

**CONSTRUCTION PERMIT
OFFICE OF AIR MANAGEMENT**

**A. E. Staley Manufacturing Company
2245 North Sagamore Parkway
Lafayette, IN 47901**

is hereby authorized to modify (increase in the process throughput and air flow rate) the Starch Flash Dryer # 3 system, listed on the Page 2 of this permit.

PERMIT SUPERSEDES THE PERMIT (CP # 157-4160-00003) CONDITIONS RELATED TO FLASH DRYER NO. 3 SYSTEM ISSUED ON APRIL 5, 1995.

This permit is issued to the above mentioned company (herein known as the Permittee) under the provisions of 326 IAC 2-1 and 40 CFR 52.780, with conditions listed on the attached pages.

Construction Permit No.: CP-157-9182-00003	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date:

- a. a natural gas-fired dryer # 3 identified as 43D7 connected with a six (6) product cyclone collectors identified as 43F81 thru 43F86 exhausting to one (1) wet scrubber identified as 43F80 connected to one (1) stack identified as S/V 265;
- b. a starch flash 3 mill identified as 40G88 carrying dry starch connected with a baghouse / receiver identified as 40F88 and a one (1) blower identified as 40C88, exhausting to one (1) stack identified as S/V 266;
- c. three (3) starch products storage / transfer bins identified as 07V20, 07V21 and 07V22, each bin connected with it's own fan identified as 7C24, 7C25 and 7C26, exhausting to their individual stack identified as 76, 77 and 78.

Maximum capacities of these facilities are considered confidential information as requested by A. E. Staley Manufacturing Company.

Construction Conditions

General Construction Conditions

1. That the data and information supplied with the application shall be considered part of this permit. Prior to any proposed change in construction which may increase the allowable emissions, the change must be approved by the Office of Air Management (OAM).
2. That this permit to construct does not relieve the permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

Effective Date of the Permit

3. That pursuant to IC 13-15-5-3, this permit becomes effective upon its issuance.
4. That pursuant to 326 IAC 2-1-9(b)(Revocation of Permits), the Commissioner may revoke this permit if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.
5. That notwithstanding Construction Condition No. 6, all requirements and conditions of this construction permit shall remain in effect unless modified in a manner consistent with procedures established for modifications of construction permits pursuant to 326 IAC 2 (Permit Review Rules).

First Time Operation Permit

6. That this document shall also become a first-time operation permit pursuant to 326 IAC 2-1-4 (Operating Permits) when, prior to start of operation, the following requirements are met:
 - (a) The attached affidavit of construction shall be submitted to the Office of Air Management (OAM), Permit Administration & Development Section, verifying that the facilities were constructed as proposed in the application. The facilities covered in the Construction Permit may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM.
 - (b) If construction is completed in phases; i.e., the entire construction is not done continuously, a separate affidavit must be submitted for each phase of construction. Any permit conditions associated with operation start up dates such as stack testing for New Source Performance Standards (NSPS) shall be applicable to each individual phase.
 - (c) Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section and attach it to this document.
 - (d) The operation permit will be subject to annual operating permit fees pursuant to 326 IAC 2-7-19 (Fees).
 - (e) The Permittee has submitted their Part 70 permit (T157-6009-00003) on May 31, 1996 for the existing source. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.
7. That when the facility is constructed and placed into operation the following operation conditions shall

be met:

Operation Conditions

General Operation Conditions

1. That the data and information supplied in the application shall be considered part of this permit. Prior to any change in the operation which may result in an increase in allowable emissions exceeding those specified in 326 IAC 2-1-1 (Construction and Operating Permit Requirements), the change must be approved by the Office of Air Management (OAM).
2. That the permittee shall comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder.

Preventive Maintenance Plan

3. That pursuant to 326 IAC 1-6-3 (Preventive Maintenance Plans), the Permittee shall prepare and maintain a preventive maintenance plan, including the following information:
 - (a) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices.
 - (b) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions.
 - (c) Identification of the replacement parts which will be maintained in inventory for quick replacement.

The preventive maintenance plan shall be submitted to IDEM, OAM upon request and shall be subject to review and approval.

Transfer of Permit

4. That pursuant to 326 IAC 2-1-6 (Transfer of Permits):
 - (a) In the event that ownership of the dry starch flash dryer No. 3 system is changed, the Permittee shall notify OAM, Permit Branch, within thirty (30) days of the change. Notification shall include the date or proposed date of said change.
 - (b) The written notification shall be sufficient to transfer the permit from the current owner to the new owner.
 - (c) The OAM shall reserve the right to issue a new permit.

