AIR QUALITY CONSTRUCTION PERMIT
PREVENTION OF SIGNIFICANT DETERIORATION

PERMIT NUMBER: CP07-0040

Facility Name: Archer Daniels Midland Company (ADM) – Fremont

NDEQ Facility ID#: 09169

Mailing Address:
PO Box 1470
Decatur, Illinois 62625-1470

Facility Location:
130 North Broad Street
Fremont, Dodge County, Nebraska 68025

Project Description: Increase production at soybean processing plant that produces soybean meal, hull pellets, and soybean oil through a hexane extraction process.

Standard Industrial Classification (SIC) Code: 2075, Soybean Oil Mills

Superseded Construction Permits: This permit supersedes the construction permit issued November 15, 2001 and the permit amendment issued on July 20, 2006

Pursuant to Chapter 14 of the Nebraska Air Quality Regulations, the public has been notified by prominent advertisement of this proposed construction of an air contaminant source and the thirty (30) day period allowed for comments has elapsed. This construction permit approves the proposed project as identified in the air quality construction permit application #07-0040 received June 14, 2007, including any supporting information received prior to issuance of this permit. Additional details of the proposed project, including estimated pollutant emissions caused by the project, 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. The permit holder, owner, and operator of the facility shall assure that the installation, operation, and maintenance of all equipment is in compliance with all of the conditions of this permit.

The undersigned issues this permit on behalf of the Director under the authority of Title 129 – Nebraska Air Quality Regulations as amended August 18, 2008.

10/29/08
Date

{Original Signed}
Shelley Kaderly, Air Administrator
Air Quality Division

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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
bhp	Brake Horsepower
BMP	Best Management Practice
btu	British Thermal Unit
bu	Bushel
CAA	Clean Air Act
CE	Control Equipment
CEM	Continuous Emissions Monitor
CEMS	Continuous Emissions Monitoring System
cf	Cubic feet
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CP	Construction Permit
DGS	Distiller's Grains with Solubles
DDGS	Dry Distillers Grains with Solubles
dscf	Dry Standard Cubic Feet
dscfm	Dry Standard Cubic Feet per Minute
DTDC	Desolventizing, Toasting, Drying, and Cooling
EMIS	Emergency Management Information System
EPA	Environmental Protection Agency
EQC	Environmental Quality Council
EP	Emission Point
ESP	Electrostatic Precipitator
EU	Emission Unit
FID	Facility Identification Number
FDCP	Fugitive Dust Control Plan
FGR	Flue Gas Recirculation
FIP	Federal Implementation Plan
FR	Federal Register
ft	Feet
FTIR	Fourier Transform Infrared
H_2S	Hydrogen Sulfide
HAP	Hazardous Air Pollutant
hp	Horsepower
hr	Hour
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
MMscf	One Million Standard Cubic Feet
MSDS	Material Safety Data Sheet
MW	Megawatt
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
PAL	Plant-wide Applicability Limit
Pb	Lead (chemical abbreviation)
PbR	Permit-by-Rule
PEMS	Parametric Emissions Monitoring System
PM	Particulate Matter
PM_{10}	Particulate Matter with and aerodynamic diameter equal to or less than 10 microns
$PM_{2.5}$	Particulate Matter with and aerodynamic diameter equal to or less than 2.5 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
RVP	Reid Vapor Pressure
RATA	Relative Accuracy Test Audit
RMP	Risk Management Plan
RTO	Regenerative Thermal Oxidizer
scf	Standard Cubic Feet
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SLR	Solvent Loss Ratio
SO_2	Sulfur Dioxide
SO_x	Sulfur Oxides
TDS	Total Dissolved Solids
TO	Thermal Oxidizer
TO/HRSG	Thermal Oxidizer with Heat Recovery Steam Generator
tpy	Tons per year
TRS	Total Reduced Sulfur
TSP	Total Suspended Particulate Matter
ULNB	Ultra Low-NO_x Burner
UST	Underground Storage Tank
UTM	Universal Transverse Mercator
VHAP	Volatile Hazardous Air Pollutant
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound
WDGS	Wet Distiller's Grains with Solubles

I. GENERAL CONDITIONS

(A) This permit is not transferable to another source or location. {Chapter 17}

(B) Holding of this permit does not relieve the owner or operator of the source from the responsibility to comply with all applicable portions of the Nebraska Air Quality Regulations and any other requirements under local, State, or Federal law. 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 or permit revocation. {Chapter 41 & Chapter 17, Section 011}

(C) Application for review of plans or advice furnished by the Director will not relieve the owner or operator of legal compliance with any provision of these regulations, or prevent the Director from enforcing or implementing any provision of these regulations. {Chapter 37}

(D) Any owner or operator who failed to submit any relevant facts or who submitted incorrect information in a permit application shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrected information. If the owner or operator wishes to make changes at the source that will result in change(s) to values, specifications, and/or locations of emission points that were indicated in the permit application (or other supplemental information provided by the owner or operator and reviewed by the NDEQ in issuance of this permit), the owner or operator must receive approval from the NDEQ before the change(s) can be made. In addition, any modification which may result in an adverse change to the air quality impacts predicted by atmospheric dispersion modeling (such as changes in stack parameters or increases in emission rates, potential emissions, or actual emissions) shall have prior approval from the NDEQ. The owner or operator shall provide all necessary information to verify that there are no substantive changes affecting the basis upon which this permit was issued. Information may include, but not be limited to, additional engineering, modeling and ambient air quality studies. {Chapter 17, Section 006, 007, & 008}

(E) Approval to construct, reconstruct and/or modify the source will become invalid if a continuous program of construction is not commenced within 18 months after the date of issuance of the construction permit, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable period of time. {Chapter 17, Section 012}

(F) The owner/operator of the source shall provide the following notifications to the NDEQ:

(1) The date construction, reconstruction or modification commenced as defined in Chapter 1, Section 031. Notification shall be postmarked no later than 30 days after such date and include a summary description of whether the requirement was met through: {Chapter 17, Section 012}

(a) Initiating physical on-site construction activities of a permanent nature that meet the definition of “begin actual construction”, or

(b) Entering into binding agreements or contractual obligations. If this option is used, the notice shall also include a brief summary of each binding agreement or contractual obligation entered into, the date of the agreement or contract, and why it cannot be cancelled or modified without substantial loss to the owner or operator.

(2) The date of initial startup of operations postmarked within 15 days after such date. {Chapter 7, Section 002.03}

(G) The owner or operator shall allow the NDEQ, EPA or an authorized representative, upon presentation of credentials to: {Neb. Rev. Statute §81-1504}

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

(2) Have access to and copy, at reasonable times, any records, for the purpose of ensuring compliance with the permit or applicable requirements;

(3) Inspect at reasonable times any facilities, pollution control equipment, including monitoring and air pollution control equipment, practices, or operations, for the purpose of ensuring compliance with the 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.

(H) When requested by the NDEQ, the owner or operator shall submit completed emission inventory forms for the preceding year to the NDEQ by March 31 of each year. {Chapter 6}

(I) Open fires are prohibited except as allowed by Chapter 30.

(J) Particulate Matter – General Requirements: {Chapter 32}

(1) The owner or operator 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 owner or operator 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 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.

(K) If and when the Director declares an air pollution episode as defined in Chapter 38, Sections 003.01B, 003.01C, or 003.01D, the owner or operator shall immediately take all required actions listed in Title 129, Appendix I until the Director declares the air pollution episode terminated.

(L) This permit may be revised (reopened and reissued) or revoked for cause in accordance with Title 129 and Title 115, Rules of Practice and Procedure. Conditions under which this permit will be revised or revoked for cause, include but are not limited to: {Chapter 15, Section 006}

(1) A determination by the Director, or the Administrator of EPA that:

(a) the permit must be revised 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.

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

(3) The submittal by the owner or operator of false, incomplete, or misleading information to the NDEQ or EPA;

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

(5) The failure of the owner or operator to pay a penalty owed pursuant to court order, stipulation and agreement, or order issued by the Administrator of the EPA.

II. SPECIFIC CONDITIONS

(A) Recordkeeping: Records of all measurements, results, inspections, and observations as required to ensure compliance with all applicable requirements shall be maintained on-site as follows:

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

(2) All records required throughout this permit shall be kept for a minimum of five years and shall be clear and readily accessible to Department representatives, unless otherwise specified in this permit.

(3) Copies of all notifications, reports, test results, and plans.

(4) Calibration records for all operating parameter monitoring equipment.

(5) Operation and Maintenance manuals, or equivalent documentation, 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.

(6) Records documenting equipment failures, malfunctions, or other variations, including date and time of occurrence, remedial action taken, and when corrections were made to each piece of permitted equipment, required control equipment, and required monitoring equipment.

(B) All permitted emission units, control equipment, and monitoring equipment shall be properly installed, operated, and maintained.

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

(D) At no time (including periods of startup, shutdown, and malfunction) shall the twelve-month (12) rolling hexane solvent loss ratio exceed 0.165 gallons (of solvent) per ton soybeans processed. The 12-month rolling hexane solvent loss ratio shall be calculated monthly based on the previous 12 consecutive operating months of data. The first compliance determination shall be made twelve months after permit issuance. Malfunctions shall be handled in accordance with Title 129, Chapter 35. {Title 129, Chapter 19}

(E) Records documenting compliance with Condition II.(D) shall include:

(1) Monthly hexane solvent purchase and inventory records

(2) Monthly quantity of soybeans processed

(3) Calculations demonstrating compliance with the 0.165 gallons per ton limitation

(F) At no time during any period of twelve (12) consecutive calendar months, and at no time during the first eleven (11) months after permit issuance, shall the source receive more than 729,300 tons of soybeans. {Title 129, Chapter 19}

(G) At no time during any period of twelve (12) consecutive calendar months, and at no time during the first eleven (11) months after permit issuance, shall the source process more than 713,700 tons of soybeans. {Title 129, Chapter 19}

(H) Records documenting compliance with Conditions II.(F) and II.(G) shall include:

(1) Monthly quantity of soybeans received

(2) Monthly quantity of soybeans processed

III.(A) Specific Conditions for Soybean Receiving, Processing, Storage, and Loadout

(1) Permitted Emission Points

(a) The source is permitted to construct and/or modify the emission points and associated emission units identified in the following table. Emissions from the emission units identified below shall be controlled by the corresponding required control equipment.

Emission Point ID#	Required Control Equipment ID# and Description	Emission Unit ID# and Description
EP-1E	CD-1E: Baghouse (existing)	EU-01: Grain Receiving
EP-2E	CD-2E: Baghouse (existing)	EU-02: Conveying and Storage #1
EP-3E	CD-3E: Baghouse (existing)	EU-02: Conveying and Storage #2
EP-02	CD-02: Baghouse (existing)	EU-04: Bean Cleaning
EP-01	CD-01: Cyclone (existing)	EU-05: Dehulling System #1
EP-01a	CD-01a: Cyclone (existing)	EU-05: Dehulling System #2
EP-01b	CD-01b: Cyclone (existing)	EU-05: Dehulling System #3
EP-06	CD-06: Cyclone (existing)	EU-06: Pelleter/Cooler
EP-04	CD-04: Cyclone (existing)	EU-07: Eight Flakers
EP-V2	N/A	EU-08: Conveyor to Extraction
EP-10	CD-10: Baghouse (existing)	EU-10: Hull Grinding/Storage
EP-07a EP-07b	CD-07a: Cyclone (existing)	EU-11b: DC portion of DTDC Unit
	CD-07b: Cyclone (existing)	
	CD-07c: Cyclone (existing)	
EP-11	CD-11: Baghouse (existing)	EU-15: Truck/Rail Loadout
EP-16	N/A	EU-16: Pellet Storage
EP-17F	N/A	EU-17: Pellet Loadout
EP-21	Cyclone (existing)	EU-21: Bean Heater
EP-22	N/A	EU-22: Unloading Pit
EP-24	CD-24: Baghouse (new)	EU-24: Meal Conveying/Grinding
EP-25	CD-25: Baghouse (new)	EU-25a: Meal Storage - Webco Tank
EP-26	CD-26: Baghouse (new)	EU-25b: Meal Storage - Concrete Tank East
EP-27	CD-27: Baghouse (new)	EU-25c: Meal Storage - Concrete Tank West
EP-28	CD-28: Baghouse (new)	EU-25d: Ground Hull Storage - Harvestore Tank East
EP-29	CD-29: Baghouse (new)	EU-25e: Meal Storage - Harvestore Tank West
EP-30	CD-30: Baghouse (new)	EU-25f: Meal Storage - Street Tank #1
EP-31	CD-31: Baghouse (new)	EU-25g: Meal Storage - Street Tank #2
EP-32	CD-32: Baghouse (new)	EU-25h: Meal Storage - Street Tank #3
EP-33	CD-33: Baghouse (new)	EU-25i: Hull Storage - Street Tank #4
EP-34	CD-34: Baghouse (new)	EU-25j: Meal Storage - Street Tank #5
EP-35	CD-35: Baghouse (new)	EU-25k: Meal Storage - Street Tank #6
EP-36	CD-36: Baghouse (new)	EU-14: Meal Flow Agent

(b) The source is permitted to construct the following emission unit identified in the following table at the capacities and using the fuel type listed:

Emission Point ID#	Emission Unit ID# and Description	Maximum Throughput (tons/hr)	Maximum Heat Input Capacity (MMBtu/hr)	Permitted Fuel Types
EP-5E	EU-5E: Grain Dryer	60	16	Natural Gas

(2) Emission Limitations and Testing Requirements:

No emission limitations or testing requirements apply to the emission units identified in Condition III.(A)(1).

(3) Operational and Monitoring Requirements and Limitations

(a) At no time during any period of twelve (12) consecutive calendar months shall the source process more than 250,000 tons of soybeans through the grain dryer. {Title 129, Chapter 4}

(b) Operation and maintenance of each baghouse shall be in accordance with the following requirements: {Chapters 19 and 20}

(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 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.

(iii) 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.

(iv) 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.

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

(c) Operation and maintenance of each cyclone shall be in accordance with the following requirements:

(i) The cyclone shall be operated whenever the associated emission units are in operation.

(ii) The cyclone 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 cyclone shall be kept on site and readily available to Department representatives.

(iii) Routine observations (at least once each day of cyclone operation) shall be conducted to determine whether there are visible emissions from the stack, leaks, noise, or other indications, which may necessitate corrective action. Corrective action shall be taken immediately if necessary.

(iv) Collected waste material from the cyclone shall be handled, transported, and stored in a manner that ensures compliance with General Condition I.(J).

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The Department has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in Condition III.(A)(1).

(5) Reporting and Recordkeeping Requirements:

(a) Amount of soybeans processed through the grain dryer each month.

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

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

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

(e) Records documenting equipment failures, malfunctions, or other variations, including time of occurrence, remedial action taken, and when corrections were made for each baghouse and cyclone. Reporting to the Department shall be in accordance with Chapter 35, Section 005.

III.(B) Specific Conditions for Soybean Oil Extraction, Equipment Leaks, and Tanks

(1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table. Emissions from the emission units identified below shall be controlled by the corresponding required control equipment.

Emission Point ID#	Required Control Equipment ID# and Description	Emission Unit Description
EP-5	CD-5: Mineral Oil Scrubber (with condenser)	EU-5: Extractor
		EU11a: DT portion of DTDC Unit
LEAKS	N/A	Equipment Leaks and Tank Losses

(2) Emission Limitations and Testing Requirements:

No emission limitations or testing requirements apply to the emission units identified in Condition III.(B)(1).

(3) Operational and Monitoring Requirements and Limitations

(a) Operation and maintenance of the mineral oil scrubber shall be in accordance with the following requirements: {Chapter 19}

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

(ii) The scrubber shall be equipped with devices capable of continuously monitoring operating parameters including, at a minimum, the Mineral Oil System temperature and flow rate. Operating parameter readings shall be recorded at least once each day the scrubber is in operation.

(iii) 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.

(b) The source shall conduct a leak detection and repair program in order to minimize solvent emissions from equipment leaks and tanks. A leak detection and repair program protocol shall be developed, maintained, and followed by the source. The protocol shall be kept onsite and readily available to Department representatives.

(4) Applicable NSPS, NESHAP, and MACT Requirements:

Applicable Standard	Title	Rule Citation
NESHAP, Subpart A	General Provisions	Chapter 28, Sec. 001.01 40 CFR 63.1
NESHAP, Subpart GGGG	Solvent Extraction for Vegetable Oil Production	Chapter 28, Sec. 001.52 40 CFR 63.2830

(5) Reporting and Recordkeeping Requirements:

(a) Records documenting the date, time, temperature and flow rate for each day the Mineral Oil System is in operation.

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

(c) A leak detection and repair protocol and records documenting that the protocol has been followed by the source.

(d) Reporting and recordkeeping as required by 40 CFR 63.2830

III.(C) Specific Conditions for the Package Boiler

(1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission unit identified in the following table at the capacity and using the fuel types listed:

Emission Point ID#	Control Equipment ID# and Description	Emission Unit ID# and Description	Capacity (MMBtu/hr)	Permitted Fuel Type
EP-18	N/A	EU-18: Package Boiler	65.0	Natural Gas
EP-18A				#2, #4, #5, & #6 Fuel Oil, Vegetable Oil, Biodiesel, Poultry Grease, and Yellow Grease

(2) Emission Limitations and Testing Requirements:

(a) Total pollutant emission rate combined from the emission points identified in the table below shall not exceed the permitted limits.

Emission Point ID#	Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Performance Testing Required (Yes/No)
EP-18 and EP-18A	SO_2	245 tons	12 month rolling total	Chapter 19	No[1]

[1] Compliance with the SO_2 limitation shall be demonstrated through the methodology presented in III.(C)(2)(b)

(b) Compliance with the SO_2 limitation shall be demonstrated using the following equation:

$$SO_2 \text{ Emissions} = \frac{F_{NG} \times EF_{NG} + F_{\#2} \times EF_{\#2} + F_{\#4} \times EF_{\#4} + F_{\#5/6} \times EF_{\#5/6} + F_{PG} \times EF_{PG} + F_{YG} \times EF_{YG}}{2{,}000}$$

Where:
F_{NG} = Amount of natural gas combusted (MMscf/month)
EF_{NG} = SO_2 Emission Factor for natural gas = 0.6 (lbs SO_2 / MMscf)
$F_{\#2}$ = Amount of #2 Fuel Oil combusted (10^3 gallons/month)
$EF_{\#2}$ = SO_2 Emission Factor for #2 Fuel Oil = 142 x $S_{\#2}$ (lbs SO_2 / 10^3 gallons)
$S_{\#2}$ = Weight percent sulfur in #2 Fuel Oil (%)
$F_{\#4}$ = Amount of #4 Fuel Oil combusted (10^3 gallons/month)
$EF_{\#4}$ = SO_2 Emission Factor for #4 Fuel Oil = 150 x $S_{\#4}$ (lbs SO_2 / 10^3 gallons)
$S_{\#4}$ = Weight percent sulfur in #4 Fuel Oil (%)
$F_{\#5/6}$ = Amount of #5 and #6 Fuel Oil combusted (10^3 gallons/month)
$EF_{\#5/6}$ = SO_2 Emission Factor for #5 and #6 Fuel Oil = 157 x $S_{\#5/6}$ (lbs SO_2 / 10^3 gallons)
$S_{\#5/6}$ = Weight percent sulfur in #5 and #6 Fuel Oil (%)
F_{PG} = Amount of Poultry Grease combusted (gallons/month)
EF_{PG} = SO_2 Emission Factor for Poultry Grease = 0.11 (lbs SO_2 / gallon)
F_{YG} = Amount of Yellow Grease combusted (gallons/month)
EF_{YG} = SO_2 Emission Factor for Yellow Grease = 0.0025 (lbs SO_2 / gallon)

(3) Operational and Monitoring Requirements and Limitations:

The sulfur content of the #2, #4, #5, and #6 Fuel Oil shall not exceed 2.0% by weight. {Chapters 19 and 24}

(4) Applicable NSPS, NESHAP, and MACT Requirements:

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

(5) Reporting and Recordkeeping Requirements:

(a) Fuel receipts for #2, #4, #5, and #6 Fuel Oil from the supplier for the fuel combusted in the boiler (EU-18). Fuel receipt shall state the name of the oil supplier, sulfur content, by weight, in the fuel, and the method used to determine the sulfur content in the oil.

(b) Monthly calculations demonstrating compliance with the SO_2 emissions limitation.

III.(D) Specific Conditions for Standby Generator

(1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table at the capacities and using the fuel types listed:

Emission Point ID#	Emission Unit ID# and Description	Maximum Capacity (HP)	Permitted Fuel Type
EP-19	EU-19: Standby Generator	220	Diesel Fuel

(2) Emission Limitations and Testing Requirements:

No emission limitations or testing requirements currently apply to the emission unit identified in Condition III.(D)(1).

(3) Operational and Monitoring Requirements and Limitations:

(a) EU-19 shall be limited to operating during emergency, maintenance, and testing activities only. {Chapter 17}

(b) The sulfur content of the diesel fuel shall not exceed 0.3% by weight. {Chapters 19 and 24}

(4) Applicable NSPS, NESHAP, and MACT Requirements:

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

(5) Reporting and Recordkeeping Requirements:

(a) Records documenting date, length of time, and reasoning why the standby generator was operated.

(b) Fuel receipts for diesel fuel from the supplier for the fuel combusted in the standby generator (EU-19). Fuel receipt shall state the name of the oil supplier, sulfur content, by weight, in the fuel, and the method used to determine the sulfur content in the oil.

III.(E) Specific Conditions for Cooling Towers

(1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table with the number of cooling tower cells and at the circulation rate listed:

Emission Point ID#	Control Equipment ID# and Description	Emission Unit ID# and Description	Number of Cooling Tower Cells	Maximum Circulation Rate (gal/hr)
EP-23	N/A	EU-23: Cooling Tower #1	1	138,000
EP-37	N/A	EU-37: Cooling Tower #2	1	132,000

(2) Emission Limitations and Testing Requirements:

The cooling towers identified above are not subject to any emissions limitations. Testing shall be conducted to ensure compliance with the TDS limitation established and is discussed below.

(3) Operational and Monitoring Requirements and Limitations:

(a) Drift loss from each 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. {Chapter 19}

(b) TDS concentration of the cooling water in each cooling tower shall not exceed 2,200 ppm. 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. {Chapter 19}

(c) The requirement for TDS sample collection and testing may be eliminated upon written approval by the Department if TDS sampling results demonstrate compliance for twelve consecutive months.

(4) Applicable NSPS, NESHAP, and MACT Requirements:

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

(5) Reporting and Recordkeeping Requirements:

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

III.(F) 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. {Chapters 20 and 32}

(2) Emission Limitations and Testing Requirements:

The haul road silt loading shall not exceed 3.0 g/m^2. {Chapters 20 and 32}

(3) Operational and Monitoring Requirements and Limitations:

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 upon observation of visible fugitive emissions leaving plant property.

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The Department has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in Condition III.(F)(1).

(5) Reporting and Recordkeeping Requirements:

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

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

FACT SHEET

Archer Daniels Midland Company
130 North Broad Street
Fremont, Dodge County, Nebraska 68025

October 29, 2008

DESCRIPTION OF THE FACILITY OR ACTIVITY:

Archer Daniels Midland Company – Fremont (ADM) is an existing soybean processing plant located in Fremont, Dodge County, Nebraska. ADM produces soybean meal, hull pellets, and soybean oil. The soybean oil is extracted through a hexane extraction process. ADM operates under primary standard industrial classification (SIC) code 2075 for Soybean Oil Mills and North American Industry Classification System (NAICS) code 311222 for Soybean Oil Mills.

The facility was originally constructed in 1956. An air quality construction permit was issued to the source on September 14, 1994, however this permit was superseded in its entirety by a construction permit issued on November 15, 2001. The November 2001 permit was in response to a Notice of Violation (NOV) issued by EPA Region VII to ADM on May 15, 1998. The NOV was in regard to violation of Prevention of Significant Deterioration (PSD) regulations. In resolution of PSD concerns, ADM agreed to federally enforceable limits below the major source thresholds for particulate matter (PM), particulate matter with an aerodynamic diameter equal to or less than ten microns (PM_{10}), and sulfur oxides (SO_x), and federally enforceable limits on volatile organic compound (VOC) emissions, such that the increase in VOC emissions as a result of the 1994 modification did not exceed 249 tons per year. By accepting limits the source was not required to undergo PSD review for the 1994 construction project. However, the potential emissions after the 1994 modification (and made enforceable by the 2001 construction permit) made the source a major source with regard to PSD (potential emissions greater than 250 tons/year, excluding fugitives, of one or more regulated PSD pollutants). If any modifications occurred after this time that fit the definition of a major modification, then PSD review would be triggered.

On January 12, 2006, the Department received an air quality construction permit application requesting permission to combust used fuel oil, yellow grease, poultry grease, and biodiesel in the existing 65.0 million British thermal unit per hour (MMBtu/hr) boiler. Permit CP06-0003 was issued on July 20, 2006, which allowed the additional fuel types to be combusted in the boiler. The change in emissions as a result of the modification was such that PSD review was not triggered.

On June 14, 2007, the Department received an air quality construction permit application (#07-0040) proposing to increase the production capacity of the existing soybean processing facility. The emissions increase associated with the expansion are such that PSD review is triggered for SO_x and VOC. Potential emissions of PM and PM_{10} will also increase, however PSD review has not been triggered for those pollutants. Due to the number of changes and in order to clarify some of the conditions established in previously issued construction permits, the Department has decided to supersede all of the existing construction permits with this permitting action. The source currently operates under a Class I Operating Permit issued on January 8, 2003 and revised on March 19, 2003. A renewal application was received by the Department on July 9, 2007; however the facility requested that the renewal operating permit include the changes associated with the expansion project.

The specific changes being made to the facility as a result of the expansion include, but are not limited to, the following items:

- The existing dehulling system will be modified in order to increase the capacity
- The aspiration system associated with the dehulling system will be modified, creating two new emission points (emissions will not triple, they will be re-distributed)
- The extractor will be lengthened
- The existing 1st effect evaporator and 2nd effect evaporator (two out of the three components of the distillation system) will be replaced by a new 1st effect evaporator and 2nd effect evaporator
- A new primary condenser will replace two existing smaller condensers
- One of the two existing cooling towers will be replaced with a larger unit
- The two baghouses currently controlling the meal processing, storage, and handling will be replaced as follows:
    - A new baghouse will control the meal processing and handling emissions
    - Eleven (11) new bin vent filters will be constructed on each of the eleven storage tanks that store soybean meal, hulls, or hull pellets.

The ADM – Fremont facility consists of the production steps/equipment presented in the following table. All emissions from each of the production steps have been accounted for in determining the facility's potential emissions. The table also identifies the emission point identification numbers associated with each production step and the location in the construction permit where conditions for each production step are located.

Equipment/Process	Emission Point ID#s	Permit Conditions
Soybean Receiving, Processing, Storage and Loadout	EP-1E, EP-2E, EP-3E, EP-02, EP-01, EP-01a, EP-01b, EP-06, EP-04, EP-V2, EP-10, EP-07a, EP-07b, EP-11, EP-16, EP-17F, EP-21, EP-22, EP-24 through EP-36, and EP-5E	Condition III.(A)
Soybean Oil Extraction, Equipment Leaks, and Tanks	EP-5 and LEAKS	Condition III.(B)
Package Boiler	EP-18/EP-18A	Condition III.(C)
Standby Generator	EP-19	Condition III.(D)
Cooling Towers	EP-23 and EP-37	Condition III.(E)
Haul Roads	N/A	Condition III.(F)

TYPE AND QUANTITY OF AIR CONTAMINANT EMISSIONS ANTICIPATED:

The ADM – Fremont soybean processing facility will generate emissions of several air pollutants, including PM, PM_{10}, SO_x, NO_x, CO, VOC, and hazardous air pollutants (HAP), specifically n-Hexane. The primary emission sources at the facility will be from the following equipment/processes:

Equipment/Process	Expected Pollutants
Soybean Receiving, Processing, Storage and Loadout	PM and PM_{10}
Soybean Oil Extraction, Equipment Leaks, and Tanks	VOC and HAP
Package Boiler	PM, PM_{10}, SO_2, NO_x, CO, VOC, and HAP
Standby Generator	PM, PM_{10}, SO_2, NO_x, CO, VOC, and HAP

Equipment/Process	Expected Pollutants
Cooling Towers	PM and PM_{10}
Haul Roads	PM and PM_{10}

Emissions for the source were calculated by separating out the major processes occurring at the site. Emission factors from EPA's Compilation of Air Pollutant Emission Factors, 5th Edition, Volume 1 (AP-42), Section 9.9.1: Grain Elevators and Processes (5/03), Table 9.9.1-1 were used to calculate emissions resulting from grain elevator operations. AP-42, Section 9.11: Vegetable Oil Processing (11/95), Table 9.11.1-1 was used to calculate emissions associated with the pelleter/cooler. Stack test emissions results for certain grain equipment were used when available. AP-42, Section 1.4: Natural Gas Combustion (7/98), Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4 were used to calculate the emissions associated with the natural gas combustion occurring in the dryer, however dryer PM and PM_{10} emissions were estimated by using emission factors from Section 9.9.1. AP-42, Section 3.3: Gasoline and Diesel Industrial Engines (10/1996), Tables 3.3-1 and 3.3-2 were used to calculate emissions from the emergency generator. Fugitive emissions associated with paved haul roads and cooling towers were estimated by using AP-42 Section 13.2.1: Paved Haul Roads (12/03) and AP-42, Section 13.4: Wet Cooling Towers (1/95) respectively. Established emission limitations were also used. Detailed emission calculations are presented in the fact sheet attachment.

Soybean Receiving and Processing

Soybeans are received at the facility in hopper bottom or straight trucks inside a building. There is one truck dump pit that utilizes a choke-flow unloading system and is controlled by a baghouse (CD-1E). If the soybeans have high moisture content, they may be dried in the grain dryer. The grain dryer is rated at 16.0 MMBtu/hr and only combusts natural gas. The grain dryer can dry up to 60 tons of soybeans per hour and is limited by the permit to drying 250,000 tons/year. The soybean conveying and storage operations (EU-02) are controlled by two baghouses (CD-2E and CD-3E). From the bulk soybean storage silos, the soybeans are processed in a series of preparation operations prior to vegetable oil extraction. First the soybeans are cleaned (EU-04) and heated (EU-21). The cleaning and heating processes are controlled by a baghouse (CD-02) and cyclone (CD-21) respectively. Next the soybeans enter the dehulling process. The soybean receiving, drying, conveying, storing, and heating operations are not being physically modified as a result of the expansion, only the annual throughput of soybeans will increase causing increased utilization of the existing equipment.

The dehulling process consists of several pieces of equipment, including a Jet Dryer, Hullosenator, Crown Split Soy Aspirator, crackers, and Crown Cascade Conditioner. The purpose of the dehulling process is to remove the hulls from the meat of the bean. Currently the dehulling system is controlled by a single cyclone (CD-01) and emissions are emitted through a single emissions point (EP-01). The dehulling system is being physically modified to accommodate the increased soybean throughput and two new emission points will be created (EP-01a and EP-01b). Each new emissions point will be controlled by a new cyclone (CD-01a and CD-01b). Although new emission points are being created, emissions from the dehulling process are not expected to increase three-fold. The emissions from dehulling will be redistributed across three emission points as opposed to only emitting through a single emission point.

Once the hulls are removed the meat enters one of eight flakers (EU-07). The flakers flake the meats to maximize surface area for purposes of oil extraction. The flakers are controlled by a single cyclone (CD-04) and emissions from the flaking process are emitted through a single emissions point (EP-04). The flakes are then conveyed to the extraction process. The emissions generated by conveying are

uncontrolled and emitted via EP-V2. The existing conveyor (EU-08) is being physically modified to accommodate the increased throughput capacity.

The removed hulls are ground in the hull grinder (EU-10). Grinding emissions are controlled by a baghouse (CD-10) and emitted through EP-10. The ground hulls are then formed into pellets and cooled. Emissions from the pelletizing and cooling process are controlled by a cyclone (CD-06) and emitted through EP-06. Hull pellets are stored in the Harvestore Tank East and ground hulls are stored in Street Tank #4. Hull pellets are loaded out via an uncontrolled loadout spout (EP-17F).

Soybean Oil Extraction

The flakes are conveyed to a countercurrent solvent extraction system. In the extractor, the flakes are mixed with an organic solvent, typically commercial grade hexane, and vegetable oil is extracted from the flakes as the solvent and flakes move in countercurrent flow through a series of extraction steps within the extraction system. The solvent-oil mixture called miscella, is processed in order to separate the solvent from the oil. The solvent is recovered from the miscella using a steam and vacuum distillation process. The solvent is then condensed, separated from the condensate, and reused. The emissions associated with the soybean oil extraction process are controlled by the mineral oil scrubber (CD-05) and emissions are emitted through EP-05. The extraction system is being physically modified with this expansion. The existing 1st effect and 2nd effect evaporators are each being replaced with new units. The two existing 1st and 2nd effect condensers are being replaced with a single primary condenser. The length of the extractor is also increasing.

Meal Processing, Storage, and Loadout

The flakes that have the oil extracted out of them are called defatted flakes. From the distillation process, the defatted flakes enter a DTDC unit. DTDC stands for Desolventizing, Toasting, Drying, and Cooling. It is a process in which residual solvent is removed from the flakes and then the flakes are dried and cooled to produce meal. Emissions from the DT portion of the DTDC process are controlled by the Mineral Oil System (main vent) and the emissions from the DC portion of the DTDC process are controlled through three cyclones (CD-07a, CD-07b, and CD-07c) and the emissions are emitted through two emission points (EP-07a and EP-07b).

The cooled meal is then ground, mixed with meal flow agent (clay), and transported to storage. Ten of the eleven storage bins at the facility are used to store meal. Currently the emissions from the eleven bins and the meal grinding operations are controlled by two baghouses. The modification at this time will replace the existing two baghouses with twelve new units. One of the new units will control the emissions associated with the meal grinding and conveying while the other eleven units will be installed on each of the eleven storage bins. Truck and rail loadout of meal occurs at EU-15 and is controlled by a baghouse (CD-11, EP-11). A new traveling conveyor will be installed and controlled by the existing baghouse (CD-11).

The meal flow agent storage is controlled by a bin vent filter (CD-36, EP-36) and this system will remain unchanged. The facility also has an unloading pit which is used to unload trucks containing material. This process is typically used when a truck fills up with meal or hulls in too large of quantities and some has to be removed. The process can also be used to unload railcars during plant outages to meet customer needs. The unloading pit (EP-22) is uncontrolled.

Steam Generation

One (1) steam generating boiler (EU-18) is used to provide steam to the necessary areas of the facility. The boiler is rated at sixty-five (65) MMBtu/hr and is currently permitted to combust #2, #4, #5, and #6 fuel oil, natural gas, vegetable oil, biodiesel, poultry grease, yellow grease, and used oil. This permitting action will remove used oil from the permitted fuels list at the request of the source.

Emissions from this unit are emitted through one of two stacks, depending on the fuel type. Emission point EP-18 emits emissions from the boiler when the boiler is operated on natural gas. Emission point EP-18a emits emissions from the boiler when the boiler is operated on #2, #4, #5, or #6 fuel oil, vegetable oil, biodiesel, poultry grease, or yellow grease. This is because point EP-18 utilizes an AREX Heat Exchanger which does not have soot blowers and cannot be used when combusting fuel oil. EP-18 and EP-18a have different stack parameters including stack height, inside diameter, exit velocity, and location (UTM coordinates).

Emergency Equipment

ADM utilizes one (1) 220 HP diesel-fired standby generator.

Due to the small tank size requirement, low volume throughput, and low vapor pressure of diesel fuel, the VOC emissions associated with the diesel fuel storage are expected to be negligible.

Potential emissions were estimated using emission factors from AP-42, Section 3.3: *Gasoline and Diesel Industrial Engines (10/96)*. The information presented in Section 3.3 is for industrial engines less than 600 HP.

Cooling Towers

The production process will be cooled by circulating water through one of two cooling towers (EP-23 and EP-37). The water circulated in the cooling tower will not come into contact with any production processes or material streams. The drift loss is limited to 0.005% and the total dissolved solids (TDS) concentration in the recirculation water is limited to 2,200 ppm per single sampling event.

Potential PM/PM_{10} emissions from the cooling tower were calculated with a mass balance approach as presented in AP-42, Section 13.4: *Wet Cooling Towers (1/95)*, using data on water circulation rate, TDS concentration, and cooling tower drift losses. PM/PM_{10} emissions are generated when the water is evaporated and the TDS enters the atmosphere.

ADM will be replacing one of the existing two cooling towers with a new unit.

Paved Haul Roads

ADM's in-plant haul roads will be paved. Fugitive dust emissions from traffic on these roads have been calculated using AP-42, Section 13.2.1: *Paved Roads* (12/03) and typical characteristics for paved roads. An increase in PM/PM_{10} emissions will occur as a result of increased utilization of the haul roads for receiving and shipping products.

A permitted silt load factor of 3.0 grams per square meter (g/m^2) was used to establish the pounds per vehicle mile traveled (lb/VMT) emission factor for PM and PM_{10}.

Emissions Summary

Potential emissions from ADM-Fremont are expected to change in the following ways as a result of the permitted expansion.

Regulated Pollutant	Pre-Project PTE (tons/yr)	Post-Project PTE (tons/yr)	Change in Potential Emissions (tons/yr)
Particulate Matter (PM)	119.94	128.04	8.09
PM equal to or smaller than 10 microns (PM_{10})	57.82	61.15	3.33
Sulfur Oxide (SO_x)	247.00	247.00	0.00
Nitrogen Oxides (NO_x)	87.19	87.19	0.00
Carbon Monoxide (CO)	35.63	35.63	0.00
Volatile Organic Compounds (VOC)	534.34	335.84	-198.50
Single HAP - Hexane:	339.83	212.78	-127.04
Total HAPs	342.52	212.87	-129.65

Detailed emission calculations are presented in the fact sheet attachment. Footnotes have been included in the fact sheet attachment in order to further explain the calculation methodologies. Multiple emissions scenarios were analyzed. The first 14 pages of the fact sheet attachment present the post-project PTE from the sources. These are the potential emissions from the source after the expansion occurs. Pages 15-28 present the pre-project potential to emit based on limitations and operating restrictions that were applicable to the source prior to this permitting action. Pages 29, 30, and 32-34 specifically present the calculations that were performed for PSD applicability purposes. The increased utilization from the boiler was evaluated as well as a post-project PTE to BAE test was completed for all the other affected units. The change in PTE from all sources due to the expansion was also evaluated and is included on page 31 of the fact sheet attachment.

APPLICABLE REQUIREMENTS AND VARIANCES OR ALTERNATIVES TO REQUIRED STANDARDS:

Title 129, Chapter 17 – Construction Permit Requirements

A federal Prevention of Significant Deterioration (PSD) construction permit is required for this project because the expansion project qualifies as a major modification under the PSD program. This permitting action is superseding the previously issued permit and permit amendment.

The facility-wide potential emissions from the facility after the issuance of this permit falls into the following category:

100 tons or more per year of any air pollutant; or
10 tons or more per year of any single HAP; or
25 tons or more per year of any combination of HAPs

Therefore, the facility submitted a $3,000 fee when submitting their Air Quality Construction Permit Application, in accordance with Title 129, Chapter 17, Section 003.01.

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

Subpart A – General Provisions: This subpart, adopted by reference in Title 129, Chapter 18, Section 001.01, applies to those units covered by the specific NSPS as discussed below. The owner or operator is required to notify the Department when several milestones occur including, but not limited to, the date construction commenced postmarked no later than thirty (30) days after such date {40 CFR 60.7(a)(1)}, the actual date of initial start up of the equipment postmarked within fifteen (15) days after such date {40 CFR 60.7(a)(3)}, and any physical or operational change to an existing facility which may increase the emission rate of any air pollutant to which a standard applies, unless that change is specifically exempted under an applicable subpart {40 CFR 60.7(a)(4)}.

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, constructed, reconstructed, or modified after June 9, 1989. A steam-generating unit is defined as any device which combusts any fuel to produce steam, heat water, or heat any heat transfer medium, including air. The boiler located at this facility is not subject to this subpart since it was constructed in 1973 and has not undergone a modification or reconstruction. Also, the grain dryer is direct fired and therefore is also not subject to this subpart.

Subpart IIII – Standards of Performance for Stationary Compression Ignition (CI) Internal Combustion Engines (ICE): This subpart, adopted by reference in Title 129, Chapter 18, Section 001.76, , applies to stationary compression ignition internal combustion engines with a displacement of less than 30 liters per cylinder that commence construction or have been modified or reconstructed after July 11, 2005. This subpart does not apply to the emergency generator located at ADM since it commenced construction prior to July 11, 2005.

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

Title 129, Chapter 19, Section 003 states "prior to beginning actual construction of a new major stationary source or a major modification of an existing major stationary source, the owner or operator must obtain a permit, issued by the Department, stating that the source will comply with the requirements [of Chapter 19]." Title 129, Chapter 1, Section 076 defines a "major modification" as any physical change in or change in the method of operation of a major stationary source that would result in a significant emissions increase of a regulated NSR (New Source Review) pollutant and a significant net emissions increase of that pollutant from the major stationary source. ADM is currently a major stationary source since the potential to emit VOC is greater than 250 tons/year. The expansion proposed to occur at ADM constitutes a major modification under Title 129, Chapter 19 effective February 16, 2008, therefore a construction permit, in accordance with Chapter 19 is required.

The proposed ADM expansion project is a major modification because the emissions increase when comparing post-project potential to emit (PTE) to baseline actual emissions (BAE) from units that are new, being physically modified, or in which utilization is increasing, exceed the significance thresholds for SO_2 and VOC. Although ADM had the option of utilizing the projected actual emissions (PAE) to BAE evaluation to determine PSD applicability, they opted to utilize the PTE to BAE methodology so that additional recordkeeping need to verify PAE would not be required. The BAE used was from actual emissions that occurred from 2005 and 2006. Various units associated with soybean receiving, processing, storage, and loadout, soybean oil extraction, and increased boiler utilization were evaluated when determining whether the emissions increase due to the project were in excess of the significance thresholds. Units not included in the analysis were excluded if utilization was not expected to increase or

if the emissions were fugitive in nature. The following table compares the emissions increase as a result of the project (PTE - BAE) to the significance thresholds. The table shows that PSD review is only applicable for SO_2 and VOC as a result of this expansion project.

Pollutant	Significant Emissions Increase Threshold (tons/year)	Post Project PTE minus BAE (tons/year)	Subject to PSD? (Yes or No)
Particulate Matter (PM)	25	24.24	No
PM $\leq$ 10 microns in diameter (PM_{10})	15	14.37	No
Sulfur Dioxide (SO_2)	40	83.92	Yes
Nitrogen Dioxide (NO_2)	40	14.51	No
Carbon Monoxide (CO)	100	3.22	No
Volatile Organic Compounds (VOC)	40	139.62	Yes

The BAE provided by the source is the average of actual emissions from 2005 and 2006. On August 21, 2003, a Consent Decree was negotiated under United States v. ADM (C.D. IL, NO. 03-CV-2066) and was filed with the U.S. District Court – Central District of Illinois. The Consent Decree required the source to reduce emissions over time by installing various control equipment and by optimizing the performance of several pieces of existing control equipment. The soybean oil extraction facilities owned and operated by ADM across the country, including the Fremont facility, were subject to portions of this consent decree. The major requirement in the consent decree that impacted the ADM Fremont facility was that the capacity-weighted average of the final solvent loss ratio (SLR) shall not exceed 0.175 gallons/ton for all conventional soybean plants owned by ADM. The final SLR limits for each individual facility was required to be proposed by December 31, 2007. The final SLR limit for ADM Fremont was proposed to be 0.180 gallons/ton. The BAE was not adjusted downward to account for any limitations that have become applicable since January 1, 2008, as Title 129 does not require downward adjustments unless they are based on regulatory changes (Title 129, Chapter 19, Section 005.07). If downward adjustment would be allowed in this case, the VOC PSD applicability determination may have been altered, however not allowing for the downward adjustment is a more conservative analysis.

A PSD review has two major components, Best Available Control Technology (BACT) and an Ambient Air Impact Analysis. PSD regulations require that all new or modified major stationary sources submit a PSD-BACT analysis and ambient air quality analysis for all PSD pollutants emitted over the significant emission increase thresholds listed in 40 CFR 52.21(b)(23). One portion of the ambient air impact analysis is a requirement for pre-application monitoring in order to determine the ambient air quality in the area that the major stationary source or modification is being constructed. The sulfur dioxide impacts from the project itself (i.e. increased utilization of the boiler) are less than 13 $\mu g/m^3$ (24-hour average) and therefore the Department has waived the pre-application monitoring requirements in accordance with Title 129, Chapter 19, Section 016.07. VOC emissions at the ADM facility will increase in excess of 100 tons/year (PTE-BAE) as a result of the expansion. Therefore pre-application monitoring may be required to be conducted. ADM requested a waiver from the Department for pre-application monitoring of ozone. The Department granted this waiver on May 20, 2008.

1.0 Best Available Control Technology (BACT)

The following is a summary of the BACT analysis submitted by ADM and approved by the Department. The complete BACT analysis can be found in the application materials and in subsequent submittals.

1.1 Top-Down BACT Analysis

The NDEQ uses a BACT analysis approach similar to EPA's preferred method, commonly referred to as the 'top-down' BACT process. The first step in a top-down BACT analysis is to determine, for each emissions unit and pollutant in question, the most stringent control technology and emissions limit available for a similar or identical source or source category. If it can be shown that this level of control is infeasible on the basis of technical, economic, energy, and environmental impacts for the source in question, then the next most stringent level of control is identified and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any technical, economic, energy or environmental consideration.

A "Top-Down" BACT analysis is comprised of the following five basic steps:

Step 1: Identify all potentially available control technologies: All control technologies for similar processes, as well as Lowest Achievable Emission Rate (LAER) technologies should be included. Technologies or techniques with a practical potential for application to the emissions unit and the regulated pollutant under evaluation.

Step 2: Eliminate technically infeasible options: Technologies demonstrated to be infeasible based on physical, chemical, and engineering principles are excluded from further consideration.

Step 3: Rank remaining technologies by control effectiveness: Technically feasible control technologies are ranked in the order of highest expected emission reduction to lowest expected emission reduction. The ranking also includes expected emission rate, control effectiveness, energy impacts, environmental impacts (including toxic and hazardous air emissions), and economic impacts.

Step 4: Evaluate most effective controls and document results: The technology ranking is evaluated and case-by-case consideration is given to energy, environmental, and economic impacts. The most effective option not rejected is chosen as BACT and is used to express an enforceable emission limitation for the affected emission unit.

Step 5: Establish BACT

1.2 Package Boiler

The existing 65.0 MMBtu/hr package boiler will not be physically modified as a result of the expansion; however the utilization is expected to increase. Emissions associated with the increased utilization have been included in the emission estimates used to determine that the expansion is a major modification and PSD review is required for SO_2 and VOC. 40 CFR 52.21(j)(3) states that a major modification shall apply BACT for each regulated NSR pollutant for which it would result in a significant net increase at the source. BACT must be applied to each emissions unit at which a net emissions increase in the pollutant would occur as a result of a physical change or change in method of operation in the unit. Although actual emissions from the boiler are expected to increase as a result of the expansion, the boiler is not undergoing a physical change or a change in method of operation. Therefore BACT is not required to be installed on the boiler.