Permit Revocation

5. That pursuant to 326 IAC 2-1-9(a)(Revocation of Permits), this permit to construct and operate may be revoked for any of the following causes:
 - (a) Violation of any conditions of this permit.

- (b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this permit.
- (c) Changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections of this permit shall not require revocation of this permit.
- (d) Noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode.
- (e) For any cause which establishes in the judgment of IDEM, the fact that continuance of this permit is not consistent with purposes of 326 IAC 2-1 (Permit Review Rules).

Availability of Permit

6. That pursuant to 326 IAC 2-1-3(l), the Permittee shall maintain the applicable permit on the premises of this source and shall make this permit available for inspection by the IDEM, or other public official having jurisdiction.

Performance Testing

7. That pursuant to 326 IAC 2-1-3 (Construction and Operating Permit Requirements) compliance stack tests shall be performed for the starch flash dryer # 3 stack (S/V 265) for particulate matter emissions as stated in operation condition no.11 within 60 days after achieving maximum production rate of the dryer, but no later than 180 days after initial start-up. These tests shall be performed according to 326 IAC 3-6 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner.
- (a) A test protocol shall be submitted to the OAM, Compliance Data Section, 35 days in advance of the test.
 - (b) The Compliance Data Section shall be notified of the actual test date at least two (2) weeks prior to the date.
 - (c) All test reports must be received by the Compliance Data Section within 45 days of completion of the testing.
 - (d) Whenever the results of the stack test performed exceed the level specified in this permit, appropriate corrective actions shall be implemented within thirty (30) days of receipt of the test results. These actions shall be implemented immediately unless notified by OAM that they are acceptable. The Permittee shall minimize emissions while the corrective actions are being implemented.
 - (e) Whenever the results of the stack test performed exceed the level specified in this permit, a second test to demonstrate compliance shall be performed within 120 days. Failure of the second test to demonstrate compliance may be grounds for immediate revocation of this permit to operate the affected facility.

Malfunction Condition

8. That pursuant to 326 IAC 1-6-2 (Records; Notice of Malfunction):

- (a) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable emission limitations shall be kept and retained for a period of three (3) years and shall be made available to the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM) or appointed representative upon request.
- (b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAM, using the Malfunction Report Forms (2 pages). Notification shall be made by telephone or facsimile, as soon as practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.
- (c) Failure to report a malfunction of any emission control equipment shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).
- (d) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39]

Annual Emission Reporting

9. That pursuant to 326 IAC 2-6 (Emission Reporting), the Permittee must annually submit an emission statement for the source. This statement must be received by July 1 of each year and must comply with the minimum requirements specified in 326 IAC 2-6-4. The annual statement must be submitted to:

Indiana Department of Environmental Management
Technical Support and Modeling Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

The annual emission statement covers the twelve (12) consecutive month time period starting January 1 and ending December 31.

Opacity Limitations

10. That pursuant to 326 IAC 5-1-2 (Visible Emission Limitations) except as provided in 326 IAC 5-1-3 (Temporary Exemptions), the visible emissions shall meet the following:
- (a) visible emissions shall not exceed an average of 40% opacity in 24 consecutive readings.
 - (b) visible emissions shall not exceed 60% opacity for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period.
11. That particulate matter emissions shall be limited pursuant to 326 IAC 6-3 and 2-2:

Facility Description	Stack ID	Emissions after controls
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		lb./hr	tons/year
Flash Dryer Scrubber Exhaust	S/V 265	7.54	33.0
Flash 3 Mill	S/V 266	0.15	0.66
Starch Product Bins # 20, 21,22	S/V 76,77,78	0.14	0.64