1.3 Vegetable Oil Extraction Process

There are several specific unit operations involved in the soybean oil extraction process; solvent extraction, meal processing, solvent/oil distillation, and solvent recovery. ADM emits VOC emissions from these operations via the main vent (which vents vapors from the solvent extractor, solvent recovery system, and the desolventizer section of the DTDC), meal processing, and equipment leaks. Each of these sources of VOC is being physically modified as part of the Fremont plant expansion and is therefore

subject to BACT. The solvent storage system is not being modified and therefore is not subject to BACT review.

The objective of this analysis is to determine BACT for VOC emissions from the main vent, meal processing operations, and equipment leaks. The source identified the following available control options that were considered in determining BACT for the main vent:

- Condensation;
- Condensation/Mineral Oil Absorption;
- Carbon Adsorption; or
- Oxidation

Condensation and condensation/mineral oil absorption are technically feasible options for controlling VOC emissions from the main vent. Carbon adsorption and oxidation are not considered to be technically feasible due to being a potential source of ignition and explosion hazard, which is not appropriate when a facility utilizes a high quantity of explosive material.

BACT for the process tanks and vents has been determined to be condensation followed by a mineral oil absorption unit capable of VOC control efficiency of 95% (3-hr or test method average). The facility is required to operate the condenser and mineral oil scrubber at all times the associated units are operating.

The source indicated that improvements in the operation and efficiency of the DTDC is the only technically feasible option for BACT for the meal processing operations. ADM also indicated that the only technically feasible option for controlling equipment leaks is conducting a leak detection and repair program (LDAR). These two items are being implemented as BACT.

Since total emissions from oil extraction are difficult to explicitly measure at individual emission points throughout the process, emission limitations are typically established as pounds or gallons of solvent emitted (i.e. solvent lost) per ton of oilseed processed. ADM proposed a BACT emissions limitation of 0.175 gallons/ton. Although other soybean oil extraction plants have been permitted with a lower emissions limitation, ADM provided information justifying why those lower emission limitations are not appropriate for the Fremont plant.

Upon closer examination of the ADM project, the Department and ADM agreed that the plant is not being modified in such a way that additional solvent will be able to be recovered. The specific modifications occurring to the extraction process itself include:

- The extractor will be lengthened
- The existing 1st effect evaporator and 2nd effect evaporator (two out of the three components of the distillation system) will be replaced by a new 1st effect evaporator and 2nd effect evaporator
- A new primary condenser will replace two existing smaller condensers

The only modifications that could potentially be more efficient at solvent recovery would be the replacement of the evaporators and condensers. ADM indicated that the replacement of these units would not reduce the hexane emissions currently being sent to and controlled by the existing mineral oil scrubber. The Department expects the new units to be more energy efficient, but not to lessen the amount of hexane being sent to the scrubber, which would result in the source being able to achieve a lower solvent loss ratio.

Currently the source employs BACT on its units; however it is appropriate to lower the solvent loss ratio (SLR) limitation at the site. The Department obtained 12-month rolling SLR totals from ADM and used a

99% confidence interval to establish BACT at 0.165 gallons/ton including periods of startup, shutdown, and malfunction.

2.0 Air Dispersion Modeling Analysis

2.1 Air Quality Impact Analysis

All PSD permits require an air quality analysis of the ambient impacts associated with the project. This analysis includes an assessment of existing air quality, an air dispersion modeling analysis, an additional impact analysis, and an evaluation of any adverse impacts to Class I areas. The air dispersion modeling analysis is required to demonstrate that new emissions from the source or major modification, in conjunction with applicable emissions from other existing sources, will not cause or contribute to a violation of any applicable National Ambient Air Quality Standards (NAAQS) or PSD increment. The analysis involves two distinct phases: a preliminary analysis and a full impact analysis. The preliminary analysis evaluates potential emissions from the project alone. The results of the preliminary analysis determine whether or not a full impact analysis is required. In addition to emissions from the project, the full impact analysis also considers emissions from existing sources and growth associated with the new project. For PM_{10}, SO_2, and NO_2 the full impact analysis consists of separate modeling analyses for the NAAQS and the PSD increments.

A source is required to conduct an air quality impacts analysis for pollutants in which emissions from the PSD project alone are above the Significant Emissions Increase (SEI) thresholds. The emissions increase included emissions associated with increased utilization of numerous units, including the package boiler. Since SO_2 and VOC are the only pollutants expected to increase in levels greater than the significance thresholds due to the project, ambient air quality analyses only need to be conducted for those pollutants. However, since an ambient air quality standard does not exist for VOC and the Fremont area is in compliance with the ozone standard and significant impact to this standard is not expected, an Air Quality Impact Analysis has only been conducted for SO_2.

2.2 Air Quality Impact Analysis Specifics

The air quality impact analysis for SO_2 was performed in accordance with U.S. EPA and NDEQ modeling guidance. Dispersion modeling was performed using AERMOD v07026. Building-induced downwash parameters were generated using BPIP v04272. Meteorological data utilized was derived by NDEQ. Surface and upper air meteorological data came from Omaha, Nebraska meteorological stations. Five years of data (2000-2004) was used in the analysis.

2.3 Preliminary Analysis

Once it is determined what pollutants need to be evaluated in the air quality impacts analysis, the preliminary analysis can be performed. The preliminary analysis evaluates potential emissions from the PSD project alone. The results of the preliminary analysis determine whether or not a full impact analysis is required. ADM elected to not perform a preliminary analysis and only conducted a full impact analysis.

2.4 Full Impact Analysis

If any of the modeled concentrations from the preliminary modeling analysis equal or exceed the SILs, then a full impact analysis must be conducted. The full impacts analysis consists of NAAQS and PSD increment compliance demonstrations. The NAAQS evaluation takes into account not only the emissions

associated with the PSD project, but also other emission units located at the facility that are remaining unchanged, other sources located near the facility, and natural emission concentrations. A PSD Increment analysis must also be conducted. The increment analysis takes into account emissions from the facility undergoing construction or modification, but also emissions from nearby sources depending on the dates sources or modifications occurred. Increment is the term for the amount of additional pollutant concentration allowed beyond a baseline pollutant concentration level. In other words, increment is the maximum allowable deterioration of air quality in a particular area. Increment is consumed when applicable emission increases contribute to an increase in ambient concentrations above the baseline level. The National and Nebraska NAAQS and PSD Increments for SO_2 are presented in the tables below.

Nebraska and National Ambient Air Quality Standards for SO_2

Pollutant	Averaging Period	Ambient Air Quality Standards (ug/m^3)	
		National	Nebraska
SO_2	3-hour[a]	1,300	1,300
	24-hour[a]	365	365
	Annual	80	80

[a]Concentration is allowed to be exceeded once per year at a single receptor.

Nebraska and National Ambient Air Quality Increment Standards for SO_2

Pollutant	Averaging Period	Air Quality Increment (ug/m^3)	
		National	Nebraska
SO_2	3-hour[a]	512	512
	24-hour[a]	91	91
	Annual	20	20

[a]Concentration is allowed to be exceeded once per year at a single receptor.

2.4.1 NAAQS Modeling Analysis

The purpose of this NAAQS modeling analysis is to demonstrate that ADM, once the expansion is completed, will not cause or contribute to violations of applicable NAAQS for SO_2 (3-hour, 24-hour, & Annual). Region VII of the Environmental Protection Agency (EPA) provided comment on the modeling analysis that was conducted for ADM-Fremont when the permit was on public notice, in accordance with Title 129, Chapter 14. Based on the comments received, NDEQ conducted a revised NAAQS analysis which updated modeling parameters that were used in the modeling analysis submitted by the source in 2007. Specifically building parameters were revised and BPIP was re-run, near-by sources located in the vicinity of ADM-Fremont and expected to cause a significant concentration gradient were added to the model, and source parameters for the point sources at ADM-Fremont were updated. Since the entire NAAQS model was re-run, the latest available met data was used (2003-2007) instead of the original met data covering years 2000-2004.

The SO_2 results for AAQS compliance are shown in the table below for 3-hour, 24-hour and annual concentrations, including contributions from existing sources of SO_2 emissions in the project area. As shown in the table, the 3-hr, 24-hour and annual concentrations are predicted to be below the ambient

standards. Each year of meteorological data was run separately; therefore the modeled concentrations represent the High 2nd High for the 3-hour and 24-hour averaging periods and the High 1st High for the annual averaging period. The modeled concentration also presents the modeled impacts from ADM as well as other nearby sources explicitly included in the modeling analysis.

Predicted Ambient SO_2 Concentrations Post-Project

Averaging Period	Year	Background ($\mu g/m^3$)	Modeled ($\mu g/m^3$)	Total ($\mu g/m^3$)	AAQS
3-hour	2003	120	477.11	597.11	1,300
	2004		448.35	568.35	
	2005		464.09	584.09	
	2006		456.45	576.45	
	2007		474.45	594.45	
24-hour	2003	48	296.98	344.98	365
	2004		301.67	349.67	
	2005		307.92	355.92	
	2006		298.55	346.55	
	2007		302.69	350.69	
Annual	2003	12	63.96	75.96	80
	2004		54.32	66.32	
	2005		54.19	66.19	
	2006		65.49	77.49	
	2007		55.92	67.92	

2.4.2 PSD Increment Modeling Analysis

The purpose of this PSD Increment modeling analysis is to demonstrate that once the ADM expansion has occurred, all of the allowable increment has not been consumed in the area. If the ADM expansion causes increment to be exceeded, the project cannot go forward without shutting down current increment consuming units in order to "make room" for the ADM expansion. The SO_2 results for PSD Increment compliance are shown in the table below for 3-hour, 24-hour and annual concentrations, including contributions from existing sources of SO_2 emissions in the project area. As shown in the table, the 3-hr, 24-hour and annual concentrations are predicted to be below the allowable increments. Each year of meteorological data was run separately; therefore the modeled concentrations represent the High 2nd High for the 3-hour and 24-hour averaging periods and the High 1st High for the annual averaging period. The modeled concentration also presents the modeled impacts from increment consuming units at ADM as well as other increment consuming nearby sources explicitly included in the modeling analysis.

Predicted Ambient SO_2 Increment Consumption

Averaging Period	Year	UTM Coordinates (m) X	UTM Coordinates (m) Y	Modeled ($\mu g/m^3$)	Increment ($\mu g/m^3$)
3-hour	2000	708,901	4,589,759	44.35	512
	2001	708,951	4,589,759	39.68	
	2002	708,851	4,589,609	44.56	
	2003	709,201	4,589,409	46.32	
	2004	709,051	4,589,759	36.87	
24-hour	2000	708,851	4,589,559	13.78	91
	2001	709,051	4,589,259	12.28	
	2002	709,001	4,589,759	10.52	
	2003	709,051	4,589,359	12.76	
	2004	708,901	4,589,709	12.14	
Annual	2000	708,951	4,589,859	2.40	20
	2001	708,951	4,589,859	2.53	
	2002	709,051	4,589,859	2.53	
	2003	708,951	4,589,959	2.23	
	2004	708,951	4,589,859	2.64	

3.0 Additional Impacts Analysis

An additional impact analysis was performed consistent with the requirements of Title 129, Chapter 19 Section 022 to determine potential air pollution impacts on soils, vegetation, and visibility from the ADM Fremont expansion. Emissions of two pollutants subject to secondary National Ambient Air Quality Standards (i.e., SO_2 and ozone) have the potential to increase by more than respective PSD significant emission rates. These pollutants were considered in the additional impacts analysis.

Predicted impacts from ADM are significant (i.e., impacts are greater than applicable Significant Impact Levels (SILs) specified in Nebraska PSD regulations) for SO_2. Refined modeling results for SO_2 indicated compliance with the NAAQS, thus the air quality values in the area are protected. On this basis, ADM concludes that the project will not impair or adversely affect any areas of commercial or aesthetic value in the vicinity of the facility. Modeled impacts were used as an index for determining the potential for adverse environmental effects.

EPA has not established a significant ambient impact level for ozone; rather, sources are required to perform ambient impact analyses if the net emissions increase in VOC equals or exceeds 100 tons per year. The net emission increase in VOC from the project and associated potential ozone impacts on vegetation and soils were evaluated.

3.1 Growth Impact Analysis

The purpose of the growth analysis is to quantify the associated industrial, commercial, and residential growth that will occur in the area of the project due to the modification undergoing PSD review. The associated growth is the growth that occurs as a result of the construction or modification of the source, but which is not part of the source. The emissions that result from this growth are then estimated and the effects of these emissions on the surrounding environment are determined.

Although ADM proposes to increase the permitted emissions for the facility, there will be no impact on population growth in the city of Fremont. The municipal services currently provided by the community

are adequate. No significant air quality degradation due to associated commercial or industrial growth is expected.

3.2 Soils and Vegetation Analysis

The direct effects of VOC on vegetation have generally not been studied. However VOC contribute to the formation of ozone, which is a known toxic pollutant to plants. Ozone is formed when nitrogen oxides and VOC react in the presence of sunlight. VOC emissions from the ADM soybean facility are not expected to significantly alter the ground level ozone concentrations in the vicinity. As a result, no vegetation impacts directly attributable to VOC emissions are expected.

3.3 Visibility Impairment Analysis

A visibility analysis is required by the CAA amendments of 1977 to prevent degradation of visibility in Class I areas as well as to inform the public about the potential effects of the project. Since there are no Class I areas in Nebraska and the closes Class I areas is several hundred kilometers away, a visibility analysis has not been required to be conducted.

Title 129, Chapter 20 – Particulate Matter Emissions

Title 129, Chapter 20, Section 001 - Process Weight Rate

The following formulas are used to determine compliance: for process weight rates up to 60,000 lbs/hr, $E= 4.10\ p^{0.67}$, and 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 and p = process weight rate in tons/hr. The facility is expected to be in compliance with the process weight rate limitations. Detailed calculations are presented in the Fact Sheet Attachment.

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

The allowable emission rates per Title 129, Chapter 20, Section 002 are calculated in the Fact Sheet Attachment and the source is expected to be in compliance with this limitation.

Title 129, Chapter 20, Section 004 - Opacity

All of the equipment at the facility is subject to the opacity standard (20% opacity limit) specified in Title 129, Chapter 20, Section 004. The use of particulate control equipment will help the facility comply with the opacity standard.

Title 129, Chapter 23 – Hazardous Air Pollutants: Emission Standards

This source is also not subject to any of the Federal National Emission Standards for Hazardous Air Pollutants (NESHAPS) that are located in Title 129, Chapter 23 since none of the pollutants regulated in this chapter will be emitted by ADM.

Title 129, Chapter 24 – Sulfur Compound Emissions

All fossil fuel burning equipment at the facility shall not emit sulfur oxides greater than two and one-half (2.5) pounds per million British thermal unit input (lb/MMBtu). It can be determined by the emission factors of permitted fuel types (presented in the Fact Sheet Attachment) that the 2.5 lb/MMBtu sulfur limit is not expected to be exceeded.

Title 129, Chapter 27 – Hazardous Air Pollutants

This source is subject to State HAP Best Available Control Technology (BACT) requirements; however since ADM is subject to National Emissions Standards for Hazardous Air Pollutants complying with the applicable NESHAPs satisfies State HAP BACT requirements. Therefore there are no explicit requirements for complying with this regulation. Since applicable NESHAPs have been promulgated for this source category, a case-by-case Maximum Achievable Control Technology (MACT) analysis does not need to be conducted.

Title 129, Chapter 28 – Hazardous Air Pollutants

Subpart A – General Provision {40 CFR 63.1, promulgated March 16, 1994}: This subpart, adopted by reference in Title 129, Chapter 28, Section 001.01, applies to the owner or operator of any stationary source that emits or has the potential to emit any hazardous air pollutant listed in or pursuant to section 112(b) of the Act; and is subject to any standard, limitation, prohibition, or federally enforceable requirement established pursuant to Part 63. This facility is subject to this subpart because it is subject to several subparts contained in Part 63 and emits hazardous air pollutants listed in section 112(b) of the Act.

Subpart Q – National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers {40 CFR 63.400, promulgated September 8, 1994}: 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 (≥10 tons/year of individual HAP or ≥ 25 tons/year of combined HAPs). This facility is exempt from this subpart because no chromium-based water treatment chemicals will be used in the cooling towers.

Subpart GGGG – National Emission Standards for Hazardous Air Pollutants: Solvent Extraction for Vegetable Oil Production {40 CFR 63.2830, promulgated April 12, 2001}: This subpart, adopted by reference in Title 129, Chapter 28, Section 001.52, applies to facilities which own or operate a vegetable oil production process that is a major source of HAP emissions (≥10 tons/year of individual HAP or ≥ 25 tons/year of combined HAPs) or is collocated within a plant site with other sources that are individually or collectively a major source of HAP. A vegetable oil production process is a collection of continuous process equipment and activities that produce crude vegetable oil and meal products by removing oil from oilseeds through direct contact with an organic solvent, such as a hexane isomer blend. The oilseeds subject to this subpart are corn germ, cottonseed, flax, peanut, rapeseed (for example, canola), safflower, soybean, and sunflower. The existing extraction operation is considered an existing source per this subpart because it was constructed prior to May 26, 2000. This expansion of extraction operations is considered a significant modification (instead of reconstruction) of an existing source due to the fixed capital cost, and therefore, it remains an existing source per this subpart. (A reconstructed has the fixed capital costs of the new components exceeds 50 percent of the fixed capital cost for constructing a new vegetable oil production process. A reconstructed source is required to meet the conditions of a new vegetable oil production process.) An existing source has a compliance date of April 12, 2004. The extraction process equipment for this facility must meet a 0.2 gal/ton oilseed solvent loss factor (gal of solvent/ton of soybeans). This factor is based on a conventional soybean extraction process, which uses a

conventional style desolventizer to produce crude soybean oil products and soybean animal feed products. ADM is currently, and will remain, subject to this subpart.

Subpart ZZZZ – Stationary Reciprocating Internal Combustion Engines (RICE) {40 CFR 63.6580, promulgated June 15, 2004 (amended January 18, 2008)}: This subpart, adopted by reference in Title 129, Chapter 28, Section 001.88, applies to stationary reciprocating internal combustion engines (non-road) located at a major (≥10 tons/year of individual HAP or ≥ 25 tons/year of combined HAPs) or area (non-major) source of HAPs, except if the stationary RICE is being tested at a stationary RICE test cell/stand. Currently this rule only establishes requirements for new or reconstructed units located at major and area sources and existing units greater than 500 HP located at major sources. The generator located at ADM is an existing source since it has a site rating of 220 HP (less than or equal to 500 brake HP), is located at a major source of HAP emissions, and construction or reconstruction commenced construction before June 12, 2006 {40 CFR 63.6590(1)(ii)}. At this time, there are no applicable requirements for the engine located at ADM. EPA intends to establish requirements for existing engines located at major and area sources in early 2009.

Subpart DDDDD – Industrial, Commercial, and Institutional Boilers and Process Heaters: This subpart, adopted by reference in Title 129, Chapter 28, Section 001.90, applies to boilers and process heaters that are located at major HAP sources (≥10 tons/year of individual HAP or ≥ 25 tons/year of combined HAPs). The subpart was vacated in its entirety by the Court of Appeals for the District of Columbia Circuit on July 30, 2007 (NRDC v. EPA). The vacatur of the rule essentially means that no rule has been promulgated for this source category. Therefore section 112(j) of the Clean Air Act will be applicable to the affected boilers at this source since the Administrator (EPA) has failed to promulgate a standard for this source category by the May 15, 2002 deadline established in section 112(j). To comply with the section 112(j) requirements, ADM may need to submit a 112(j) Part 1 application for affected units to the Department once it is determined that any units are subject to this subpart, according to regulation. However, the Department will instruct the source in the future as to when and if a Part 1 application needs to be submitted based on impending guidance from EPA. Within sixty (60) days of submitting the Part 1 application, the owner or operator must submit a 112(j) Part 2 application, if a standard has not yet been promulgated, which shall include a case-by-case MACT determination in accordance with 112(g). The Department will then review the case-by-case MACT determination and incorporate the necessary requirements into a Title V permitting action.

Past permitting conditions and how they have been incorporated into this permitting action:

September 14, 1994

The construction permit issued on this date will not be discussed since the construction permits issued on November 15, 2001, and July 20, 2006, superseded it.

November 15, 2001 and July 20, 2006

Conditions I. through XII.: The general conditions have been replaced with the current general conditions used by the Department.

Condition XIII.(A): This condition has been revised in order to permit the source to receive more grain, specifically soybeans, in order for more soybean oil to be produced. The source is now permitted to receive 729,300 tons of soybeans per year (Condition II.(F)) where as previously the source was only permitted to receive 682,200 tons/year. The condition stating that the "temporary truck receiving" pit shall not be used since this equipment has been removed from the facility.

Conditions XIII.(B)(1) and (2): This condition has been incorporated into the current permitting action. The source is still required to operate a condenser and mineral oil scrubber (Condition III.(B)) when the associated emissions units are operating. The amount of soybeans allowed to be processed has increased in order for the facility to actually expand production. The source is now permitted to process 713,700 tons of soybeans per year (Condition II.(G)) where as previously the source was only permitted to process 622,200 tons/year. The tons/day limitation has been removed as the regulatory basis for the condition is unknown.

Condition XIII.(B)(3): This condition has been revised since PSD BACT has been required to be complied with for the extraction operations due to the expansion. The source is now required to comply with a 0.165 gallons/ton solvent loss ratio, not a 530 tons/year hexane consumption or 2.9 lbs/ton limitations.

Condition XIII.(C): This condition has been revised and incorporated into the current permitting action. The sulfur limitation has remained at 245 tons/year from the boiler, however the calculation methodology has been revised in order to accurately reflect the permitted fuel types. Previously the source was permitted to combust used oil, however this requirement has been removed. Due to the removal of used oil from the list of permitted fuel types, hydrochloric acid is no longer a pollutant of concern and the oil permitted is not in danger of being considered a hazardous waste.

Condition XIII.(D): The requirements for the grain dryer have been explicitly incorporated into this permitting action (Conditions III.(A)(1)(b) and III.(A)(3)(a)).

Condition XIII.(E): The requirements for the diesel generator have been explicitly incorporated into this permitting action (Conditions III.(D)(1) and III.(D)(3)(b)).

Condition XIII.(F): These conditions have been revised in the current permit. This condition requires the use of multiple baghouses and cyclones on various operations through the facility. The source is replacing or removing various pieces of equipment that are listed in this condition. The new permit correctly requires the new or existing control equipment in accordance with what the source will be permitted to operate after the permit is issued. Maintenance requirements for the baghouses and cyclones have been updated to reflect the current language used by the Department. Most of these requirements are now located in Condition III.(A).

Condition XIII.(G): This condition has been removed from the permit. This condition does not need to be included since this requirement is explicitly stated in Title 129, Chapter 20. All sources are subject to this requirement and therefore does not need to be in the specific conditions of this permit.

Condition XIII.(H): This conditions has been removed from the permit. This condition does not need to be included since the requirements are explicitly stated in Title 129, Chapter 24. All sources are subject to this requirement and therefore does not need to be in the specific conditions of this permit.

Condition XIII.(I): This condition lists all of the monitoring and related recordkeeping and reporting requirements for the facility. The recordkeeping requirements are now located with the emission point that they support and in Condition II.(A). Recordkeeping has been updated to reflect the changes made to the permit.

Condition XIII.(J): This condition has been removed from the permit. This condition is currently contained in the source's operation permit, which is the appropriate location for the condition since the

emissions inventory is based on actually operating hours and rates. Therefore it need not be in the construction permit.

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

II.(A) This condition contains recordkeeping and reporting requirements that apply to all permitted emission units, control equipment, and monitoring devices. These requirements establish several things including a completion date when records must be completed, how long records need to be maintained, and identifying specific types of records that must be maintained. Records are required to be maintained to ensure compliance with all applicable requirements, specifically those required in this permit. However, additional recordkeeping requirements may be established in the future to better ensure compliance. Documentation detailing operation and maintenance can be operational and maintenance manuals provided by the manufacturer. If manufacturer manuals are not available, the owner or operator must develop a document containing proper operation and maintenance requirements for each permitted emission unit and piece of required control equipment.

II.(B) This condition requires all permitted emission units, control equipment, and monitoring equipment to be properly installed, operated, and maintained. It is expected that the installation, operation, and maintenance conducted will be similar to the items contained in the documents detailing proper operation, inspection, and maintenance of the equipment (required in Specific Condition II.(A)(5)). It is very important that permitted and required equipment is operating properly and maintained since un-maintained equipment has the potential to emit greater amounts of pollution into the atmosphere or monitor items incorrectly or inaccurately. Emission estimates for this permitting action assume that all equipment is operating properly and being properly maintained.

II.(C) This condition requires any emissions resulting from equipment failures, malfunctions, or other variations in control or process equipment performance that are, or may be, in excess of the applicable emission control regulations to be reported to the Department in accordance with Title 129, Chapter 35, Section 005. The Department needs to be notified when excess emissions have, or may have occurred, along with the cause of the emissions. These reports also assist with verifying proper operation and maintenance of process and control equipment.

II.(D) This condition limits the VOC emissions from the source. Since the primary source of VOC emissions is via the use of hexane solvent for oil extraction and there are numerous means for the VOC to enter the atmosphere, the best way to restrict total VOC emissions is to limit the quantity of solvent permitted to "leave" the facility. Therefore this limitation covers emissions from multiple sources, including the extraction process (controlled by a condenser and mineral scrubber), equipment leaks, tank losses, and fugitive VOC contained in the soybean meal. This limitation has been established as BACT for VOC.

II.(E) This condition requires the appropriate recordkeeping to demonstrate compliance with Condition II.(D).

II.(F) This condition limits the amount of soybeans that can be received by the facility to 729,300 tons per 12 consecutive calendar months. If this limitation was not in place, the source may be required to undergo PSD review for PM and PM_{10} because the increase in emissions due to the project (PTE - BAE) may be in excess of the significance thresholds for those pollutants. The weight of the soybeans received is the weight of the beans themselves as well as the hulls. Only

the beans are processed as the hulls are ground and pressed into pellets. The source was limited to 682,200 tons in their previous permit.

II.(G) This condition limits the amount of beans that can be processed by the facility to 713,700 tons per 12 consecutive calendar months. If this limitation was not in place, the source may be required to undergo PSD review for PM and PM_{10} because the increase in emissions due to the project (PTE - BAE) may be in excess of the significance thresholds for those pollutants. The source was limited to 622,200 in their previous permit.

II.(H) This condition requires the appropriate recordkeeping to demonstrate compliance with Conditions II.(F) and II.(G).

Emission Point Conditions contained in the proposed permit are discussed as follows:

III.(A)
Soybean Receiving, Processing, Storage, and Loadout

(1) The owner or operator is permitted to construct and operate the emission points and associated emission units listed in the table.
(2) No emission limitations or testing requirements apply to the emission units identified in Condition III.(A)(1). Emissions were calculated conservatively and using site specific data where available such that there is high confidence that emissions will not exceed the calculated values, and there is no regulatory reason to require the source to reduce their emissions any further.
(3) The grain dryer is limited to drying 250,000 tons of soybeans per 12 consecutive months. This limitation was included in the construction permit issued in 2001. It is believed that this requirement was established as a result of PM_{10} air dispersion modeling conducted in 2001 and therefore the condition has not been removed. The PM/PM_{10} emissions resulting from soybean receiving, processing, storage, and loadout are required to be controlled by multiple baghouses and cyclones. In order to control particulate emissions, a baghouse must be properly operated whenever the associated emission units are in operation. 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. 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, the Department is confident that baghouse malfunctions will be detected quickly and 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 from the unit. Keeping spare bags will minimize the duration of excess emissions. Operating and maintenance requirements have also been established for the cyclones.
(4) At this time the Department has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in Condition III.(A)(1).
(5) Recordkeeping requirements that include documenting pressure differential indicator readings, indicators that corrective action is needed, when baghouse filters are replaced, observations and corrective actions taken. The source must also maintain documentation demonstrating compliance with the grain dryer throughput limitation. Additional recordkeeping requirements in accordance with Specific Condition II.(A) are also required to be maintained which includes, but is not limited to, documenting equipment failures and malfunctions.

III.(B)

Soybean Oil Extraction, Equipment Leaks, and Tanks

(1) The owner or operator is permitted to construct and operate the emission points and associated emission units listed in the table.
(2) No emission limitations or testing requirements apply to the emission units identified in Condition III.(B)(1).
(3) In order to control VOC emissions and to establish necessary requirements for compliance with Condition II.(D), the mineral oil scrubber must be properly operated whenever the associated emission units are in operation. The scrubber is required to be equipped with devices capable of monitoring scrubbing liquid temperature and flow rate, and pressure differential of the unit. These three parameters are important in determining whether a scrubber is providing enough emissions control. Specific operating parameters or parameter ranges, with averaging periods, will be incorporated into the source's operating permit. Specific parameters are not being established at this time since it is unknown what the monitored parameters will need to be and what the values will be to ensure compliance with the permitted emission limits. The facility must conduct daily observations, during the daylight hours of scrubber operation, to ensure that there are no visible emissions from the stack, leaks, or noise from the unit. By requiring daily observations, the Department is confident that scrubber malfunctions will be detected quickly and be corrected. A leak detection and repair (LDAR) program must also be conducted by the source. Since the BACT limitation has already been established at 0.165 gallons / ton soybeans processed, establishing a LDAR with explicit requirements in a permit is unnecessary. Therefore, the source is responsible for conducting the appropriate level of LDAR to ensure compliance with the BACT limitation.
(4) The source is subject to NESHAP Subparts A and GGGG for Solvent Extraction for Vegetable Oil Production.
(5) Recordkeeping requirements that include documenting Mineral Oil System temperature and flow rate and observations and corrective actions are taken. The LDAR protocol established by the source is required to be available to Department representatives at all times. The source is also required to maintain the appropriate records associated with the applicable NESHAPs. Additional recordkeeping requirements in accordance with Specific Condition II.(A) are also required to be maintained, which includes but is not limited to documenting equipment failures and malfunctions.

III.(C)
Package Boiler

(1) The owner or operator is permitted to construct the emission unit, at the capacity and fuel types, as described in the table.
(2) An SO_2 emissions limitation has been carried over from the previously issued permit. The compliance methodology has been updated to reflect the fuels currently permitted to be combusted in the boiler.
(3) The boiler may only combust #2, #4, #5, and #6 Fuel Oil with a maximum sulfur content of 2.0% by weight. This limitation was previously established in other construction permitting actions.
(4) At this time the Department has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in Condition III.(C)(1). Please refer to discussion on NESHAP, Subpart DDDDD.
(5) Recordkeeping requirements that include maintaining fuel receipts to indicate that #2, #4, #5, and #6 Fuel Oil with a maximum sulfur content of 2.0% by weight is the fuel being combusted in the boiler. Monthly calculations must also be maintained demonstrating that the boiler has not emitted more than 245 tons/year of SO_2 per 12-consecutive calendar months. Additional recordkeeping requirements in accordance with Specific Condition II.(A) are also required to be maintained.

III.(D)
Standby Generator

(1) The source is permitted to construct the equipment listed in the table. The maximum horsepower ratings and permitted fuel types of the combustion equipment is also listed.
(2) No emission limitations or testing requirements currently apply to the emission unit identified in Condition III.(D)(1). If the unit becomes subject to NESHAP, Subpart ZZZZ, testing may be required in accordance with the subpart in the future.
(3) The standby generator is limited to operating during emergency, maintenance, and testing activities only. This is a source requested limitation in order to avoid possibly more stringent requirements in the upcoming NESHAP, Subpart ZZZZ. The generator may only combust distillate fuel with a maximum sulfur content of 0.3% by weight.
(4) At this time the Department has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in Condition III.(D)(1). Please refer to discussion on NESHAP, Subpart ZZZZ.
(5) Recordkeeping requirements that include maintaining fuel receipts to indicate that diesel fuel with a maximum sulfur content of 0.3% by weight is the only fuel being combusted in the generator. Records must also be kept indicating when and why the generator was operated to ensure compliance with Condition III.(D)(3)(a). Additional recordkeeping requirements in accordance with Specific Condition II.(A) are also required to be maintained.

III.(E)
Cooling Towers

(1) ADM is permitted to construct and operate two (2) cooling towers.
(2) No emission limitations or testing requirements are being established on either cooling tower. Monitoring of TDS concentration is being required and is discussed below.
(3) The total dissolved solids (TDS) concentration in the cooling towers' water has been limited to 2,200 ppm to ensure PM/PM_{10} emissions from the cooling tower are consistent with the emission calculations performed. The owner or operator is required to conduct monthly cooling tower water tests to determine TDS concentration. A limitation on the drift loss percent from each cooling tower has also been established at 0.005%, based on the manufacturer's drift loss percent. If the cooling towers are properly maintained and operated then the drift loss percent limitation is expected to be complied with.
(4) At this time the Department has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in Condition III.(E)(1).
(5) Recordkeeping requirements that include documenting when routine maintenance and preventative actions are performed on the cooling towers, when equipment failures occur, and the TDS testing results. Additional recordkeeping requirements in accordance with Specific Condition II.(A) are also required to be maintained.

III.(F)
Haul Roads

(1) All haul roads are required to be paved. Paved roads, with proper maintenance, are expected to emit less PM/PM_{10} than unpaved roads. This requirement will help ADM comply with Title 129, Chapters 20 and 32.

(2) A silt load limit of 3.0 grams/square meter (g/m^2) has been established for the facility's paved haul roads. This is a conservative silt load for haul roads and therefore no silt load testing is required. A silt load limitation has been established so that if the facility is required to conduct silt load testing in the future by the Department, which may occur if there is reason to believe the haul roads are not being properly maintained, then the facility has a silt load value that they are required to comply with (i.e. test to).
(3) Haul road emissions must be controlled to prevent off-site transport of fugitive particulate matter. If the visible fugitive emissions go beyond the property line, then the facility may be in violation of General Condition II.(J). Since a conservative 3.0 g/m^2 silt loading value was permitted, initial silt load testing is not required for this facility. Therefore, the facility will demonstrate compliance with the silt load value and haul road emissions by complying with General Condition II.(J). Visible emissions are an indicator that the haul roads must be cleaned or have additional controls to prevent off-site transport of particulate matter. No visible emissions occurring during truck traffic movement on haul roads indicate that the controls methods are adequate to prevent air-borne off-site transport of particulate matter.
(4) There are no NSPS, NESHAP, or MACT Requirements applicable to this emission point.
(5) Recordkeeping requirements that include documenting the types of fugitive dust control measures taken and when daily haul road emissions observations occur.

STATUTORY OR REGULATORY PROVISIONS ON WHICH PERMIT REQUIREMENTS ARE BASED:

Applicable regulations: Title 129 - Nebraska Air Quality Regulations (NAQR) as amended August 18, 2008.

PROCEDURES FOR FINAL DETERMINATION WITH RESPECT TO THE PROPOSED CONSTRUCTION PERMIT:

The public notice, as required under NAQR Chapter 14, shall be published on July 29, 2008, in the Fremont Tribune newspaper. Persons or groups shall have 30 days from that issuance of public notice (August 27, 2008) 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:

Sara Speser-Environmental Engineer
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.

RE: RESPONSE SUMMARY
Archer Daniels Midland Company (ADM)
PO Box 1470
Decatur, IL 62525
(Fremont, Dodge County, NDEQ Facility #09169)

To Whom It May Concern:

The Department has considered all comments received and has made a final decision to issue the Construction Permit for the above referenced facility. This Permit approves an increase production at the ADM – Fremont soybean processing plant that produces soybean meal, hull pellets, and soybean oil through a hexane extraction process in accordance with regulations contained in Title 129 - Air Quality Regulations.

The decision regarding issuance of this Construction Permit may be appealed under Neb. Rev. Stat. 81-1509. This appeal shall be done in accordance with the Administrative Procedure Act, Neb. Rev. Stat. Section 84-901 to 84-920 and Title 115 - Rules of Practice and Procedure.

In preparing this summary, the Department reviewed all comments made during the public comment period from July 29, 2008 to August 27, 2008 and listed all comments in the attached Responsiveness Summary. The Responsiveness Summary consists of four sections:

Comment #: The comment is summarized.

Response and Rationale: Department's response to the comment raised and the rationale.

Changes: Any changes to the Permit and/or Fact Sheet are addressed.

Applicable Regulations/Statutes: This is a listing of regulations/statutes pertinent to the comment.
The Department appreciates the time and the conscientious efforts of all that have commented. If you have any questions, please contact Sara Speser or me at (402) 471-2189.
Sincerely,

_____ _____

Shelley Kaderly, Air Administrator Date
Air Quality Division

Enclosure

RESPONSE TO PUBLIC COMMENTS SUMMARY
On the Issuance of a PSD Construction Permit for the Expansion of
the ADM-Fremont Soybean Oil Extraction Facility (Facility #09169)

Background Information:

On June 14, 2007, the Department received an air quality construction permit application (#07-0040) proposing to increase the production capacity of the existing soybean processing facility. The specific changes being made to the facility as a result of the expansion include the following items:

- The existing dehulling system will be modified in order to increase the capacity
- The aspiration system associated with the dehulling system will be modified
- The extractor will be lengthened
- The existing 1st effect evaporator and 2nd effect evaporator will be replaced by a new 1st effect evaporator and 2nd effect evaporator
- A new primary condenser will replace two existing smaller condensers
- One of the two existing cooling towers will be replaced with a larger unit
- The two baghouses currently controlling the meal processing, storage, and handling will be replaced as follows:
    - A new baghouse will control the meal processing and handling emissions
    - Eleven (11) new bin vent filters will be constructed on each of the eleven storage tanks that store soybean meal, hulls, or hull pellets.

This permit approves the increase in production capacity, specifically the projects listed above, of the existing ADM-Fremont soybean processing facility.

On August 27, 2008, the Department received comments on the ADM-Fremont construction permitting documents from Region VII of the Environmental Protection Agency (EPA). The following are NDEQ's responses to the comments received during the public comment period:

COMMENT #1 (summarized): EPA believes that the modifications being performed at the Fremont facility should allow ADM to achieve a solvent loss ratio (SLR) below the proposed Best Available Control Technology (BACT) limit for volatile organic compounds (VOC) of 0.165 gal/ton proposed in the draft permit. EPA indicated that although historical data may be useful in assessing the likelihood that a plant can meet a BACT limit, it should not be the only information the state relies on in setting BACT. EPA suggested that NDEQ look at what other similar plants have achieved following similar modifications. EPA suggested the establishment of a SLR of 0.15 gal/ton VOC emissions limitation for ADM-Fremont.

RESPONSE AND RATIONALE: NDEQ disagrees that the SLR limitation of 0.165 gal/ton should be lowered. The modifications being conducted at ADM-Fremont are not expected to decrease the amount of solvent lost at the facility. ADM has indicated that by changing out evaporators and condensers additional solvent will not be able to be recovered. EPA provided actual solvent loss data to NDEQ for the ADM-Mankato facility, which underwent a similar expansion project in the past to the expansion that ADM-Fremont is undergoing at this time. The ADM-Mankato's average SLR data prior to obtaining their PSD permit for the expansion project is less than the average SLR data after the project was permitted and completed. This similar plant data supports the determination by the NDEQ that the modification being performed at ADM-Fremont will not allow for greater solvent recovery to be achieved. Therefore, the most appropriate way to establish BACT for ADM-Fremont is utilizing past performance of the facility since BACT control devises are currently employed.

It is important to establish BACT on a case-by-case basis, especially for sources that utilize feed stocks that are known to be variable. In the case of soybeans, variable degrees of moisture content as well as different growing conditions (soil conditions, weather conditions, excess rain, frost, herbicides and pesticides, time of planting and harvesting, etc.) can have a large effect on the beans being processed, which can therefore impact the amount of solvent loss. Since the variability of bean quality can vary significantly from plant to plant, it is important not to overly rely on the performance of similar facilities in establishing BACT. The BACT limit chosen should also allow the source a reasonable compliance margin. Actual SLR data obtained from ADM-Fremont indicated that although they often hover around an SLR value of 0.130, there are times during normal operations that the SLR can creep as high as 0.159.

BACT is an emissions limitation based on the maximum degree of reduction for each regulated new source review (NSR) pollutant established on a case-by-case basis. NDEQ has established BACT for ADM-Fremont by evaluating past performance and determining that additional solvent loss recovery is not expected to be achieved through the modification being permitted. Therefore, NDEQ shall maintain the originally proposed BACT limit of 0.165 gallon/ton. It should be noted that the proposed BACT limit includes periods of startup, shutdown, and malfunction (SSM). BACT limits at other plants often do not require emissions to be accounted for during SSM events.

CHANGES: No change to permitting documents.

APPLICABLE REGULATIONS: Title 129, Chapter 19

COMMENT #2: Page 18, Fact Sheet, third paragraph. There appears to be a typographical error that states: "The source is now required to comply with the **0.175** gallons/ton solvent loss ratio . . ."

RESPONSE AND RATIONALE: The reference to 0.175 was incorrect and unintended. The source is required to comply with a 0.165 gallon/ton solvent loss ratio upon issuance of this permit. Originally ADM proposed a BACT limitation of 0.175 which may explain the reference to this value.

CHANGES: Fact Sheet as been corrected. Reference to a SLR of 0.175 has been changed to 0.165.

APPLICABLE REGULATIONS: None.

COMMENT #3 (summarized): Comments regarding the air dispersion modeling analysis conducted to support the issuance of the ADM-Fremont expansion permit were received from EPA. The significant comments included: questioning the utilization of a "10D" screening technique to determine which nearby sources should explicitly be included in the increment modeling analysis; lack of inclusion of Ash Grove and Cargill in the NAAQS modeling analysis yet including the two sources in the increment model; not modeling the two boiler stacks; and asking for verification of the ADM-Fremont building parameters.

RESPONSE AND RATIONALE: In order to address EPA's concerns, the Department chose to conduct a revised ambient air quality analysis in order to demonstrate that the National Ambient Air Quality Standards for sulfur dioxide (SO_2) are expected to be protected by allowing the ADM-Fremont expansion. Specific details regarding the revised NAAQS modeling analysis can be found in the revised Fact Sheet that accompanies the ADM-Fremont permit and in the facility's permitting file at the NDEQ.

The revised SO_2 NAAQS model included updated building parameters, stack parameters, and nearby sources based on the specific comments received from the EPA. NDEQ spoke with ADM-Fremont and compiled a revised list of buildings located onsite and re-ran the EPA's Building Profile Input Program (BPIP) to account for building downwash. NDEQ also explicitly included Ash Grove and Cargill as nearby sources in the revised analysis. The revised modeling analysis evaluated whether emissions from EP-18 or EP-18A would cause greater ambient air impacts. EP-18A causes greater ambient air quality impacts than EP-18 which is why EP-18A was used to determine the maximum modeled concentrations. The results from the revised modeling analysis are presented below and demonstrate compliance with the NAAQS. The modeled concentrations for the 3-hr and 24-hr standards represent the highest High 2nd High obtain from each year of meteorological data, while the annual standard presents the highest average. Updated meteorological data was also utilized in the revised modeling analysis.

Predicted Ambient SO_2 Concentrations – Revised NAAQS Modeling Analysis

Averaging Period	Year	Background ($\mu g/m^3$)	Modeled ($\mu g/m^3$)	Total ($\mu g/m^3$)	AAQS
3-hour	2003	120	477.11	597.11	1,300
	2004		448.35	568.35	
	2005		464.09	584.09	
	2006		456.45	576.45	
	2007		474.45	594.45	
24-hour	2003	48	296.98	344.98	365
	2004		301.67	349.67	
	2005		307.92	355.92	
	2006		298.55	346.55	
	2007		302.69	350.69	
Annual	2003	12	63.96	75.96	80
	2004		54.32	66.32	
	2005		54.19	66.19	
	2006		65.49	77.49	
	2007		55.92	67.92	

The NDEQ believes that the use of the "10D" method for screening of sources for increment modeling purposes, as well as NAAQS modeling purposes, is appropriate. The 10D screening typically compares the emissions in tons per year of a nearby source to the distance in kilometers the nearby source is outside of the modeled source's radius of impact (ROI). NDEQ utilizes this procedure, along with professional judgment, to eliminate nearby sources that are not "expected to cause a significant concentration gradient in the vicinity of the source or sources under consideration for emission limit(s)" (40 CFR Part 51, Appendix W, Section 9.2.3) based on their emissions and distance from the modeled source. It is impractical and overly time-consuming to include every possible NAAQS and increment consumer regardless of size/distance in the modeling analysis, which is why the 10D screening method has been established.

CHANGES: Updates have been made to the Fact Sheet that accompanies the ADM-Fremont PSD Permit, specifically the **Title 129, Chapter 19** – 2.0 Air Dispersion Modeling Analysis section, in order to provide the updated air dispersion modeling results.