Baghouse Operating Condition

12. That the baghouses identified as mill feed receiver (ID. 40F88), 7F20, 7F21 and 7F22 shall be operated at all times when the flash 3 mill and starch product bins identified as 20, 21 and 22 are in operation.
- (a) That visible emission notations of all exhaust to the atmosphere from the baghouses identified as mill feed receiver (ID. 40F88), 7F20, 7F21 and 7F22 shall be performed once per working shift. A trained employee will record whether emissions are normal or abnormal.
- (i) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, 80% of the time, the process is in operation, not counting start up or shut down time.
- (ii) In the case of batch or discontinuous operation, readings shall be taken during that part of the operation specified in the facility's specific condition prescribing visible emissions.
- (iii) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal and abnormal visible emissions for that specific process.
- (iv) The Preventive Maintenance Plan for this facility shall contain troubleshooting contingency and corrective actions for when an abnormal emission is observed
- (b) An inspection shall be performed each calendar quarter of the all the baghouses identified as mill feed receiver (Id. 40F88), 7F20, 7F21 and 7F22. Defective bags shall be replaced. A record shall be kept of the results of the inspection and the number of bags replaced.
- (c) In the event that a bag's failure has been observed:
- (i) The affected compartments will be shut down immediately until the failed units have been replaced.
- (ii) Based upon the findings of the inspection, any additional corrective actions will be devised within eight (8) hours of discovery and will include a timetable for completion.

Centrifugal Scrubber Operating Condition

13. That the centrifugal scrubber shall be operated at all times when the flash dryer No. 3 is in operation.
- (a) An inspection shall be performed each calendar quarter of the centrifugal scrubber. Defective scrubber part(s) shall be replaced. A record shall be kept of the results of the inspection and the number of scrubber part(s) replaced.
 - (b) In the event that a centrifugal scrubber's failure has been observed:
 - (i) The affected process will be shut down immediately until the failed unit has been replaced.
 - (ii) Based upon the findings of the inspection, any additional corrective actions will be devised within eight (8) hours of discovery and will include a timetable for completion.

Visible Emission Notations

14. That visible emission notations of all exhaust to the atmosphere from the centrifugal scrubber shall be performed once per working shift. A trained employee will record whether emissions are normal or abnormal.
- (a) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, 80% of the time, the process is in operation, not counting start up or shut down time.
 - (b) In the case of batch or discontinuous operation, readings shall be taken during that part of the operation specified in the facility's specific condition prescribing visible emissions.
 - (c) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal and abnormal visible emissions for that specific process.
 - (d) The Preventive Maintenance Plan for this facility shall contain troubleshooting contingency and corrective actions for when an abnormal emission is observed

Reporting Requirements

15. That a log of information necessary to document compliance with operation permit condition no/s. 7, 12, 13, and 14 shall be maintained. These records shall be kept for at least the past 36 month period and made available upon request to the Office of Air Management (OAM).

Open Burning

16. The Permittee shall not open burn any material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6. The previous sentence notwithstanding, the Permittee may open burn in accordance with an open burning approval issued by the Commissioner under 326 IAC 4-1-4.1.

Emergency Reduction Plans

17. Pursuant to 326 IAC 1-5-2 (Emergency Reduction Plans; Submission):

- (a) The Permittee shall prepare written emergency reduction plans (ERPs) consistent with safe operating procedures.
- (b) These ERPs shall be submitted for approval to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Management
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

within 180 calendar days from the issuance date of this permit.
- (c) If the ERP is disapproved by IDEM, OAM, the Permittee shall have an additional thirty (30) days to resolve the differences and submit an approvable ERP. If after this time, the Permittee does not submit an approvable ERP, IDEM, OAM, shall supply such a plan.
- (d) These ERPs shall state those actions that will be taken, when each episode level is declared, to reduce or eliminate emissions of the appropriate air pollutants.
- (e) Said ERPs shall also identify the sources of air pollutants, the approximate amount of reduction of the pollutants, and a brief description of the manner in which the reduction will be achieved.
- (f) Upon direct notification by IDEM, OAM, that a specific air pollution episode level is in effect, the Permittee shall immediately put into effect the actions stipulated in the approved ERP for the appropriate level. [326 IAC 1-5-3]

MALFUNCTION REPORT

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR MANAGEMENT
FAX NUMBER - 317 233-5967**

Sec. 1. The requirements of this rule (326 IAC 1-6) shall apply to the owner or operator of any facility which has the potential to emit twenty-five (25) pounds per hour of particulates, one hundred (100) pounds per hour of volatile organic compounds or SO₂, or two thousand (2,000) pounds per hour of any other pollutant; or to the owner or operator of any facility with emission control equipment which suffers a malfunction that causes emissions in excess of the applicable limitation.