RESPONSE TO PUBLIC COMMENTS SUMMARY
On the Issuance of a PSD Construction Permit for the Expansion of the ADM-Fremont Soybean Oil Extraction Facility (Facility #09169)

APPLICABLE REGULATIONS: Title 129, Chapters 4 and 19

Questions regarding this summary may be directed to:

Air Quality Division-Permitting Section
Nebraska Department of Environmental Quality
PO Box 98922
Lincoln, NE 68509-8922

Fact Sheet Attachment: Post-Project Facility Process Information

Archer Daniels Midland Company - Fremont
Facility ID #09169

Receiving Information

New Limitation - Soybeans Received:	729,300	tons/year
Includes total beans needed for processing, plus filling the storage bins completely		
Oilseed Processed:	713,700	tons/year
Soybean Density:	60	lbs/bu soybeans @ 13% moisture
Soybean Oil Density:	7.7	lbs/gallon
Oil Extraction Rate:	11	lbs soybean oil / bu soybeans
Percentage of Soybeans Received are Hulls:	6.25%	
Percentage of Soybeans Received are Beans:	93.75%	

Maximum Production

Product #1: Soybean Oil	33,985,714	gallons/year
Product #2: Soybean Meal	538,249	tons/year
Product #3: Hull Pellets	44,606	tons/year

Additional Limitations

Grain Dryer Throughput	250,000	tons/year

Additional Information

Flow Agent Needed:	3,569	tons/year
New VOC BACT Emissions Limitation:	0.165	gallons solvent / ton soybeans processed
Maximum Amount of Hexane Received:	117,761	gallons/year

Fact Sheet Attachment: Post-Project Soybean Processing

Archer Daniels Midland Company - Fremont
Facility ID #09169

PM/PM$_{10}$ Emissions from Soybean Processing

Emission Point ID#	Emission Point Description	Material Processed	Control Equipment	(A) Maximum Hourly Throughput[1]	(B) Annual Throughput	Emission Factors (lbs/ton)[2]		(E) Capture Efficiency (%)[3]		Annual Uncaptured Emissions (tons/year)		(H) Control Efficiency (%)[3]		PM Emissions from EP		PM$_{10}$ Emissions from EP		Allowable Emission Rate Based on Maximum Capacity Title 129, Chapter 20 'E'
				(tons/hour)	(tons/year)	(C) PM	(D) PM$_{10}$	PM	PM$_{10}$	(F)[4] PM	(G)[5] PM$_{10}$	PM	PM$_{10}$	(I)[6] (lbs/hr)	(J)[7] (tons/yr)	(K)[8] (lbs/hr)	(L)[9] (tons/yr)	(lb/hr)
EP-1E	EU-01: Grain Receiving	Soybeans	CD-1E: Baghouse (existing)	545	729,300	0.035	0.0078	75%	75%	3.19	0.71	98%	98%	0.29	0.19	0.06	0.04	69.99
EP-2E	EU-02: Conveying and Storage #1	Soybeans	CD-2E: Baghouse (existing)	545	744,900	0.061	0.034	100%	100%	0.00	0.00	98%	98%	0.66	0.45	0.37	0.25	69.99
EP-3E	EU-02: Conveying and Storage #2	Soybeans	CD-3E: Baghouse (existing)	545	31,200	0.061	0.034	100%	100%	0.00	0.00	98%	98%	0.66	0.02	0.37	0.01	69.99
EP-02	EU-04: Bean Cleaning	Soybeans	CD-02: Baghouse (existing)	81.25	713,700	0.375	0.095	100%	100%	0.00	0.00	98%	98%	0.61	2.68	0.15	0.68	49.22
EP-01	EU-05: Dehulling System #1[10]	Soybeans	CD-01: Cyclone (existing)	81.25	713,700	0.08375	0.0315	100%	100%	0.00	0.00	0%	0%	6.80	29.89	2.56	11.24	49.22
EP-01a	EU-05: Dehulling System #2[10]	Soybeans	CD-01a: Cyclone (existing)															
EP-01b	EU-05: Dehulling System #3[10]	Soybeans	CD-01b: Cyclone (existing)															
EP-06	EU-06: Pelleter/Cooler[11]	Hulls	CD-06: Cyclone (existing)	6.25	44,606	0.75	0.375	100%	100%	0.00	0.00	80%	80%	0.94	3.35	0.47	1.67	14.00
EP-04	EU-07: Eight Flakers[10]	Beans	CD-04: Cyclone (existing)	87.50	713,700	0.006875	0.004194	100%	100%	0.00	0.00	0%	0%	0.60	2.45	0.37	1.50	49.95
EP-V2	EU-08: Conveyor to Extraction[15]	Beans	-	150	713,700	0.01525	0.0085	100%	100%	0.00	0.00	0%	0%	2.29	5.44	1.28	3.03	55.44
EP-10	EU-10: Hull Grinding/Storage[10]	Hulls	CD-10: Baghouse (existing)	7.1	44,606	0.0075	0.0075	100%	100%	0.00	0.00	0%	0%	0.05	0.17	0.05	0.17	15.24
EP-07a	EU-11: DTDC[10]	Beans	CD-07a: Cyclone (existing)	81.5	713,700	0.0044	0.0029	100%	100%	0.00	0.00	0%	0%	0.36	1.57	0.24	1.03	49.25
EP-07b	EU-11: DTDC[10]	Beans	CD-07b & CD-07c: Cyclones (existing)															
EP-11	EU-15: Truck/Rail Loadout[11]	Soybean Meal/Hull Pellets	CD-11: Baghouse (existing)	450	713,700	0.27	0.0675	100%	100%	0.00	0.00	98%	98%	2.43	1.93	0.61	0.48	67.7
EP-16	EU-16: Pellet Storage	Hull Pellets	-	7	44,606	0.000752	0.000752	100%	100%	0.00	0.00	0%	0%	0.01	0.02	0.01	0.02	15.24
EP-17F	EU-17: Pellet Loadout	Hull Pellets	-	450	44,606	0.086	0.029	100%	100%	0.00	0.00	0%	0%	38.70	1.92	13.05	0.65	67.70
EP-21	EU-21: Bean Heater	Beans	Cyclone	81.25	713,700	0.05	0.03	100%	100%	0.00	0.00	80%	80%	0.81	3.57	0.49	2.14	49.22
EP-22	EU-22: Unloading Pit (meal, hulls, hull pellets)[12]	Soybean Meal/Hull Pellets	-	50.0	48,000	0.27	0.0675	70%	70%	1.94	0.49	0%	0%	9.45	4.54	2.36	1.13	44.58
EP-24	EU-24: Meal Conveying/Grinding[10]	Soybean Meal	CD-24: Baghouse (new)	87.5	713,700	0.004	0.004	100%	100%	0.00	0.00	0%	0%	0.35	1.43	0.35	1.43	49.95
EP-25	EU-25: Meal Storage - Webco Tank[13]	Soybean Meal	CD-25: Baghouse (new)	87.5	59,805	0.000714	0.000714	100%	100%	0.00	0.00	98%	98%	0.0012	0.0004	0.0012	0.0004	49.95
EP-26	EU-25: Meal Storage - Concrete Tank East[13]	Soybean Meal	CD-26: Baghouse (new)	87.5	59,805	0.000714	0.000714	100%	100%	0.00	0.00	98%	98%	0.0012	0.0004	0.0012	0.0004	49.95
EP-27	EU-25: Meal Storage - Concrete Tank West[13]	Soybean Meal	CD-27: Baghouse (new)	87.5	59,805	0.000714	0.000714	100%	100%	0.00	0.00	98%	98%	0.0012	0.0004	0.0012	0.0004	49.95
EP-28	EU-25: Ground Hull Storage - Harvestore Tank East[13]	Ground Hulls	CD-28: Baghouse (new)	87.5	22,303	0.001299	0.001299	100%	100%	0.00	0.00	98%	98%	0.0023	0.0003	0.0023	0.0003	49.95
EP-29	EU-25: Meal Storage - Harvestore Tank West[13]	Soybean Meal	CD-29: Baghouse (new)	87.5	59,805	0.000714	0.000714	100%	100%	0.00	0.00	98%	98%	0.0012	0.0004	0.0012	0.0004	49.95
EP-30	EU-25: Meal Storage - Street Tank #1[13]	Soybean Meal	CD-30: Baghouse (new)	87.5	59,805	0.000714	0.000714	100%	100%	0.00	0.00	98%	98%	0.0012	0.0004	0.0012	0.0004	49.95
EP-31	EU-25: Meal Storage - Street Tank #2[13]	Soybean Meal	CD-31: Baghouse (new)	87.5	59,805	0.000714	0.000714	100%	100%	0.00	0.00	98%	98%	0.0012	0.0004	0.0012	0.0004	49.95
EP-32	EU-25: Meal Storage - Street Tank #3[13]	Soybean Meal	CD-32: Baghouse (new)	87.5	59,805	0.000714	0.000714	100%	100%	0.00	0.00	98%	98%	0.0012	0.0004	0.0012	0.0004	49.95
EP-33	EU-25: Hull Storage - Street Tank #4[13]	Hull Pellets or Ground Hulls	CD-33: Baghouse (new)	87.5	22,303	0.001299	0.001299	100%	100%	0.00	0.00	98%	98%	0.0023	0.0003	0.0023	0.0003	49.95
EP-34	EU-25: Meal Storage - Street Tank #5[13]	Soybean Meal	CD-34: Baghouse (new)	87.5	59,805	0.000714	0.000714	100%	100%	0.00	0.00	98%	98%	0.0012	0.0004	0.0012	0.0004	49.95
EP-35	EU-25: Meal Storage - Street Tank #6[13]	Soybean Meal	CD-35: Baghouse (new)	87.5	59,805	0.000714	0.000714	100%	100%	0.00	0.00	98%	98%	0.0012	0.0004	0.0012	0.0004	49.95
EP-36	EU-14: Meal Flow Agent[14]	Flowability Agent	CD-36: Baghouse (new)	1.43	3,569	0.8	0.4	100%	100%	0.00	0.00	98%	98%	0.0229	0.0286	0.0114	0.0143	5.21

[1]Maximum Hourly Throughput based on design capacity of equipment

[2]Emission Factors are from AP-42 Section 9.9.1 (5/2003) unless otherwise noted

[3]Capture and Control Efficiencies provided by facility and based on design of control equipment

[4](F) = (B) x (C) x [1 - (E)] / 2,000 (lbs/ton)

[5](G) = (B) x (D) x [1 - (E)] / 2,000 (lbs/ton)

[6](I) = (A) x (C) x (E) x [1 - (H)]

[7](J) = (B) x (C) x (E) x [1 - (H)] / 2,000 (lbs/ton)

[8](K) = (A) x (D) x (E) x [1 - (H)]

[9](L) = (B) x (D) x (E) x [1 - (H)] / 2,000 (lbs/ton)

[10]Emission factors from Stack Test, Control Efficiency taken into consideration in Emission Factors

[11]Emission factors for Pelleter/Cooler from AP-42, Table 9.11.1-1

[12]Unloading Pit annual throughput based on the expected maximum throughput of 12,000 tons of hulls, 12,000 tons of hull pellets and 24,000 tons of soybean meal.

[13]Emission factors for baghouses based on 0.1 grain loading and displaced air flow rate flowing into Baghouse

[14]Emission factors for Meal Flow Agent from FIRE

[15]Emission factors are 25% of the AP-42 value due to the low airflow from the unit

Total Emissions from Soybean Processing

Particulate Matter (PM)	64.77	tons/year
Particulate Matter (PM$_{10}$)	26.69	tons/year

NOTE: All emissions are counted towards major source applicability because there are no "fugitive" emissions emitted, only uncaptured

Fact Sheet Attachment: Post-Project Grain Dryer

Archer Daniels Midland Company - Fremont
Facility ID #09169
One Column Grain Process Dryer, 16 MMBtu/hr, 60 ton/hr Drying Capacity
Emission Point ID#: EP-5E

Potential to Emit from Combusting Natural Gas in a Column Grain Dryer

Total Heat Input Capacity	16.0	MMBtu/hr
Potential Natural Gas Throughput	0.0157	MMscf/hr
	137.5	MMscf/yr
Maximum Grain Throughput	60	tons/hour
Limited Grain Throughput	250,000	tons/year
Limited Operating Time (OT)	8,760	hours/year

(A) Maximum Hourly Throughput	(B) Annual Throughput	Emission Factors (lbs/ton)[1]		(E) Capture Efficiency (%)[2]		Annual Uncaptured Emissions (tons/year)		(H) Control Efficiency (%)[2]		PM Emissions from EP		PM_{10} Emissions from EP	
(tons/hour)	(tons/year)	(C) PM	(D) PM_{10}	PM	PM_{10}	(F)[3] PM	(G)[4] PM_{10}	PM	PM_{10}	(I)[5] (lbs/hr)	(J)[6] (tons/yr)	(K)[7] (lbs/hr)	(L)[8] (tons/yr)
60	250,000	0.22	0.055	5.7%	5.7%	25.93	6.48	80%	80%	0.15	0.31	0.04	0.08

[1]Emission Factors are from AP-42, Section 9.9.1 (5/03)

[2]Capture and Control Efficiencies provided by facility and based on design of control equipment; Facility indicated that only 5.7% of the dryer exhaust is captured and then controlled by the cyclone

[3](F) = (B) x (C) x [1 - (E)] / 2,000 (lbs/ton)

[4](G) = (B) x (D) x [1 - (E)] / 2,000 (lbs/ton)

[5](I) = (A) x (C) x (E) x [1 - (H)]

[6](J) = (B) x (C) x (E) x [1 - (H)] / 2,000 (lbs/ton)

[7](K) = (A) x (D) x (E) x [1 - (H)]

[8](L) = (B) x (D) x (E) x [1 - (H)] / 2,000 (lbs/ton)

Fact Sheet Attachment: Post-Project Grain Dryer

Archer Daniels Midland Company - Fremont
Facility ID #09169
One Column Grain Process Dryer, 16 MMBtu/hr, 60 ton/hr Drying Capacity
Emission Point ID#: EP-5E

Potential to Emit from Combusting Natural Gas in a Column Grain Dryer

Pollutant	(A) Emission Factor[1] (lb/MMscf)	Emission Rate (lbs/hr)		Emission Rate (tons/year)	
		(C) Potential[2]	(D) Limited[3]	(E) Potential[4]	(F) Limited[5]
Sulfur Dioxide (SO_2)	0.6	0.01	0.01	0.04	0.04
Nitrogen Oxides (NO_x)	100	1.57	1.57	6.88	6.88
Carbon Monoxide (CO)	84	1.32	1.32	5.78	5.78
Volatile Organic Compounds (VOC)	5.5	0.09	0.09	0.38	0.38
Individual Hazardous Air Pollutants (HAP)					
Benzene	0.0021	3.30E-05	3.30E-05	1.44E-04	1.44E-04
Dichlorobenzene	0.0012	1.88E-05	1.88E-05	8.25E-05	8.25E-05
Formaldehyde	0.075	1.18E-03	1.18E-03	5.16E-03	5.16E-03
Hexane	1.8	2.83E-02	2.83E-02	1.24E-01	1.24E-01
Lead Compounds	0.0005	7.85E-06	7.85E-06	3.44E-05	3.44E-05
Naphthalene	0.00061	9.58E-06	9.58E-06	4.19E-05	4.19E-05
Polycyclic Organic Matter (POM)	0.0000882	1.38E-06	1.38E-06	6.07E-06	6.07E-06
Toluene	0.0034	5.34E-05	5.34E-05	2.34E-04	2.34E-04
Arsenic Compounds (ASC)	0.0002	3.14E-06	3.14E-06	1.38E-05	1.38E-05
Beryllium Compounds (BEC)	0.000012	1.88E-07	1.88E-07	8.25E-07	8.25E-07
Cadmium Compounds (CDC)	0.0011	1.73E-05	1.73E-05	7.56E-05	7.56E-05
Chromium Compounds (CRC)	0.0014	2.20E-05	2.20E-05	9.63E-05	9.63E-05
Cobalt Compounds (COC)	0.000084	1.32E-06	1.32E-06	5.78E-06	5.78E-06
Manganese Compounds (MNC)	0.00038	5.97E-06	5.97E-06	2.61E-05	2.61E-05
Mercury Compounds (HGC)	0.00026	4.08E-06	4.08E-06	1.79E-05	1.79E-05
Nickel Compounds (NIC)	0.0021	3.30E-05	3.30E-05	1.44E-04	1.44E-04
Selenium Compounds (SEC)	0.000024	3.77E-07	3.77E-07	1.65E-06	1.65E-06
Total HAPs	1.89	0.0296	0.0296	0.1299	0.1299

[1]Emission Factors from AP-42 Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4 (7/98)

[2](C) = Potential Natural Gas Throughput (MMscf/hr) x (A) (lb/MMscf)

[3](D) = Potential Natural Gas Throughput (MMscf/hr) x (A) (lb/MMscf)

[4](E) = (C) x 8,760 (hours/year) / 2,000 (lbs/ton)

[5](F) = (D) x Limited Operating Time (hours/year) / 2,000 (lbs/ton)

Note: 1 MMscf = 1,020 MMBtu

Fact Sheet Attachment: Post-Project Soybean Oil Extraction, Equipment Leaks, and Tank Losses

Archer Daniels Midland Company - Fremont
Facility ID #09169
Emission Point ID#: EP-5

Amount of Soybeans processed:	713,700	tons/year
Density of Solvent (Hexane):	5.63	lb/gallon @ 60^{o}C
VOC **BACT** Emissions Limitation:	0.165	gallons solvent / ton soybeans processed
Potential VOC Emissions from Extraction:	662,992	lbs/year
	331	tons/year
Percentage of Solvent that is HAP:	64%	
Potential n-Hexane Emissions:	424,315	lbs/year
	212.16	tons/year

Percentage of Emissions from Non-Fugitive Sources:	67.3%
Percentage of Emissions from Fugitive Sources:	32.7%

As Calculated in previous CP

Fact Sheet Attachment: Post-Project Package Boiler

Archer Daniels Midland Company - Fremont
Facility ID #09169

Combustion Equipment	Capacity (MMBtu/hr)	Maximum #2 Fuel Oil Usage (10^3 gallons/hr)[1]	Maximum #4 Fuel Oil Usage (10^3 gallons/hr)[2]	Maximum #5 Fuel Oil Usage (10^3 gallons/hr)[3]	Maximum #6 Fuel Oil Usage (10^3 gallons/hr)[4]
EU-18: Package Boiler	65.0	0.4643	0.4452	0.4392	0.4333

[1]Capacity (MMBtu/hr) / [140,000 (Btu/gal) / 1,000 (gal/kgal)]
[2]Capacity (MMBtu/hr) / [146,000 (Btu/gal) / 1,000 (gal/kgal)]
[3]Capacity (MMBtu/hr) / [148,000 (Btu/gal) / 1,000 (gal/kgal)]
[4]Capacity (MMBtu/hr) / [150,000 (Btu/gal) / 1,000 (gal/kgal)]

Combustion Equipment	Capacity (MMBtu/hr)	Maximum Natural Gas Usage (MMscf/hr)[1]	Maximum Vegetable Oil Usage (10^3 gallons/hr)[2]	Maximum Biodiesel Usage (10^3 gallons/hr)[3]	Maximum Poultry Grease Usage (10^3 gallons/hr)[4]	Maximum Yellow Grease Usage (10^3 gallons/hr)[5]
EU-18: Package Boiler	65.0	0.064	0.5056	0.5150	0.5215	0.5207

[1]Capacity (MMBtu/hr) / 1,020 (Btu/scf)
[2]Capacity (MMBtu/hr) / [128,554 (Btu/gal) / 1,000 (gal/kgal)]
[3]Capacity (MMBtu/hr) / [126,203 (Btu/gal) / 1,000 (gal/kgal)]
[4]Capacity (MMBtu/hr) / [124,641 (Btu/gal) / 1,000 (gal/kgal)]
[5]Capacity (MMBtu/hr) / [124,833 (Btu/gal) / 1,000 (gal/kgal)]

Fuel Oil Sulfur Limitation (%) 2

Fact Sheet Attachment: Post-Project Package Boiler

Archer Daniels Midland Company - Fremont
Facility ID #09169

Emission Factors

Pollutant	#2 Fuel Oil ($lb/10^3$ gal)[1]	#4 Fuel Oil ($lb/10^3$ gal)[1]	#5 Fuel Oil ($lb/10^3$ gal)[1]	#6 Fuel Oil ($lb/10^3$ gal)[1]
Particulate Matter (PM)	3.30	8.50	23.1	11.5
Particulate Matter (PM_{10})	3.30	8.50	23.1	11.5
Sulfur Dioxide (SO_2)	284.00	300.00	314.0	314
Sulfur Trioxide (SO_3)	4.00	4.00	4.0	4.00
Sulfur Oxides (SO_x)	288.00	304.00	318.0	318.00
Sulfur Oxides (SO_x) - (lb/MMBtu)	2.06	2.08	2.15	2.12
Nitrogen Oxides (NO_x)	20.00	20.00	55	55.0
Carbon Monoxide (CO)	5.00	5.00	5	5.0
Volatile Organic Compounds (VOC)	0.20	0.20	0.28	0.28

[1]Emission Factors from AP-42 Tables 1.3-1, 1.3-2, and 1.3-3 (9/98)

Pollutant	Natural Gas ($lb/10^6$ scf)[1]	Vegetable Oil (lb/MMBtu)[2]	Biodiesel ($lb/10^3$ gal)[3]	Poultry Grease (lb/MMBtu)[4]	Yellow Grease (lb/MMBtu)[5]
Particulate Matter (PM)	7.6	0.05	1.75	0.083	0.041
Particulate Matter (PM_{10})	7.6	0.05	1.75	0.083	0.041
Sulfur Oxides (SO_x)[6],[7]	0.6	0	0	0.87	0.02
Sulfur Oxides (SO_x) (lb/gallon)	-	-	-	0.11	0.0025
Nitrogen Oxides (NO_x)[4]	100	0.1776	22	0.164	0.127
Carbon Monoxide (CO)	84	0.0047	2.6	0	0.0224
Volatile Organic Compounds (VOC)	5.5	0.002	0.1	0	0.0015

[1]Emission Factors from AP-42 Tables 1.4-1 and 1.4-2 (7/98)

[2]Stack Test - Quincy 3/2001

[3]Derived from tests conducted by EPA. Source website: www.biodiesel.org/pdf_files/fuelfactsheets/emissions.pdf

[4]Poultry Grease (PM, PM_{10}, NO_x, CO, and VOC) and Yellow Grease (NO_x) Emission Factors from University of Georgia, June 30 2002 Report, "A Demonstration of Fat and Grease as an Industrial Boiler Fuel"

[5]From Render Magazine, "Turn up the heat," April 2001, pages 18-21. Stack test data from boiler burning yellow grease.

[6]Poultry Grease Emission Factor derived from the sulfur content of the poultry grease.