326 IAC 1-2-39 “Malfunction” definition

Sec. 39. Any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. (Air Pollution Control Board; 326 IAC 1-2-39; filed Mar 10, 1988, 1:20 p.m. : 11 IR 2373)

***Essential services** are interpreted to mean those operations, such as, the providing of electricity by power plants. Continued operation solely for the economic benefit of the owner or operator shall not be sufficient reason why a facility cannot be shutdown during a control equipment shutdown.

If this item is checked on the front, please explain rationale:

Indiana Department of Environmental Management Office of Air Management

Technical Support Document (TSD) for New Construction and Operation

Source Background and Description

Source Name: A. E. Staley Manufacturing Company
 Source Location: 2245 North Sagamore Parkway, Lafayette, IN 47901
 County: Tippecanoe
 Construction Permit No.: CP-157-9182-00003
 SIC Code: 2046
 Permit Reviewer: Manoj P. Patel

The Office of Air Management (OAM) has reviewed an application from A. E. Staley Manufacturing Company relating to the modification (increase in the confidential throughput, air flow rate) and operation of the starch flash dryer No. 3 system:

- (1) The starch flash dryer No. 3 system will contain:
 - (a) a natural gas-fired dryer # 3 identified as 43D7 connected with a six (6) product cyclone collectors identified as 43F81 thru 43F86 exhausting to one (1) wet scrubber identified as 43F80 connected to one (1) stack identified as S/V 265;
 - (b) a starch flash 3 mill identified as 40G88 carrying dry starch connected with a baghouse / receiver identified as 40F88 and one (1) blower identified as 40C88, exhausting to one (1) stack identified as S/V 266;
 - (c) three (3) starch products storage / transfer bins identified as 07V20, 07V21 and 07V22, each bin connected with it's own fan identified as 7C24, 7C25 and 7C26, exhausting to their individual stack identified as 76, 77 and 78.

The company has requested that the production capacity of each facility be considered confidential. A Construction Permit CP # 157-4160 was issued on April 5, 1995 for this operation. The application is to modify certain processes from their earlier permit. The capacity of the natural gas burner identified as 43B71 in the construction permit application will not be affected by the increases in the process throughput and air flow to flash dryer No. 3 system.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (°F)
S/V 265	Scrubber Exhaust	120	7.75	110,000	105
S/V 266	Mill feed receiver	70	0.67	2,200	120
S/V 76	Product Storage Bin	70	1.08	2,100	80
S/V 77	Product Storage Bin	70	1.08	2,100	80
S/V 78	Product Storage Bin	70	1.08	2,100	80

Enforcement Issue

There is no enforcement issue pending with the source.

Recommendation

The staff recommends to the Commissioner that the construction and operation be approved. This recommendation is based on the following facts and conditions:

Information, unless otherwise stated, used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on November 4, 1997, with additional information received on January 12 and 16, 1998.

This proposed permit will supersede the operation permit condition (CP# 157-4160-00003) related to Flash Dryer No. 3 System issued on April 5, 1995.

Emissions Calculations

See Appendix A (Emissions Calculation Spreadsheets) for detailed calculations (1 page).

Total Potential and Allowable Emissions

Indiana Permit Allowable Emissions Definition (after compliance with applicable rules, based on 8,760 hours of operation per year at rated capacity):

Pollutant	Emissions before the Modification (tons/year)	Emissions after the Modification (tons/year)	Net Emissions (PTE) (tons/year)
Particulate Matter (PM)	27.53	34.30	6.77
Particulate Matter (PM10)	27.53	34.30	6.77
Sulfur Dioxide (SO ₂)	0.0	0.0	0.0
Volatile Organic Compounds (VOC)	0.0	0.0	0.0
Carbon Monoxide (CO)	0.0	0.0	0.0
Nitrogen Oxides (NO _x)	0.0	0.0	0.0
Single Hazardous Air Pollutant (HAP)	0.0	0.0	0.0
Combination of HAPs	0.0	0.0	0.0

- (a) Allowable emissions are determined from the applicability of rule 326 IAC 6-3.
- (b) The potential emissions before control are less than the allowable emissions, therefore, the potential emissions before control are used for the permitting determinations.
- (c) Allowable emissions (as defined in the Indiana Rule) of particulate matter (PM) are greater than 25 tons per year. Therefore, pursuant to 326 IAC 2-1, Sections 1 and 3, a construction permit is required.