[7]Yellow Grease Emission Factor from an NDEQ compilation of stack test data from boilers burning yellow grease

Fact Sheet Attachment: Post-Project Package Boiler

Archer Daniels Midland Company - Fremont
Facility ID #09169

Quantity of each fuel type can be combusted without exceeding Sulfur Oxide Emissions Limit

Combustion Equipment	Capacity (MMBtu/hr)	Maximum #2 Fuel Oil Usage (10^3 gallons/yr)[1]	Maximum #4 Fuel Oil Usage (10^3 gallons/yr)[1]	Maximum #5 Fuel Oil Usage (10^3 gallons/yr)[1]	Maximum #6 Fuel Oil Usage (10^3 gallons/yr)[1]
EU-18: Package Boiler	65.0	1725.35	1633.33	1560.51	1560.51

[1]Quantity able to be combusted without violating 245 tpy SO_2 Limitation; 245 (tons/yr) x 2,000 (lbs/ton) / SO_2 Emission Factor (lb/10^3 gallon)

Combustion Equipment	Capacity (MMBtu/hr)	Maximum Natural Gas Usage (MMscf/yr)[1]	Maximum Vegetable Oil Usage (10^3 gallons/yr)[2]	Maximum Biodiesel Usage (10^3 gallons/yr)[2]	Maximum Poultry Grease Usage (10^3 gallons/yr)[3]	Maximum Yellow Grease Usage (10^3 gallons/yr)[3]
EU-18: Package Boiler	65.0	558.2	4429.3	4511.8	4518.7	4561.3

[1]Quantity able to be combusted without violating 245 tpy SO_2 Limitation; 245 (tons/yr) x 2,000 (lbs/ton) / SO_x Emission Factor (lb/MMscf)

[2]Quantity able to be combusted without violating 245 tpy SO_2 Limitation, which is the total amount needed since sulfur is not emitted when these fuels are combusted

[3]Quantity combusted without violating 245 tpy SO_2 Limitation;
245 (tons/yr) x 2,000 (lbs/ton) x 1,000,000 (MMBtu/Btu) / SO_x Emission Factor (lb/10^3 gallon) / Fuel Heat Input (Btu/gallon) / 1,000 (gal/10^3 gal)

Potential to Emit - Worst Case Fuel Type

Pollutant	Packaged Boiler	
	(lb/hr)	(tons/year)
Particulate Matter (PM)	10.15	23.37
Particulate Matter (PM_{10})	10.15	23.37
Sulfur Dioxide (SO_2)[1]	139.66	245.00
Nitrogen Oxides (NO_x)	24.16	50.56
Carbon Monoxide (CO)	5.35	23.45
Volatile Organic Compounds (VOC)	0.35	1.54

[1]Boiler is limited to 245 tons/year of SO_2 emissions, Worst Case lb/hr SO_2 Emissions are while combusting #5 Fuel Oil

Fact Sheet Attachment: Post-Project Package Boiler

Archer Daniels Midland Company - Fremont
Facility ID #09169

Potential to Emit HAP - Worst Case Fuel Type

	Emission Factors by Fuel Type			Potential to Emit HAP	
	Natural Gas	Diesel Fuel	Diesel Fuel		
Hazardous Air Pollutants (HAP)	($lb/10^6$ scf)[1]	($lb/10^3$ gal)[2]	(lb/MMBtu)[2]	(lb/hr)	(tons/year)
Benzene	2.10E-03	2.14E-04	-	1.34E-04	5.86E-04
Dichlorobenzene	1.20E-03	-	-	7.65E-05	3.35E-04
Ethylbenzene	-	6.36E-05	-	2.95E-05	5.49E-05
Formaldehyde	7.50E-02	3.30E-02	-	1.53E-02	2.85E-02
Hexane	1.80E+00	-	-	1.15E-01	5.02E-01
Lead Compounds	5.00E-04	-	-	3.19E-05	1.40E-04
Naphthalene	6.10E-04	1.13E-03	-	5.25E-04	9.75E-04
Polycyclic Organic Matter (POM)	8.82E-05	3.30E-03	-	1.53E-03	2.85E-03
Toluene	3.40E-03	6.20E-03	-	2.88E-03	5.35E-03
1,1,1 Trichloroethane	-	2.36E-04	-	1.10E-04	2.04E-04
Xylene	-	1.09E-04	-	5.06E-05	9.40E-05
Arsenic Compounds (ASC)	2.00E-04	-	4.00E-06	2.60E-04	4.83E-04
Beryllium Compounds (BEC)	1.20E-05	-	3.00E-06	1.95E-04	3.62E-04
Cadmium Compounds (CDC)	1.10E-03	-	3.00E-06	1.95E-04	3.62E-04
Chromium Compounds (CRC)	1.40E-03	-	3.00E-06	1.95E-04	3.91E-04
Cobalt Compounds (COC)	8.40E-05	-	9.00E-06	5.85E-04	1.09E-03
Manganese Compounds (MNC)	3.80E-04	-	6.00E-06	3.90E-04	7.25E-04
Mercury Compounds (HGC)	2.60E-04	-	3.00E-06	1.95E-04	3.62E-04
Nickel Compounds (NIC)	2.10E-03	-	3.00E-06	1.95E-04	5.86E-04
Selenium Compounds (SEC)	2.40E-05	-	1.50E-05	9.75E-04	1.81E-03
Total HAPs	-	-	-	1.39E-01	5.48E-01

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

[2]Emission Factors from AP-42 Tables 1.3-8, 1.3-9, and 1.3-10 (9/98)

Fact Sheet Attachment: Post-Project Standby Generator

Archer Daniels Midland Company - Fremont
Facility ID #09169
Emission Point ID Numbers: EP-19
One (1) 220 HP Standby Generator

Internal Combustion of Distillate Fuel in Engines (< 600 hp)

Total Horsepower	220	HP		
Total Heat Input Capacity	1.54	MMBtu/hr		
Potential Diesel Fuel Throughput	0.011	kgal/hr	96.36	kgal/year
Sulfur Fuel Limit	0.3	weight % sulfur		
Limited Operating Hours (OT)	8,760	hr/year		

Pollutant	(A) Emission Factor[1] (lb/MMBtu)	(B) = (A) x MMBtu/hr Emission Rate (lbs/hr)		(C) = (B) x OT Emission Rate (lbs/year)		(D) = (C)/2000 Potential to Emit (tons/year)	
		Potential	Limited	Potential	Limited	Potential	Limited
Particulate Matter (PM)	0.31	0.48	0.48	4182.02	4182.02	2.09	2.09
Particulate Matter (PM_{10})	0.31	0.48	0.48	4182.02	4182.02	2.09	2.09
Sulfur Dioxide (SO_2)	0.29	0.45	0.45	3912.22	3912.22	1.96	1.96
Nitrogen Oxides (NO_x)	4.41	6.79	6.79	59492.66	59492.66	29.75	29.75
Carbon Monoxide (CO)	0.95	1.46	1.46	12815.88	12815.88	6.41	6.41
Volatile Organic Compounds (VOC)	0.36	0.55	0.55	4856.54	4856.54	2.43	2.43
Individual Hazardous Air Pollutants (HAP)							
1,3 - Butadiene	3.91E-05	0.0001	0.0001	5.30E-01	0.53	2.65E-04	2.64E-04
Acetaldehyde	7.67E-04	0.0012	0.0012	1.04E+01	10.35	5.18E-03	5.17E-03
Acrolein	9.25E-04	0.0014	0.0014	1.25E+01	12.48	6.24E-03	6.24E-03
Benzene	9.33E-04	0.0014	0.0014	1.26E+01	12.59	6.30E-03	6.29E-03
Formaldehyde	1.18E-03	0.0018	0.0018	1.59E+01	15.92	7.96E-03	7.96E-03
Naphthalene	8.48E-05	0.0001	0.0001	1.14E+00	1.14	5.70E-04	5.72E-04
Polycyclic Organic Matter (POM)	8.32E-05	0.0001	0.0001	1.12E+00	1.12	5.60E-04	5.61E-04
Toluene	4.09E-04	0.0006	0.0006	5.52E+00	5.52	2.76E-03	2.76E-03
Xylene	2.85E-04	0.0004	0.0004	3.84E+00	3.84	1.92E-03	1.92E-03
Total HAPs	-	0.0072	0.0072	63.4900	63.49	0.0317	3.17E-02

[1]Emission Factors are from AP-42 Tables 3.3-1 and 3.3-2 (10/96)
Conversion Factor: Heat Capacity of Diesel Fuel is assumed to be 140,000 Btu/gal
Note: kgal = 1000 gallons
Note: Potential Operating Hours is 8760

Fact Sheet Attachment: Post-Project Process Cooling Water

Archer Daniels Midland Company - Fremont
Facility ID #09169

	EP-23 Existing Cooling Tower CFF-182416-1I-14	EP-37 New Cooling Tower Model #NC8310K
Total Dissolved Solids (ppm):	2,200	2,200
Drift Loss (%):	0.005	0.005
Number of Cells:	1	1
Individual Cell Flow Rate (gal/hr):	138,000	132,000
Total Tower Flow Rate (gal/hr):	138,000	132,000
Operation Hours (hrs/yr):	8,760	8,760

Water density: 8.34 lbs/gal

Emission factor equation from AP-42, Section 13.4-2 (01/1995)

PM emission factor = $\left(\frac{ppmTDS}{1{,}000{,}000\,lbswater}\right)\left(\frac{8.34\,lbs}{gal}\,water\right)\left(\frac{1{,}000\,gal}{1\,Mgal}\right)\left(\frac{0.005}{100}\,driftloss\right)$

		EP-23 Existing Cooling Tower CFF-182416-1I-14	EP-37 New Cooling Tower Model #NC8310K
PM Emission Factor (lbs/Mgal):		0.000917	0.000917
PM_{10} Fraction (%):		60.16%	60.16%
PM Emissions:	lb/hr	0.13	0.12
	ton/yr	0.56	0.53
PM_{10} Emissions:	lb/hr	0.08	0.07
	ton/yr	0.33	0.32

Fact Sheet Attachment: Post-Project Haul Road Emissions

Archer Daniels Midland Company - Fremont
Facility ID #09169

Paved roads {AP-42 Chapter 13.2.1 (11/06)}

Equation (2): *(modified)*

$$E = k \times \left(\frac{sL}{2}\right)^{0.65} \times \left(\frac{W}{3}\right)^{1.5} \times \left(1 - \frac{P}{4 \times 365}\right) \times \left(\frac{S}{30}\right)^{d}$$

	k	*d*
PM	0.082	0.3
PM_{10}	0.016	0.5

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

Haul Road / Traffic Parameters

Activity / Road Description	Road Type / Silt Value		Roundtrip Distance (feet)		Truck Weight (tons)			Ave. Speed (mph)	Maximum Throughput (units/yr) [2]	Ave. Truck Capacity (units/truck)		Annual VMT
			empty	full	empty	full	Ave.[1]					
Bean Receiving	p	3.00	74	895	13	40	37.9	15	729,300	27	ton	4,957
Meal Loadout	p	3.00	451	63	13	40	16.3	15	538,249	27	ton	1,941
Pellet Loadout	p	3.00	1,088	400	13	40	20.3	15	44,606	27	ton	466
Oil Loadout	p	3.00	85	0	13	40	13.0	15	33,985,714	7,500	gallons	73
Fuel Oil Delivery	p	3.00	142	114	13	40	25.0	15	4,657,654	6,000	gallons	37.64
Hexane Delivery	p	3.00	177	135	13	40	24.7	15	117,761	7,500	gallons	1
Flow Agent Delivery	p	3.00	216	154	13	40	24.2	15	3,569	27	ton	9

[1] Weighted average = {(distance*weight empty)+(distance*weight full)}/(Roundtrip distance)

Total VMT: 7,484

[2] Includes permit-limited throughput

tons/year

Fact Sheet Attachment

	Emission Factors (lb/VMT)		Potential Emissions (tons/yr)	
	PM	**PM_{10}**	**PM**	**PM_{10}**
Bean Receiving	3.66	0.62	9.07	1.54
Meal Loadout	1.03	0.18	1.00	0.17
Pellet Loadout	1.43	0.24	0.33	0.06
Oil Loadout	0.73	0.12	0.03	0.00
Fuel Oil Delivery	1.96	0.33	0.04	0.01
Hexane Delivery	1.92	0.33	0.00	0.00
Flow Agent Delivery	1.87	0.32	0.01	0.00
Total Annual Emissions:			**10.47**	**1.78**

Description of Constants/Variables

E: haul road emissions (lb/VMT)

k, a, b, c, d: dimensionless constants from AP-42 Tables 13.2.1-1 & 13.2.2-2

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 precipitation

P = 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: Post-Project Facility-Wide Potential to Emit

Archer Daniels Midland Company - Fremont
Facility ID #09169
All Emission Rates in tons/year

Pollutant	Soybean Processing	Grain Dryer	Extraction, Equipment Leaks, Tanks, etc.		Package Boiler	Generator	Cooling Towers (Fugitive)	Haul Roads (Fugitive)	Total Emissions
			Non-Fugitive	Fugitive					
Particulate Matter (PM)	64.77	26.25	-	-	23.37	2.09	1.09	10.47	128.04
Particulate Matter (PM_{10})	26.69	6.56	-	-	23.37	2.09	0.65	1.78	61.15
Sulfur Dioxide (SO_2)	-	0.04	-	-	245.00	1.96	-	-	247.00
Nitrogen Oxides (NO_x)	-	6.88	-	-	50.56	29.75	-	-	87.19
Carbon Monoxide (CO)	-	5.78	-	-	23.45	6.41	-	-	35.63
Volatile Organic Compounds (VOC)	-	0.38	223.10	108.40	1.54	2.43	-	-	335.84
Individual Hazardous Air Pollutants (HAP)									
Acetaldehyde	-	-	-	-	-	5.17E-03	-	-	5.17E-03
Acrolein	-	-	-	-	-	6.24E-03	-	-	6.24E-03
Benzene	-	1.44E-04	-	-	5.86E-04	6.29E-03	-	-	7.02E-03
1,3 - Butadiene	-	-	-	-	-	2.64E-04	-	-	2.64E-04
Dichlorobenzene	-	8.25E-05	-	-	3.35E-04	-	-	-	4.17E-04
Ethylbenzene	-	-	-	-	5.49E-05	-	-	-	5.49E-05
Formaldehyde	-	5.16E-03	-	-	2.85E-02	7.96E-03	-	-	4.16E-02
Hexane	-	1.24E-01	142.78	69.38	5.02E-01	-	-	-	212.78
Hydrochloric Acid	-	-	-	-	-	-	-	-	0.00
Lead Compounds	-	3.44E-05	-	-	1.40E-04	-	-	-	1.74E-04
Naphthalene	-	4.19E-05	-	-	9.75E-04	5.72E-04	-	-	1.59E-03
Polycyclic Organic Matter (POM)	-	6.07E-06	-	-	2.85E-03	5.61E-04	-	-	3.41E-03
Toluene	-	2.34E-04	-	-	5.35E-03	2.76E-03	-	-	8.34E-03
1,1,1 Trichloroethane	-	-	-	-	2.04E-04	-	-	-	2.04E-04
Xylene	-	-	-	-	9.40E-05	1.92E-03	-	-	2.02E-03
Arsenic Compounds (ASC)	-	1.38E-05	-	-	4.83E-04	-	-	-	4.97E-04
Beryllium Compounds (BEC)	-	8.25E-07	-	-	3.62E-04	-	-	-	3.63E-04
Cadmium Compounds (CDC)	-	7.56E-05	-	-	3.62E-04	-	-	-	4.38E-04
Chromium Compounds (CRC)	-	9.63E-05	-	-	3.91E-04	-	-	-	4.87E-04
Cobalt Compounds (COC)	-	5.78E-06	-	-	1.09E-03	-	-	-	1.09E-03
Manganese Compounds (MNC)	-	2.61E-05	-	-	7.25E-04	-	-	-	7.51E-04
Mercury Compounds (HGC)	-	1.79E-05	-	-	3.62E-04	-	-	-	3.80E-04
Nickel Compounds (NIC)	-	1.44E-04	-	-	5.86E-04	-	-	-	7.31E-04
Selenium Compounds (SEC)	-	1.65E-06	-	-	1.81E-03	-	-	-	1.81E-03
Total HAPs	-	1.30E-01	142.78	69.38	5.48E-01	3.17E-02	-	-	212.87

Fact Sheet Attachment: Post-Project Title 129, Chapter 20 Applicability

Archer Daniels Midland Company - Fremont
Facility ID #09169
Title 129, Chapter 20 Applicability

Title 129, Chapter 20, Section 001

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 Dryer	120,000 lbs/hr	46.29 lbs/hr	0.15 lbs/hr
	60.00 tons/hr		
Existing Cooling Tower	1,150,920 lbs/hr	70.65 lbs/hr	0.13 lbs/hr
	575.46 tons/hr		
New Cooling Tower	1,100,880 lbs/hr	70.11 lbs/hr	0.12 lb/hr
	550.44 tons/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	$1.026/I^{0.233}$ Where I = total heat input in MMBtu/hr.
10,000 or more	0.12

Process equipment	MMBtu/hr	Allowable PM (lbs/MMBtu)	Unit PM emission rate (lbs/MMBtu)
Boiler	65.00	0.39	0.16
Generator	1.54	0.60	0.31

Fact Sheet Attachment: Pre-Project Facility Process Information

Archer Daniels Midland Company - Fremont
Facility ID #09169

Receiving Information

Old Limitation - Soybeans Received:	682,200	tons/year
Oilseed Processed Limitations:	1,700	tons/day
	622,200	tons/year
Soybean Density:	60	lbs/bu soybeans @ 13% moisture
Soybean Oil Density:	7.7	lbs/gallon
Oil Extraction Rate:	11	lbs soybean oil / bu soybeans
Percentage of Soybeans Received are Hulls:	6.25%	
Percentage of Soybeans Received are Beans:	93.75%	

Previous Maximum Production

Product #1: Soybean Oil	29,628,571	gallons/year
Product #2: Soybean Meal	469,243	tons/year
Product #3: Hull Pellets	38,888	tons/year

Additional Limitations

Grain Dryer Throughput	250,000	tons/year

Additional Information

Flow Agent Needed:	3,112	tons/year
VOC Emissions Limitation	2.9	lbs solvent / ton soybeans processed
Density of Solvent (Hexane):	5.63	lb/gallon @ 15.6^{o}C
VOC Emissions Limitation:	0.515	gallons solvent / ton soybeans processed
Limited Amount of Solvent Received (i.e. emitted):	530.0	tons/year
Maximum Amount of Hexane Received (i.e. emitted):	188,277	gallons/year

Fact Sheet Attachment: Pre-Project Soybean Processing

Archer Daniels Midland Company - Fremont
Facility ID #09169

PM/PM_{10} Emissions from Soybean Processing

Emission Point ID#	Emission Point Description	Material Processed	Control Equipment	(A) Maximum Hourly Throughput[1]	(B) Annual Throughput	Emission Factors (lbs/ton)[2]		(E) Capture Efficiency (%)[3]		Annual Uncaptured Emissions (tons/year)		(H) Control Efficiency (%)[3]		PM Emissions from EP		PM_{10} Emissions from EP		Allowable Emission Rate Based on Maximum Capacity Title 129, Chapter 20 'E'
				(tons/hour)	(tons/year)	(C) PM	(D) PM_{10}	PM	PM_{10}	(F)[4] PM	(G)[5] PM_{10}	PM	PM_{10}	(I)[6] (lbs/hr)	(J)[7] (tons/yr)	(K)[8] (lbs/hr)	(L)[9] (tons/yr)	(lb/hr)
EP-1E	EU-01: Grain Receiving	Soybeans	CD-1E: Baghouse (existing)	545	682,200	0.035	0.0078	75%	75%	2.98	0.67	98%	98%	0.29	0.18	0.06	0.04	69.99
EP-2E	EU-02: Conveying and Storage #1	Soybeans	CD-2E: Baghouse (existing)	545	653,400	0.061	0.034	100%	100%	0.00	0.00	98%	98%	0.66	0.40	0.37	0.22	69.99
EP-3E	EU-02: Conveying and Storage #2	Soybeans	CD-3E: Baghouse (existing)	545	31,200	0.061	0.034	100%	100%	0.00	0.00	98%	98%	0.66	0.02	0.37	0.01	69.99
EP-02	EU-04: Bean Cleaning	Soybeans	CD-02: Baghouse (existing)	70.83	622,200	0.375	0.095	100%	100%	0.00	0.00	98%	98%	0.53	2.33	0.13	0.59	47.88
EP-01	EU-05: Dehulling System[10]	Soybeans	CD-01, CD-01a, & CD-01b: Cyclones (existing)	70.83	622,200	0.08375	0.0315	100%	100%	0.00	0.00	0%	0%	5.93	26.05	2.23	9.80	47.88
EP-06	EU-06: Pelleter/Cooler[11]	Hulls	CD-06: Cyclone (existing)	6.25	38,888	0.75	0.375	100%	100%	0.00	0.00	80%	80%	0.94	2.92	0.47	1.46	14.00
EP-04	EU-07: Eight Flakers[10]	Beans	CD-04: Cyclone (existing)	70.83	622,200	0.006875	0.004194	100%	100%	0.00	0.00	0%	0%	0.49	2.14	0.30	1.30	47.88
EP-V2	EU-08: Conveyor to Extraction	Beans	-	70.83	622,200	0.01525	0.0085	100%	100%	0.00	0.00	0%	0%	1.08	4.74	0.60	2.64	47.88
EP-10	EU-10: Hull Grinding/Storage[10]	Hulls	CD-10: Baghouse (existing)	7.1	38,888	0.0075	0.0075	100%	100%	0.00	0.00	0%	0%	0.05	0.15	0.05	0.15	15.24
EP-07a	EU-11: DTDC[10]	Beans	CD-07a: Cyclone (existing)	70.83	622,200	0.0044	0.0029	100%	100%	0.00	0.00	0%	0%	0.31	1.37	0.21	0.90	47.88
EP-07b	EU-11: DTDC[10]	Beans	CD-07b & CD-07c: Cyclones (existing)															
EP-11	EU-15: Truck/Rail Loadout[11]	Soybean Meal/Hull Pellets	CD-11: Baghouse (existing)	450	622,200	0.27	0.0675	100%	100%	0.00	0.00	98%	98%	2.43	1.68	0.61	0.42	67.7
EP-16	EU-16: Pellet Storage	Hull Pellets	-	7	38,888	0.000752	0.000752	100%	100%	0.00	0.00	0%	0%	0.01	0.01	0.01	0.01	15.24
EP-17F	EU-17: Pellet Loadout	Hull Pellets	-	450	38,888	0.086	0.029	100%	100%	0.00	0.00	0%	0%	38.70	1.67	13.05	0.56	67.70
EP-21	EU-21: Bean Heater	Beans	Cyclone (existing)	70.83	622,200	0.05	0.03	100%	100%	0.00	0.00	80%	80%	0.71	3.11	0.43	1.87	47.88
EP-22	EU-22: Unloading Pit (meal, hulls, hull pellets)[12]	Soybean Meal/Hull Pellets	-	50.0	48,000	0.27	0.0675	70%	70%	1.94	0.49	0%	0%	9.45	4.54	2.36	1.13	44.58
EP-12	EU-12 (New EU-24): Meal Conveying/Grinding[10]	Soybean Meal	CD-08: Baghouse (existing - being replaced with CD-24)	70.8	622,200	0.004	0.004	100%	100%	0.00	0.00	0%	0%	0.28	1.24	0.28	1.24	47.88
EP-13	EU-13 (New EU-24): Meal Conveying	Soybean Meal	CD-09: Baghouse (existing - being replaced with multiple units)	70.8	622,200	0.004	0.004	100%	100%	0.00	0.00	98%	98%	0.01	0.02	0.01	0.02	47.88
	EU-13 (New EU-25): Meal Storage - Webco Tank[13]	Soybean Meal		70.8	52,138	0.000714	0.000714	100%	100%	0.00	0.00	98%	98%	0.0010	0.0004	0.0010	0.0004	47.88
	EU-13 (New EU-25): Meal Storage - Concrete Tank East[13]	Soybean Meal		70.8	52,138	0.000714	0.000714	100%	100%	0.00	0.00	98%	98%	0.0010	0.0004	0.0010	0.0004	47.88
	EU-13 (New EU-25): Meal Storage - Concrete Tank West[13]	Soybean Meal		70.8	52,138	0.000714	0.000714	100%	100%	0.00	0.00	98%	98%	0.0010	0.0004	0.0010	0.0004	47.88
	EU-13 (New EU-25): Hull Pellet Storage - Harvestore Tank East[13]	Hull Pellets		70.8	19,444	0.000714	0.000714	100%	100%	0.00	0.00	98%	98%	0.0010	0.0001	0.0010	0.0001	47.88
	EU-13 (New EU-25): Meal Storage - Harvestore Tank West[13]	Soybean Meal		70.8	52,138	0.000714	0.000714	100%	100%	0.00	0.00	98%	98%	0.0010	0.0004	0.0010	0.0004	47.88
	EU-13 (New EU-25): Meal Storage - Street Tank #1[13]	Soybean Meal		70.8	52,138	0.000714	0.000714	100%	100%	0.00	0.00	98%	98%	0.0010	0.0004	0.0010	0.0004	47.88
	EU-13 (New EU-25): Meal Storage - Street Tank #2[13]	Soybean Meal		70.8	52,138	0.000714	0.000714	100%	100%	0.00	0.00	98%	98%	0.0010	0.0004	0.0010	0.0004	47.88
	EU-13 (New EU-25): Meal Storage - Street Tank #3[13]	Soybean Meal		70.8	52,138	0.000714	0.000714	100%	100%	0.00	0.00	98%	98%	0.0010	0.0004	0.0010	0.0004	47.88
	EU-13 (New EU-25): Hull Pellet Storage - Street Tank #4[13]	Hull Pellets		70.8	19,444	0.000714	0.000714	100%	100%	0.00	0.00	98%	98%	0.0010	0.0001	0.0010	0.0001	47.88
	EU-13 (New EU-25): Meal Storage - Street Tank #5[13]	Soybean Meal		70.8	52,138	0.000714	0.000714	100%	100%	0.00	0.00	98%	98%	0.0010	0.0004	0.0010	0.0004	47.88
	EU-13 (New EU-25): Meal Storage - Street Tank #6[13]	Soybean Meal		70.8	52,138	0.000714	0.000714	100%	100%	0.00	0.00	98%	98%	0.0010	0.0004	0.0010	0.0004	47.88
	EU-14: Meal Flow Agent[14]	Flow Agent		1.43	3,112	0.8	0.4	100%	100%	0.00	0.00	98%	98%	0.0229	0.0249	0.0114	0.0124	5.21

[1]Maximum Hourly Throughput based on design capacity of equipment or based on Daily Throughput Limitation of 1,200 tons/day (if maximum throughput exceeds daily limitation)

[2]Emission Factors are from AP-42 Section 9.9.1 (5/2003) unless otherwise noted

[3]Capture and Control Efficiencies provided by facility and based on design of control equipment

[4](F) = (B) x (C) x [1 - (E)] / 2,000 (lbs/ton)

[5](G) = (B) x (D) x [1 - (E)] / 2,000 (lbs/ton)

[6](I) = (A) x (C) x (E) x [1 - (H)]

[7](J) = (B) x (C) x (E) x [1 - (H)] / 2,000 (lbs/ton)

[8](K) = (A) x (D) x (E) x [1 - (H)]

[9](L) = (B) x (D) x (E) x [1 - (H)] / 2,000 (lbs/ton)

[10]Emission factors from Stack Test, Control Efficiency taken into consideration in Emission Factors

[11]Emission factors for Pelleter/Cooler from AP-42, Table 9.11.1-1

[12]Unloading Pit annual throughput based on the expected maximum throughput of 12,000 tons of hulls, 12,000 tons of hull pellets and 24,000 tons of soybean meal.