County Attainment Status

- (a) Volatile organic compounds (VOC) and oxides of nitrogen (NOx) are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule applicability relating to the ozone standards. Tippecanoe County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.
- (b) Tippecanoe County has been classified as attainment or unclassifiable for all other regulated air pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

Source Status

Existing Source PSD, (emissions after controls, based on 8,760 hours of operation per year at rated capacity and/ or as otherwise limited):

Pollutant	Emissions (ton/yr)
PM	213.66
PM10	213.66
SO ₂	1552.38
VOC	798.60
CO	45.88
NO _x	529.10

- (a) This existing source is a major stationary source because at least one attainment regulated pollutant is emitted at a rate of 250 tons per year.
- (b) These emissions were based on 1995 STEPS submittal to OAM.

Proposed Modification

PTE from the proposed modification (based on 8,760 hours of operation per year at rated capacity including enforceable emission control and production limit, where applicable):

Pollutant	PM (ton/yr)	PM ₁₀ (ton/yr)	SO ₂ (ton/yr)	VOC (ton/yr)	CO (ton/yr)	NO _x (ton/yr)
Emissions before the Modification	27.53	27.53	0.0	0.0	0.0	0.0
Emissions after the Modification	34.30	34.30	0.0	0.0	0.0	0.0
Net Emissions (PTE)	6.77	6.77	0.0	0.0	0.0	0.0
PSD Significant Level	25	15	40	40	100	40

- (a) The new netting with this permit voids and replaces the netting performed in the construction permit related to Starch Dryer No. 3 system (CP-157-4160-00003). The new netting (relaxing the previous increases) does not exceed the significant level for particulate matter (PM) and particulate matter less than 10 microns (PM₁₀). Therefore, 40 CFR 52.21 r4 is not triggered. (See Appendix B of TSD).
- (b) This modification to an existing major stationary source is not major because the emissions increase is less than the PSD significant levels. Furthermore, there are no existing production limits (synthetic minors) on this facility. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.
- (c) The particulate matter (PM) and particulate matter less than 10 microns in aerodynamic diameter (PM₁₀) emissions are the emissions after the control.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This existing source has submitted their Part 70 (T-157-6009-00003) application on May 31, 1996. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.

Federal Rule Applicability

- (a) There are no New Source Performance Standards (326 IAC 12) and 40 CFR Part 60 applicable to this facility.
- (b) There are no National Emissions Standards for Hazardous Air Pollutants (NESHAP) 40 CFR Part 63 applicable to this facility.

State Rule Applicability

326 IAC 2-6 (Emission Reporting)

This facility is subject to 326 IAC 2-6 (Emission Reporting), because the source has potential to emit volatile organic compounds (VOC), oxides of nitrogen (NO_x), particulate matter less than 10 microns in aerodynamic diameter (PM₁₀), and sulfur dioxide (SO₂) into the ambient air levels equal to or greater than one hundred (100) tons per year. Pursuant to this rule, the owner/operator of this facility must annually submit an emission statement of the facility. The annual statement must be received by July 1 of each year and must contain the minimum requirements as specified in 326 IAC 2-6-4.

326 IAC 5-1-2 (Visible Emission Limitations)

Pursuant to 326 IAC 5-1-2 (Visible Emissions Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), visible emissions shall meet the following:

- (a) Visible emissions shall not exceed an average of forty (40%) percent opacity in twenty-four (24) consecutive readings as determined by 326 IAC 5-1-4,
- (b) Visible emissions shall not exceed sixty percent (60%) opacity for more than a cumulative total of fifteen (15) minutes (Sixty (60) readings)in a six (6) hour period.

326 IAC 6-3 (Particulate Emissions Limitations for Process Operations)

The proposed modifications to the existing processes are in compliance, but calculations are not shown due to process weight rate confidentiality. Compliance is shown by the use of the centrifugal scrubber as control equipment.

Air Toxic Emissions

Indiana presently requests applicants to provide information on emissions of the 187 hazardous air pollutants set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as air toxics on the Office of Air Management (OAM) Construction Permit Application Form Y.

- (a) None of these listed air toxics will be emitted from this proposed construction.

Conclusion

The construction of this flash dryer system #3 modification will be subject to the conditions of the attached proposed **Construction Permit No. CP-157-9182-00003**.