[13]Emission factors for baghouses based on 0.1 grain loading and displaced air flow rate flowing to baghouse

[14]Emission factors for Meal Flow Agent from FIRE

Total Emissions from Soybean Processing

Particulate Matter (PM)	57.54	tons/year
Particulate Matter (PM_{10})	23.55	tons/year

NOTE: All emissions are counted towards major source applicability because there are no "fugitive" emissions emitted, only uncaptured

Fact Sheet Attachment: Pre-Project Grain Dryer

Archer Daniels Midland Company - Fremont
Facility ID #09169
One Column Grain Process Dryer, 16 MMBtu/hr, 60 ton/hr Drying Capacity
Emission Point ID#: EP-5E

Potential to Emit from Combusting Natural Gas in a Column Grain Dryer

Total Heat Input Capacity	16.0	MMBtu/hr
Potential Natural Gas Throughput	0.0157	MMscf/hr
	137.5	MMscf/yr
Maximum Grain Throughput	60	tons/hour
Limited Grain Throughput	250,000	tons/year
Limited Operating Time (OT)	8,760	hours/year

(A) Maximum Hourly Throughput	(B) Annual Throughput	Emission Factors (lbs/ton)[1]		(E) Capture Efficiency (%)[2]		Annual Uncaptured Emissions (tons/year)		(H) Control Efficiency (%)[2]		PM Emissions from EP		PM_{10} Emissions from EP	
(tons/hour)	(tons/year)	(C) PM	(D) PM_{10}	PM	PM_{10}	(F)[3] PM	(G)[4] PM_{10}	PM	PM_{10}	(I)[5] (lbs/hr)	(J)[6] (tons/yr)	(K)[7] (lbs/hr)	(L)[8] (tons/yr)
60	250,000	0.22	0.055	5.7%	5.7%	25.93	6.48	80%	80%	0.15	0.31	0.04	0.08

[1]Emission Factors are from AP-42, Section 9.9.1 (5/03)

[2]Capture and Control Efficiencies provided by facility and based on design of control equipment; Facility indicated that only 5.7% of the dryer exhaust is captured and then controlled by the cyclone

[3](F) = (B) x (C) x [1 - (E)] / 2,000 (lbs/ton)

[4](G) = (B) x (D) x [1 - (E)] / 2,000 (lbs/ton)

[5](I) = (A) x (C) x (E) x [1 - (H)]

[6](J) = (B) x (C) x (E) x [1 - (H)] / 2,000 (lbs/ton)

[7](K) = (A) x (D) x (E) x [1 - (H)]

[8](L) = (B) x (D) x (E) x [1 - (H)] / 2,000 (lbs/ton)

Fact Sheet Attachment: Pre-Project Grain Dryer

Archer Daniels Midland Company - Fremont
Facility ID #09169
One Column Grain Process Dryer, 16 MMBtu/hr, 60 ton/hr Drying Capacity
Emission Point ID#: EP-5E

Potential to Emit from Combusting Natural Gas in a Column Grain Dryer

Pollutant	(A) Emission Factor[1] (lb/MMscf)	Emission Rate (lbs/hr)		Emission Rate (tons/year)	
		(C) Potential[2]	(D) Limited[3]	(E) Potential[4]	(F) Limited[5]
Sulfur Dioxide (SO_2)	0.6	0.01	0.01	0.04	0.04
Nitrogen Oxides (NO_x)	100	1.57	1.57	6.88	6.88
Carbon Monoxide (CO)	84	1.32	1.32	5.78	5.78
Volatile Organic Compounds (VOC)	5.5	0.09	0.09	0.38	0.38
Individual Hazardous Air Pollutants (HAP)					
Benzene	0.0021	3.30E-05	3.30E-05	1.44E-04	1.44E-04
Dichlorobenzene	0.0012	1.88E-05	1.88E-05	8.25E-05	8.25E-05
Formaldehyde	0.075	1.18E-03	1.18E-03	5.16E-03	5.16E-03
Hexane	1.8	2.83E-02	2.83E-02	1.24E-01	1.24E-01
Lead Compounds	0.0005	7.85E-06	7.85E-06	3.44E-05	3.44E-05
Naphthalene	0.00061	9.58E-06	9.58E-06	4.19E-05	4.19E-05
Polycyclic Organic Matter (POM)	0.0000882	1.38E-06	1.38E-06	6.07E-06	6.07E-06
Toluene	0.0034	5.34E-05	5.34E-05	2.34E-04	2.34E-04
Arsenic Compounds (ASC)	0.0002	3.14E-06	3.14E-06	1.38E-05	1.38E-05
Beryllium Compounds (BEC)	0.000012	1.88E-07	1.88E-07	8.25E-07	8.25E-07
Cadmium Compounds (CDC)	0.0011	1.73E-05	1.73E-05	7.56E-05	7.56E-05
Chromium Compounds (CRC)	0.0014	2.20E-05	2.20E-05	9.63E-05	9.63E-05
Cobalt Compounds (COC)	0.000084	1.32E-06	1.32E-06	5.78E-06	5.78E-06
Manganese Compounds (MNC)	0.00038	5.97E-06	5.97E-06	2.61E-05	2.61E-05
Mercury Compounds (HGC)	0.00026	4.08E-06	4.08E-06	1.79E-05	1.79E-05
Nickel Compounds (NIC)	0.0021	3.30E-05	3.30E-05	1.44E-04	1.44E-04
Selenium Compounds (SEC)	0.000024	3.77E-07	3.77E-07	1.65E-06	1.65E-06
Total HAPs	1.89	0.0296	0.0296	0.1299	0.1299

[1]Emission Factors from AP-42 Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4 (7/98)

[2](C) = Potential Natural Gas Throughput (MMscf/hr) x (A) (lb/MMscf)

[3](D) = Potential Natural Gas Throughput (MMscf/hr) x (A) (lb/MMscf)

[4](E) = (C) x 8,760 (hours/year) / 2,000 (lbs/ton)

[5](F) = (D) x Limited Operating Time (hours/year) / 2,000 (lbs/ton)

Note: 1 MMscf = 1,020 MMBtu

Fact Sheet Attachment: Pre-Project Soybean Oil Extraction, Equipment Leaks, and Tank Losses

Archer Daniels Midland Company - Fremont
Facility ID #09169
Emission Point ID#: EP-5

Amount of Soybeans processed:	622,200	tons/year
Density of Solvent (Hexane):	5.63	lb/gallon @ 15.6^{o}C
VOC Emissions Limitation:	0.515	gallons solvent / ton soybeans processed
Limited VOC Emissions from Extraction:	530.0	tons/year
Percentage of Solvent that is HAP:	64%	
Potential n-Hexane Emissions:	339.2	tons/year
Percentage of Emissions from Non-Fugitive Sources:	67.3%	
Percentage of Emissions from Fugitive Sources:	32.7%	

As Calculated in previous CP

Fact Sheet Attachment: Pre-Project Package Boiler

Archer Daniels Midland Company - Fremont
Facility ID #09169

Combustion Equipment	Capacity (MMBtu/hr)	Maximum #2 Fuel Oil Usage (10^3 gallons/hr)[1]	Maximum #4 Fuel Oil Usage (10^3 gallons/hr)[2]	Maximum #5 Fuel Oil Usage (10^3 gallons/hr)[3]	Maximum #6 Fuel Oil Usage (10^3 gallons/hr)[4]	Maximum Used Oil Usage (10^3 gallons/hr)[5]
EU-18: Package Boiler	65.0	0.4643	0.4452	0.4392	0.4333	0.4610

[1]Capacity (MMBtu/hr) / [140,000 (Btu/gal) / 1,000 (gal/kgal)]
[2]Capacity (MMBtu/hr) / [146,000 (Btu/gal) / 1,000 (gal/kgal)]
[3]Capacity (MMBtu/hr) / [148,000 (Btu/gal) / 1,000 (gal/kgal)]
[4]Capacity (MMBtu/hr) / [150,000 (Btu/gal) / 1,000 (gal/kgal)]
[5]Capacity (MMBtu/hr) / [140,997 (Btu/gal) / 1,000 (gal/kgal)]

Combustion Equipment	Capacity (MMBtu/hr)	Maximum Natural Gas Usage (MMscf/hr)[1]	Maximum Vegetable Oil Usage (10^3 gallons/hr)[2]	Maximum Biodiesel Usage (10^3 gallons/hr)[3]	Maximum Poultry Grease Usage (10^3 gallons/hr)[4]	Maximum Yellow Grease Usage (10^3 gallons/hr)[5]
EU-18: Package Boiler	65.0	0.064	0.5056	0.5150	0.5215	0.5207

[1]Capacity (MMBtu/hr) / 1,020 (Btu/scf)
[2]Capacity (MMBtu/hr) / [128,554 (Btu/gal) / 1,000 (gal/kgal)]
[3]Capacity (MMBtu/hr) / [126,203 (Btu/gal) / 1,000 (gal/kgal)]
[4]Capacity (MMBtu/hr) / [124,641 (Btu/gal) / 1,000 (gal/kgal)]
[5]Capacity (MMBtu/hr) / [124,833 (Btu/gal) / 1,000 (gal/kgal)]

Fuel Oil Sulfur Limitation (%)	2
Ash Limitation for Used Oil (%)	0.87

Fact Sheet Attachment: Pre-Project Package Boiler

Archer Daniels Midland Company - Fremont
Facility ID #09169

Emission Factors

Pollutant	#2 Fuel Oil ($lb/10^3$ gal)[1]	#4 Fuel Oil ($lb/10^3$ gal)[1]	#5 Fuel Oil ($lb/10^3$ gal)[1]	#6 Fuel Oil ($lb/10^3$ gal)[1]	Used Oil ($lb/10^3$ gal)[2]
Particulate Matter (PM)	3.30	8.50	23.1	11.5	55.68
Particulate Matter (PM_{10})	3.30	8.50	23.1	11.5	44.37
Sulfur Dioxide (SO_2)	284.00	300.00	314.0	314	-
Sulfur Trioxide (SO_3)	4.00	4.00	4.0	4.00	-
Sulfur Oxides (SO_x)	288.00	304.00	318	318.00	294.00
Sulfur Oxides (SO_x) - (lb/MMBtu)	2.06	2.08	2.15	2.12	2.09
Nitrogen Oxides (NO_x)	20.00	20.00	55	55.0	19.0
Carbon Monoxide (CO)	5.00	5.00	5	5.0	5.0
Volatile Organic Compounds (VOC)	0.20	0.20	0.28	0.28	1.0

[1]Emission Factors from AP-42 Tables 1.3-1, 1.3-2, and 1.3-3 (9/98)

[2]Emission Factors from AP-42 Tables 1.11-1, 1.11-2, and 1.11-3 (10/96)

Pollutant	Natural Gas ($lb/10^6$ scf)[1]	Vegetable Oil (lb/MMBtu)[2]	Biodiesel ($lb/10^3$ gal)[3]	Poultry Grease (lb/MMBtu)[4]	Yellow Grease (lb/MMBtu)[5]
Particulate Matter (PM)	7.6	0.05	1.75	0.083	0.041
Particulate Matter (PM_{10})	7.6	0.05	1.75	0.083	0.041
Sulfur Oxides (SO_x)[6],[7]	0.6	0	0	0.87	0.02
Nitrogen Oxides (NO_x)[4]	100	0.1776	22	0.164	0.127
Carbon Monoxide (CO)	84	0.0047	2.6	0	0.0224
Volatile Organic Compounds (VOC)	5.5	0.002	0.1	0	0.0015

[1]Emission Factors from AP-42 Tables 1.4-1 and 1.4-2 (7/98)

[2]Stack Test - Quincy 3/2001

[3]Derived from tests conducted by EPA. Source website: www.biodiesel.org/pdf_files/fuelfactsheets/emissions.pdf

[4]Poultry Grease (PM, PM_{10}, NO_x, CO, and VOC) and Yellow Grease (NO_x) Emission Factors from University of Georgia, June 30 2002 Report, "A Demonstration of Fat and Grease as an Industrial Boiler Fuel"

[5]From Render Magazine, "Turn up the heat," April 2001, pages 18-21. Stack test data from boiler burning yellow grease.

[6]Poultry Grease Emission Factor derived from the sulfur content of the poultry grease.

[7]Yellow Grease Emission Factor from an NDEQ compilation of stack test data from boilers burning yellow grease

Fact Sheet Attachment: Pre-Project Package Boiler

Archer Daniels Midland Company - Fremont
Facility ID #09169

Quantity of each fuel type can be combusted without exceeding Sulfur Oxide Emissions Limit

Combustion Equipment	Capacity (MMBtu/hr)	Maximum #2 Fuel Oil Usage (10^3 gallons/yr)[1]	Maximum #4 Fuel Oil Usage (10^3 gallons/yr)[1]	Maximum #5 Fuel Oil Usage (10^3 gallons/yr)[1]	Maximum #6 Fuel Oil Usage (10^3 gallons/yr)[1]	Maximum Used Oil Usage (10^3 gallons/yr)[2]
EU-18: Package Boiler	65.0	1725.35	1633.33	1560.51	1560.51	727.27

[1]Quantity able to be combusted without violating 245 tpy SO_2 Limitation; 245 (tons/yr) x 2,000 (lbs/ton) / SO_2 Emission Factor (lb/10^3 gallon)

[2]Quantity able to be combusted without violating 2.4 tpy HCL Limitation; 2.4 (tons/yr) x 2,000 (lbs/ton) / HCL Emission Factor (lb/10^3 gallon)

Combustion Equipment	Capacity (MMBtu/hr)	Maximum Natural Gas Usage (MMscf/yr)[1]	Maximum Vegetable Oil Usage (10^3 gallons/yr)[2]	Maximum Biodiesel Usage (10^3 gallons/yr)[2]	Maximum Poultry Grease Usage (10^3 gallons/yr)[3]	Maximum Yellow Grease Usage (10^3 gallons/yr)[3]
EU-18: Package Boiler	65.0	558.2	4429.3	4511.8	4518.7	4561.3

[1]Quantity able to be combusted without violating 245 tpy SO_2 Limitation; 245 (tons/yr) x 2,000 (lbs/ton) / SO_x Emission Factor (lb/MMscf)

[2]Quantity able to be combusted without violating 245 tpy SO_2 Limitation, which is the total amount needed since sulfur is not emitted when these fuels are combusted

[3]Quantity combusted without violating 245 tpy SO_2 Limitation;
245 (tons/yr) x 2,000 (lbs/ton) x 1,000,000 (MMBtu/Btu) / SO_x Emission Factor (lb/10^3 gallon) / Fuel Heat Input (Btu/gallon) / 1,000 (gal/10^3 gal)

Potential to Emit - Worst Case Fuel Type

Pollutant	Packaged Boiler	
	(lb/hr)	(tons/year)
Particulate Matter (PM)	10.15	23.37
Particulate Matter (PM_{10})	10.15	23.37
Sulfur Oxides (SO_x)[1]	139.66	245.00
Nitrogen Oxides (NO_x)	24.16	50.56
Carbon Monoxide (CO)	5.35	23.45
Volatile Organic Compounds (VOC)	0.35	1.54

[1]Boiler is limited to 245 tons/year of SO_2 emissions, Worst Case lb/hr SO_x Emissions are while combusting #5 Fuel Oil

Fact Sheet Attachment: Pre-Project Package Boiler

Archer Daniels Midland Company - Fremont
Facility ID #09169

Potential to Emit HAP - Worst Case Fuel Type

	Emission Factors by Fuel Type				Potential to Emit HAP	
	Natural Gas	Diesel Fuel	Diesel Fuel	Used Oil		
Hazardous Air Pollutants (HAP)	(lb/10^6 scf)[1]	(lb/10^3 gal)[2]	(lb/MMBtu)[2]	(lb/10^3 gal)[3]	(lb/hr)	(tons/year)
Benzene	2.10E-03	2.14E-04	-	-	1.34E-04	5.86E-04
Dichlorobenzene	1.20E-03	-	-	-	7.65E-05	3.35E-04
Ethylbenzene	-	6.36E-05	-	-	2.95E-05	5.49E-05
Formaldehyde	7.50E-02	3.30E-02	-	-	1.53E-02	2.85E-02
Hexane	1.80E+00	-	-	-	1.15E-01	5.02E-01
Hydrochloric Acid	-	-	-	6.60E+00	3.04E+00	2.40E+00
Lead Compounds	5.00E-04	-	-	5.50E-01	2.54E-01	2.00E-01
Naphthalene	6.10E-04	1.13E-03	-	-	5.25E-04	9.75E-04
Polycyclic Organic Matter (POM)	8.82E-05	3.30E-03	-	-	1.53E-03	2.85E-03
Toluene	3.40E-03	6.20E-03	-	-	2.88E-03	5.35E-03
1,1,1 Trichloroethane	-	2.36E-04	-	-	1.10E-04	2.04E-04
Xylene	-	1.09E-04	-	-	5.06E-05	9.40E-05
Arsenic Compounds (ASC)	2.00E-04	-	4.00E-06	1.10E-01	5.07E-02	5.64E-03
Beryllium Compounds (BEC)	1.20E-05	-	3.00E-06	-	1.95E-04	3.62E-04
Cadmium Compounds (CDC)	1.10E-03	-	3.00E-06	9.30E-03	4.29E-03	4.77E-04
Chromium Compounds (CRC)	1.40E-03	-	3.00E-06	2.00E-02	9.22E-03	1.03E-03
Cobalt Compounds (COC)	8.40E-05	-	9.00E-06	2.10E-04	5.85E-04	1.09E-03
Manganese Compounds (MNC)	3.80E-04	-	6.00E-06	6.80E-02	3.13E-02	3.49E-03
Mercury Compounds (HGC)	2.60E-04	-	3.00E-06	-	1.95E-04	3.62E-04
Nickel Compounds (NIC)	2.10E-03	-	3.00E-06	1.10E-02	5.07E-03	5.86E-04
Selenium Compounds (SEC)	2.40E-05	-	1.50E-05	-	9.75E-04	1.81E-03
Total HAPs	-	-	-	-	3.53E+00	3.16E+00

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

[2]Emission Factors from AP-42 Tables 1.3-8, 1.3-9, and 1.3-10 (9/98)

[3]Emission Factors from AP-42 Tables 1.11-1, 1.11-3, and 1.11-4 (10/96)

Fact Sheet Attachment: Pre-Project Standby Generator

Archer Daniels Midland Company - Fremont
Facility ID #09169
Emission Point ID Numbers: EP-19
One (1) 220 HP Standby Generator

Internal Combustion of Distillate Fuel in Engines (< 600 hp)

Total Horsepower	220	HP		
Total Heat Input Capacity	1.54	MMBtu/hr		
Potential Diesel Fuel Throughput	0.011	kgal/hr	96.36	kgal/year
Sulfur Fuel Limit	0.3	weight % sulfur		
Limited Operating Hours (OT)	8,760	hr/year		

Pollutant	(A) Emission Factor[1] (lb/MMBtu)	(B) = (A) x MMBtu/hr Emission Rate (lbs/hr)		(C) = (B) x OT Emission Rate (lbs/year)		(D) = (C)/2000 Potential to Emit (tons/year)	
		Potential	Limited	Potential	Limited	Potential	Limited
Particulate Matter (PM)	0.31	0.48	0.48	4182.02	4182.02	2.09	2.09
Particulate Matter (PM_{10})	0.31	0.48	0.48	4182.02	4182.02	2.09	2.09
Sulfur Dioxide (SO_2)	0.29	0.45	0.45	3912.22	3912.22	1.96	1.96
Nitrogen Oxides (NO_x)	4.41	6.79	6.79	59492.66	59492.66	29.75	29.75
Carbon Monoxide (CO)	0.95	1.46	1.46	12815.88	12815.88	6.41	6.41
Volatile Organic Compounds (VOC)	0.36	0.55	0.55	4856.54	4856.54	2.43	2.43
Individual Hazardous Air Pollutants (HAP)							
1,3 - Butadiene	3.91E-05	0.0001	0.0001	5.30E-01	0.53	2.65E-04	2.64E-04
Acetaldehyde	7.67E-04	0.0012	0.0012	1.04E+01	10.35	5.18E-03	5.17E-03
Acrolein	9.25E-04	0.0014	0.0014	1.25E+01	12.48	6.24E-03	6.24E-03
Benzene	9.33E-04	0.0014	0.0014	1.26E+01	12.59	6.30E-03	6.29E-03
Formaldehyde	1.18E-03	0.0018	0.0018	1.59E+01	15.92	7.96E-03	7.96E-03
Naphthalene	8.48E-05	0.0001	0.0001	1.14E+00	1.14	5.70E-04	5.72E-04
Polycyclic Organic Matter (POM)	8.32E-05	0.0001	0.0001	1.12E+00	1.12	5.60E-04	5.61E-04
Toluene	4.09E-04	0.0006	0.0006	5.52E+00	5.52	2.76E-03	2.76E-03
Xylene	2.85E-04	0.0004	0.0004	3.84E+00	3.84	1.92E-03	1.92E-03
Total HAPs	-	0.0072	0.0072	63.4900	63.49	0.0317	3.17E-02

[1]Emission Factors are from AP-42 Tables 3.3-1 and 3.3-2 (10/96)
Conversion Factor: Heat Capacity of Diesel Fuel is 140,000 Btu/gal
Note: kgal = 1000 gallons
Note: Potential Operating Hours is 8760

Fact Sheet Attachment: Pre-Project Process Cooling Water

Archer Daniels Midland Company - Fremont
Facility ID #09169

	EP-23 Existing Cooling Tower CFF-182416-1I-14	Existing Cooling Tower (being replaced)
Total Dissolved Solids (ppm):	2,200	2,200
Drift Loss (%):	0.005	0.008
Number of Cells:	1	1
Individual Cell Flow Rate (gal/hr):	138,000	66,000
Total Tower Flow Rate (gal/hr):	138,000	66,000
Operation Hours (hrs/yr):	8,760	8,760

Water density: 8.34 lbs/gal

Emission factor equation from AP-42, Section 13.4-2 (01/1995)

PM emission factor = $\left(\frac{ppmTDS}{1{,}000{,}000\,lbswater}\right)\left(\frac{8.34\,lbs}{gal}\,water\right)\left(\frac{1{,}000\,gal}{1Mgal}\right)\left(\frac{0.005}{100}\,driftloss\right)$

		EP-23 Existing Cooling Tower CFF-182416-1I-14	Existing Cooling Tower (being replaced)
PM Emission Factor (lbs/Mgal):		0.000917	0.001468
PM_{10} Fraction (%):		60.16%	60.16%
PM Emissions:	lb/hr	0.13	0.10
	ton/yr	0.56	0.42
PM_{10} Emissions:	lb/hr	0.08	0.06
	ton/yr	0.33	0.26

Fact Sheet Attachment: Pre-Project Haul Road Emissions

Archer Daniels Midland Company - Fremont
Facility ID #09169

Paved roads {AP-42 Chapter 13.2.1 (11/06)}

Equation (2): *(modified)*

$$E = k \times \left(\frac{sL}{2}\right)^{0.65} \times \left(\frac{W}{3}\right)^{1.5} \times \left(1 - \frac{P}{4 \times 365}\right) \times \left(\frac{S}{30}\right)^{d}$$

	k	*d*
PM	0.082	0.3
PM_{10}	0.016	0.5

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

Haul Road / Traffic Parameters

Activity / Road Description	Road Type / Silt Value		Roundtrip Distance (feet)		Truck Weight (tons)			Ave. Speed (mph)	Maximum Throughput (units/yr) [2]	Ave. Truck Capacity (units/truck)		Annual VMT
			empty	full	empty	full	Ave.[1]					
Bean Receiving	p	3.00	74	895	13	40	37.9	15	682,200	27	ton	4,637
Meal Loadout	p	3.00	451	63	13	40	16.3	15	469,243	27	ton	1,692
Pellet Loadout	p	3.00	1,088	400	13	40	20.3	15	38,888	27	ton	406
Oil Loadout	p	3.00	85	0	13	40	13.0	15	29,628,571	7,500	gallons	64
Fuel Oil Delivery	p	3.00	142	114	13	40	25.0	15	4,657,654	6,000	gallons	37.64
Hexane Delivery	p	3.00	177	135	13	40	24.7	15	188,277	7,500	gallons	1
Flow Agent Delivery	p	3.00	216	154	13	40	24.2	15	3,112	27	ton	8

[1] Weighted average = {(distance*weight empty)+(distance*weight full)}/(Roundtrip distance) Total VMT: 6,846

[2] Includes permit-limited throughput

tons/year

Fact Sheet Attachment

	Emission Factors (lb/VMT)		Potential Emissions (tons/yr)	
	PM	**PM_{10}**	**PM**	**PM_{10}**
Bean Receiving	3.66	0.62	8.48	1.44
Meal Loadout	1.03	0.18	0.87	0.15
Pellet Loadout	1.43	0.24	0.29	0.05
Oil Loadout	0.73	0.12	0.02	0.00
Fuel Oil Delivery	1.96	0.33	0.04	0.01
Hexane Delivery	1.92	0.33	0.00	0.00
Flow Agent Delivery	1.87	0.32	0.01	0.00
Total Annual Emissions:			**9.71**	**1.65**

Description of Constants/Variables

E: haul road emissions (lb/VMT)

k, a, b, c, d: dimensionless constants from AP-42 Tables 13.2.1-1 & 13.2.2-2

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 precipitation

P = 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: Pre-Project Facility-Wide Potential to Emit

Archer Daniels Midland Company - Fremont
Facility ID #09169
All Emission Rates in tons/year

Pollutant	Soybean Processing	Grain Dryer	Extraction, Equipment Leaks, Tanks, etc.		Package Boiler	Generator	Cooling Towers (Fugitive)	Haul Roads (Fugitive)	Total Emissions
			Non-Fugitive	Fugitive					
Particulate Matter (PM)	57.54	26.25	-	-	23.37	2.09	0.98	9.71	119.94
Particulate Matter (PM_{10})	23.55	6.56	-	-	23.37	2.09	0.59	1.65	57.82
Sulfur Dioxide (SO_2)	-	0.04	-	-	245.00	1.96	-	-	247.00
Nitrogen Oxides (NO_x)	-	6.88	-	-	50.56	29.75	-	-	87.19
Carbon Monoxide (CO)	-	5.78	-	-	23.45	6.41	-	-	35.63
Volatile Organic Compounds (VOC)	-	0.38	356.69	173.31	1.54	2.43	-	-	534.34
Individual Hazardous Air Pollutants (HAP)									
Acetaldehyde	-	-	-	-	-	5.17E-03	-	-	5.17E-03
Acrolein	-	-	-	-	-	6.24E-03	-	-	6.24E-03
Benzene	-	1.44E-04	-	-	5.86E-04	6.29E-03	-	-	7.02E-03
1,3 - Butadiene	-	-	-	-	-	2.64E-04	-	-	2.64E-04
Dichlorobenzene	-	8.25E-05	-	-	3.35E-04	-	-	-	4.17E-04
Ethylbenzene	-	-	-	-	5.49E-05	-	-	-	5.49E-05
Formaldehyde	-	5.16E-03	-	-	2.85E-02	7.96E-03	-	-	4.16E-02
Hexane	-	1.24E-01	228.28	110.92	5.02E-01	-	-	-	339.83
Hydrochloric Acid	-	-	-	-	2.40E+00	-	-	-	2.40
Lead Compounds	-	3.44E-05	-	-	2.00E-01	-	-	-	2.00E-01
Naphthalene	-	4.19E-05	-	-	9.75E-04	5.72E-04	-	-	1.59E-03
Polycyclic Organic Matter (POM)	-	6.07E-06	-	-	2.85E-03	5.61E-04	-	-	3.41E-03
Toluene	-	2.34E-04	-	-	5.35E-03	2.76E-03	-	-	8.34E-03
1,1,1 Trichloroethane	-	-	-	-	2.04E-04	-	-	-	2.04E-04
Xylene	-	-	-	-	9.40E-05	1.92E-03	-	-	2.02E-03
Arsenic Compounds (ASC)	-	1.38E-05	-	-	5.64E-03	-	-	-	5.65E-03
Beryllium Compounds (BEC)	-	8.25E-07	-	-	3.62E-04	-	-	-	3.63E-04
Cadmium Compounds (CDC)	-	7.56E-05	-	-	4.77E-04	-	-	-	5.52E-04
Chromium Compounds (CRC)	-	9.63E-05	-	-	1.03E-03	-	-	-	1.12E-03
Cobalt Compounds (COC)	-	5.78E-06	-	-	1.09E-03	-	-	-	1.09E-03
Manganese Compounds (MNC)	-	2.61E-05	-	-	3.49E-03	-	-	-	3.51E-03
Mercury Compounds (HGC)	-	1.79E-05	-	-	3.62E-04	-	-	-	3.80E-04
Nickel Compounds (NIC)	-	1.44E-04	-	-	5.86E-04	-	-	-	7.31E-04
Selenium Compounds (SEC)	-	1.65E-06	-	-	1.81E-03	-	-	-	1.81E-03
Total HAPs	-	1.30E-01	228.28	110.92	3.16E+00	3.17E-02	-	-	342.52

Fact Sheet Attachment: Pre-Project Title 129, Chapter 20 Applicability

Archer Daniels Midland Company - Fremont
Facility ID #09169
Title 129, Chapter 20 Applicability

Title 129, Chapter 20, Section 001

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 Dryer	120,000 lbs/hr 60.00 tons/hr	46.29 lbs/hr	0.15 lbs/hr
Existing Cooling Tower	1,150,920 lbs/hr 575.46 tons/hr	70.65 lbs/hr	0.13 lbs/hr
New Cooling Tower	550,440 lbs/hr 275.22 tons/hr	62.03 lbs/hr	0.10 lb/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	$1.026/I^{0.233}$ Where I = total heat input in MMBtu/hr.
10,000 or more	0.12

Process equipment	MMBtu/hr	Allowable PM (lbs/MMBtu)	Unit PM emission rate (lbs/MMBtu)
Boiler	65.00	0.39	0.16
Generator	1.54	0.60	0.31

Fact Sheet Attachment: Potential to Emit - Baseline Actual Emissions

Archer Daniels Midland Company - Fremont
Facility ID #09169

Emission Point ID#	Emission Point Description	Baseline Actual Emissions (tons/year)[1]		Post-Project Potential to Emit (tons/year)		PTE - BAE (tons/year)	
		PM	PM_{10}	PM	PM_{10}	PM	PM_{10}
EP-1E	EU-01: Grain Receiving	2.44	0.54	3.38	0.75	0.94	0.21
EP-2E	EU-02: Conveying and Storage #1	0.32	0.18	0.45	0.25	0.15	0.08
EP-3E	EU-02: Conveying and Storage #2			0.02	0.01		
EP-02	EU-04: Bean Cleaning	1.97	0.5	2.68	0.68	0.71	0.18
EP-01	EU-05: Dehulling System[2]	21.99	8.27	29.89	11.24	7.90	2.97
EP-06	EU-06: Pelleter/Cooler	2.43	1.21	3.35	1.67	0.92	0.46
EP-04	EU-07: Eight Flakers	1.8	1.1	2.45	1.50	0.65	0.40
EP-V2	EU-08: Conveyor to Extraction	4.02	2.23	5.44	3.03	1.42	0.80
EP-10	EU-10: Hull Grinding/Storage	0.12	0.12	0.17	0.17	0.05	0.05
EP-07a	EU-11: DTDC	1.16	0.75	1.57	1.03	0.41	0.28
EP-07b	EU-11: DTDC						
EP-11	EU-15: Truck/Rail Loadout	1.42	0.36	1.93	0.48	0.51	0.12
EP-16	EU-16: Pellet Storage	0.01	0.01	0.02	0.02	0.01	0.01
EP-17F	EU-17: Pellet Loadout	1.39	0.47	1.92	0.65	0.53	0.18
EP-21	EU-21: Bean Heater (New Emission Point)	0	0	3.57	2.14	3.57	2.14
EP-12 (New EP-24)	EU-12 (New EU-24): Meal Conveying/Grinding	1.05	1.05	1.43	1.43	0.38	0.38
EP-13 (New EP-25 through EP-36)	EU-13 (New EU-25): Meal Storage - Webco Tank	0.02	0.01	0.00043	0.00043	0.01	0.01
	EU-13 (New EU-25): Meal Storage - Concrete Tank East			0.00043	0.00043		
	EU-13 (New EU-25): Meal Storage - Concrete Tank West			0.00043	0.00043		
	EU-13 (New EU-25): Hull Pellet Storage - Harvestore Tank East			0.00029	0.00029		
	EU-13 (New EU-25): Meal Storage - Harvestore Tank West			0.00043	0.00043		
	EU-13 (New EU-25): Meal Storage - Street Tank #1			0.00043	0.00043		
	EU-13 (New EU-25): Meal Storage - Street Tank #2			0.00043	0.00043		
	EU-13 (New EU-25): Meal Storage - Street Tank #3			0.00043	0.00043		
	EU-13 (New EU-25): Hull Pellet Storage - Street Tank #4			0.00029	0.00029		
	EU-13 (New EU-25): Meal Storage - Street Tank #5			0.00043	0.00043		
	EU-13 (New EU-25): Meal Storage - Street Tank #6			0.00043	0.00043		
	EU-14: Meal Flow Agent			0.03	0.01		
EP-18	EU-18: Package Boiler (increase in utilization)	-	-	-	-	6.10	6.10
[1]Baseline Actual Emissions is average actual emission rate from 2005 and 2006						24.24	14.37

[2]Dehulling system becoming 3 emission points, emissions not increasing by a factor of 3

NOTE: The emissions from units/emission point not listed in the above table are not expected to increase as a result of the expansion (either due to modification or increased utilization)

Fact Sheet Attachment: Potential to Emit - Baseline Actual Emissions

Archer Daniels Midland Company - Fremont
Facility ID #09169

Emission Point ID#	Emission Point Description	Baseline Actual Emissions (tons/year)[1]	Post-Project Potential to Emit (tons/year)[2]	PTE - BAE (tons/year)
		Sulfur Dioxide (SO_2)		
EP-5	EU-5: Extractor	-	-	0
EP-18	EU-18: Package Boiler (increase in utilization)	-	-	83.92
				83.92
		Nitrogen Oxides (NO_x)		
EP-5	EU-5: Extractor	-	-	0
EP-18	EU-18: Package Boiler (increase in utilization)	-	-	14.51
				14.51
		Carbon Monoxide (CO)		
EP-5	EU-5: Extractor	-	-	0
EP-18	EU-18: Package Boiler (increase in utilization)	-	-	3.22
				3.22
		Volatile Organic Compounds (VOC)		
EP-5	EU-5: Extractor	192.09	331.50	139.41
EP-18	EU-18: Package Boiler (increase in utilization)	-	-	0.21
				139.62

Fact Sheet Attachment: Change in PTE as a result of Expansion

Archer Daniels Midland Company - Fremont
Facility ID #09169
All Emission Rates in tons/year

Pollutant	Pre-Project Potential to Emit (tons/year)	Post-Project Potential to Emit (tons/year)	Change in PTE (tons/year)
Particulate Matter (PM)	119.94	128.04	8.09
Particulate Matter (PM_{10})	57.82	61.15	3.33
Sulfur Oxides (SO_x)	247.00	247.00	0.00
Nitrogen Oxides (NO_x)	87.19	87.19	0.00
Carbon Monoxide (CO)	35.63	35.63	0.00
Volatile Organic Compounds (VOC)	534.34	335.84	-198.50
Individual Hazardous Air Pollutants (HAP)			
Acetaldehyde	5.17E-03	5.17E-03	0.00
Acrolein	6.24E-03	6.24E-03	0.00
Benzene	7.02E-03	7.02E-03	0.00
1,3 - Butadiene	2.64E-04	2.64E-04	0.00
Dichlorobenzene	4.17E-04	4.17E-04	0.00
Ethylbenzene	5.49E-05	5.49E-05	0.00
Formaldehyde	4.16E-02	4.16E-02	0.00
Hexane	339.83	212.78	-127.04
Hydrochloric Acid	2.40	0.00	-2.40
Lead Compounds	0.20	0.00	-0.20
Naphthalene	1.59E-03	1.59E-03	0.00
Polycyclic Organic Matter (POM)	3.41E-03	3.41E-03	0.00
Toluene	8.34E-03	8.34E-03	0.00
1,1,1 Trichloroethane	2.04E-04	2.04E-04	0.00
Xylene	2.02E-03	2.02E-03	0.00
Arsenic Compounds (ASC)	5.65E-03	4.97E-04	-0.01
Beryllium Compounds (BEC)	3.63E-04	3.63E-04	0.00
Cadmium Compounds (CDC)	5.52E-04	4.38E-04	0.00
Chromium Compounds (CRC)	1.12E-03	4.87E-04	0.00
Cobalt Compounds (COC)	1.09E-03	1.09E-03	0.00
Manganese Compounds (MNC)	3.51E-03	7.51E-04	0.00
Mercury Compounds (HGC)	3.80E-04	3.80E-04	0.00
Nickel Compounds (NIC)	7.31E-04	7.31E-04	0.00
Selenium Compounds (SEC)	1.81E-03	1.81E-03	0.00
Total HAPs	342.52	212.87	-129.65

Fact Sheet Attachment: Increase in Boiler Utilization as a result of Expansion

Archer Daniels Midland Company - Fremont
Facility ID #09169

Current Soybean Processing Rate:	1,700	tons/day	New Soybean Processing Rate:	1,955	tons/day (average - based on 713,700 tons/year)
Soybean Density:	60	lbs/bu soybeans @ 13% moisture	Soybean Density:	60	lbs/bu soybeans @ 13% moisture
Current Soybean Processing Rate:	56,667	bushels/day	Current Soybean Processing Rate:	65,178	bushels/day
Amount of Steam needed per Bushel:	17.9	lbs of steam/bu	Amount of Steam needed per Bushel:	17.9	lbs of steam/bu
Boiler Efficiency	85%		Boiler Efficiency	85%	
Based on Steam Chart Information:	1194	Btu/lb of steam	Based on Steam Chart Information:	1194	Btu/lb of steam
Current Boiler Heat Output	50.46	MMBtu/hr output	New Boiler Heat Output	58.04	MMBtu/hr output
Current Boiler Heat Input	59.37	MMBtu/hr input	New Boiler Heat Input	68.29	MMBtu/hr input

Note: The New Boiler Heat Input is greater than the capacity of the boiler (65.0 MMBtu/hr). Source may have to install new boiler in the future which may also need to go through PSD review for SO2 and VOC if the new boiler project would be considered to be aggregated with the emissions increase from the expansion project.

Increase in Utilization = New Boiler Heat Input - Current Boiler Heat Input = 8.92 MMBtu/hr

Combustion Equipment	Capacity (MMBtu/hr)	Maximum #2 Fuel Oil Usage (10^3 gallons/hr)[1]	Maximum #4 Fuel Oil Usage (10^3 gallons/hr)[2]	Maximum #5 Fuel Oil Usage (10^3 gallons/hr)[3]	Maximum #6 Fuel Oil Usage (10^3 gallons/hr)[4]
EU-18: Package Boiler	8.9	0.0637	0.0611	0.0603	0.0594

[1]Capacity (MMBtu/hr) / [140,000 (Btu/gal) / 1,000 (gal/kgal)]
[2]Capacity (MMBtu/hr) / [146,000 (Btu/gal) / 1,000 (gal/kgal)]
[3]Capacity (MMBtu/hr) / [148,000 (Btu/gal) / 1,000 (gal/kgal)]
[4]Capacity (MMBtu/hr) / [150,000 (Btu/gal) / 1,000 (gal/kgal)]

Combustion Equipment	Capacity (MMBtu/hr)	Maximum Natural Gas Usage (MMscf/hr)[1]	Maximum Vegetable Oil Usage (10^3 gallons/hr)[2]	Maximum Biodiesel Usage (10^3 gallons/hr)[3]	Maximum Poultry Grease Usage (10^3 gallons/hr)[4]	Maximum Yellow Grease Usage (10^3 gallons/hr)[5]
EU-18: Package Boiler	8.9	0.009	0.0694	0.0707	0.0715	0.0714

[1]Capacity (MMBtu/hr) / 1,020 (Btu/scf)
[2]Capacity (MMBtu/hr) / [128,554 (Btu/gal) / 1,000 (gal/kgal)]
[3]Capacity (MMBtu/hr) / [126,203 (Btu/gal) / 1,000 (gal/kgal)]
[4]Capacity (MMBtu/hr) / [124,641 (Btu/gal) / 1,000 (gal/kgal)]
[5]Capacity (MMBtu/hr) / [124,833 (Btu/gal) / 1,000 (gal/kgal)]

Fact Sheet Attachment: Increase in Boiler Utilization as a result of Expansion

Archer Daniels Midland Company - Fremont
Facility ID #09169

Fuel Oil Sulfur Limitation (%) 2.0

Emission Factors

Pollutant	#2 Fuel Oil ($lb/10^3$ gal)[1]	#4 Fuel Oil ($lb/10^3$ gal)[1]	#5 Fuel Oil ($lb/10^3$ gal)[1]	#6 Fuel Oil ($lb/10^3$ gal)[1]
Particulate Matter (PM)	3.30	8.50	23.1	11.5
Particulate Matter (PM_{10})	3.30	8.50	23.1	11.5
Sulfur Dioxide (SO_2)	284.00	300.00	314.0	314
Sulfur Trioxide (SO_3)	4.00	4.00	4.0	4.00
Sulfur Oxides (SO_x)	288.00	304.00	318.0	318.00
Sulfur Oxides (SO_x) - (lb/MMBtu)	2.06	2.08	2.15	2.12
Nitrogen Oxides (NO_x)	20.00	20.00	55	55.0
Carbon Monoxide (CO)	5.00	5.00	5	5.0
Volatile Organic Compounds (VOC)	0.20	0.20	0.28	0.28

[1]Emission Factors from AP-42 Tables 1.3-1, 1.3-2, and 1.3-3 (9/98)

Pollutant	Natural Gas ($lb/10^6$ scf)[1]	Vegetable Oil (lb/MMBtu)[2]	Biodiesel ($lb/10^3$ gal)[3]	Poultry Grease (lb/MMBtu)[4]	Yellow Grease (lb/MMBtu)[5]
Particulate Matter (PM)	7.6	0.05	1.75	0.083	0.041
Particulate Matter (PM_{10})	7.6	0.05	1.75	0.083	0.041
Sulfur Oxides (SO_x)[6],[7]	0.6	0	0	0.87	0.02
Nitrogen Oxides (NO_x)[4]	100	0.1776	22	0.164	0.127
Carbon Monoxide (CO)	84	0.0047	2.6	0	0.0224
Volatile Organic Compounds (VOC)	5.5	0.002	0.1	0	0.0015

[1]Emission Factors from AP-42 Tables 1.4-1 and 1.4-2 (7/98)

[2]Stack Test - Quincy 3/2001

[3]Derived from tests conducted by EPA. Source website: www.biodiesel.org/pdf_files/fuelfactsheets/emissions.pdf

[4]Poultry Grease (PM, PM_{10}, NO_x, CO, and VOC) and Yellow Grease (NO_x) Emission Factors from University of Georgia, June 30 2002 Report, "A Demonstration of Fat and Grease as an Industrial Boiler Fuel"

[5]From Render Magazine, "Turn up the heat," April 2001, pages 18-21. Stack test data from boiler burning yellow grease.

[6]Poultry Grease Emission Factor derived from the sulfur content of the poultry grease.

[7]Yellow Grease Emission Factor from an NDEQ compilation of stack test data from boilers burning yellow grease

Fact Sheet Attachment: Increase in Boiler Utilization as a result of Expansion

Archer Daniels Midland Company - Fremont
Facility ID #09169

Potential to Emit due to Increased Utilization

Pollutant	Packaged Boiler	
	(lb/hr)	(tons/year)
Particulate Matter (PM)	1.39	6.10
Particulate Matter (PM_{10})	1.39	6.10
Sulfur Dioxide (SO_2)	19.16	83.92
Nitrogen Oxides (NO_x)	3.31	14.51
Carbon Monoxide (CO)	0.73	3.22
Volatile Organic Compounds (VOC)	0.05	0.21

Potential to Emit HAP due to Increased Utilization

	Emission Factors by Fuel Type			**Potential to Emit HAP**	
	Natural Gas	Diesel Fuel	Diesel Fuel		
Hazardous Air Pollutants (HAP)	($lb/10^6$ scf)[1]	($lb/10^3$ gal)[2]	(lb/MMBtu)[2]	(lb/hr)	(tons/year)
Benzene	2.10E-03	2.14E-04	-	1.84E-05	8.04E-05
Dichlorobenzene	1.20E-03	-	-	1.05E-05	4.59E-05
Ethylbenzene	-	6.36E-05	-	4.05E-06	1.77E-05
Formaldehyde	7.50E-02	3.30E-02	-	2.10E-03	9.21E-03
Hexane	1.80E+00	-	-	1.57E-02	6.89E-02
Lead Compounds	5.00E-04	-	-	4.37E-06	1.91E-05
Naphthalene	6.10E-04	1.13E-03	-	7.20E-05	3.15E-04
Polycyclic Organic Matter (POM)	8.82E-05	3.30E-03	-	2.10E-04	9.21E-04
Toluene	3.40E-03	6.20E-03	-	3.95E-04	1.73E-03
1,1,1 Trichloroethane	-	2.36E-04	-	1.50E-05	6.58E-05
Xylene	-	1.09E-04	-	6.94E-06	3.04E-05
Arsenic Compounds (ASC)	2.00E-04	-	4.00E-06	3.57E-05	1.56E-04
Beryllium Compounds (BEC)	1.20E-05	-	3.00E-06	2.68E-05	1.17E-04
Cadmium Compounds (CDC)	1.10E-03	-	3.00E-06	2.68E-05	1.17E-04
Chromium Compounds (CRC)	1.40E-03	-	3.00E-06	2.68E-05	1.17E-04
Cobalt Compounds (COC)	8.40E-05	-	9.00E-06	8.03E-05	3.52E-04
Manganese Compounds (MNC)	3.80E-04	-	6.00E-06	5.35E-05	2.34E-04
Mercury Compounds (HGC)	2.60E-04	-	3.00E-06	2.68E-05	1.17E-04
Nickel Compounds (NIC)	2.10E-03	-	3.00E-06	2.68E-05	1.17E-04
Selenium Compounds (SEC)	2.40E-05	-	1.50E-05	1.34E-04	5.86E-04
Total HAPs	-	-	-	1.90E-02	8.33E-02

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

[2]Emission Factors from AP-42 Tables 1.3-8, 1.3-9, and 1.3-10 (9/98)