Indiana Department of Environmental Management Office of Air Management

Addendum to the Technical Support Document for New Construction and Operation

Source Name: A. E. Staley Manufacturing Company
Source Location: 2245 North Sagamore Parkway, Lafayette, IN 47901
County: Tippecanoe
Construction Permit No.: CP-157-9182-00003
SIC Code: 2046
Permit Reviewer: Manoj P. Patel

On February 16, 1998, the Office of Air Management (OAM) had a notice published in the Journal and Courier, Lafayette, Indiana, stating that A. E. Staley Manufacturing Company had applied for a construction permit to modify (increase in the confidential throughput, air flow rate) and operate the starch flash dryer No. 3 system. The notice also stated that OAM proposed to issue a permit for this installation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed.

On March 18, 1998, Edith E. Babcock and Stanton Babcock, 3508 Mulberry Drive, Lafayette, Indiana 47905 submitted written comment regarding the proposed construction permit. They felt that A. E. Staley Manufacturing Company should not be given approval to put more particulate matter (PM) emissions into air. They commented that the technical support document did not specify the **noise** issue, which is a big problem into the area. She specified further in the comment that she was told that the replacement system would be larger and would make more noise and requested for a public hearing. In response to her comment, the OAM contacted her on the telephone on March 24, 1998 at about 3:40 P.M. EST. It was explained to her that there will not be any replacement of the system but the company applied for the permit to modify the flash dryer no. 3 system. OAM does not have any authority to control noise with the air regulation and hence it was not addressed in the TSD. She was informed that the possible existence of local ordinance which covers the noise. This construction permit has been reviewed under 326 IAC 2-1 and it satisfy the all requirements of the applicable rules. At this point, the OAM believes that the response satisfy the comment and there is no need for the public hearing.

On March 17, 1998, A. E. Staley Manufacturing Company submitted comments on the proposed construction permit. The summary of the comments and corresponding responses is as follows:

Comment 1:

Construction Condition 1 in the proposed permit states that prior to making any changes in the flash dryer # 3 system Staley must seek the approval of IDEM. Staley opposes the restrictive language and regulatory burden imposed by this condition. In the event of the facility plan to make an operational change resulting in an emissions decrease, this condition requires the approval of OAM prior to making such modification even though the change would not trigger permitting requirements under Indiana air regulations. Staley asks that this condition be deleted or at least modified to reflected the language for General Operational Condition No. 1.

Response to Comment 1:

OAM believes that the General Construction Condition No. 1 on page 3 of the proposed permit would be necessary but it's language has been modified to provide the operation flexibility.

Construction Condition 1 has been revised as follows:

General Construction Conditions

1. That the data and information supplied with the application shall be considered part of this permit. Prior to any proposed change in construction which may ~~effect~~ **increase the** allowable emissions, the change must be approved by the Office of Air Management (OAM).

Comment 2:

Operation Condition 7(d) and (e) on page 5 of the proposed permit state that the permittee shall perform a compliance stack test on the particulate emission of the starch flash dryer # 3 within a specified time period. Section (d) and (e) stipulate time periods and actions that must be taken by Staley in the event the stack test performed exceeds the allowable emission rate. Section (e) also specifies consequences that may result from failure to comply with this condition. Inclusion of this language in the operating condition eliminates the enforcement discretion of the agency if such a situation occurs. Section (d) and (e) are not relevant to the performance testing condition and do not belong in a construction permit. Staley request that section (d) and (e) of operating condition no. 7 be deleted from the permit.

Response to Comment 2:

The OAM believes that the thirty day (30) time period provided in section (d) of operation condition 7 is sufficient to take appropriate corrective actions. The time frames set forth in the permit also considered all stages of diagnosis in the facility and it's control device. The OAM believes that the section (e) of the condition provides the reasonable time frames to re-demonstrate compliance with the applicable emission limits. There will be no change in the condition due to this comment.

Comment 3:

Condition no. 11 provides a summary table detailing specific information regarding operating parameters and emission rate for each piece of equipment. The inclusion of emission and control characteristics such as air flow, grain loading, air to cloth ratio and filter area provided in the summary table are unnecessary and could be misinterpreted as permit limits. The content of this table is very relevant to the source, some information should be included in the technical support document not as a condition of the construction permit.

Response to Comment 3:

Operation Condition no. 11 of the proposed permit has been changed as follows:

11. That particulate matter emissions shall be limited pursuant to 326 IAC 6-3 and 2-2:

Facility Description	Stack ID	Airflow rate (acfm)	Grain Loading (gr/acfm)	a/c ratio X:1	Filter Area (ft ²)	Emissions after controls	
						lb./hr	tons/year
Flash Dryer Scrubber Exhaust	S/V 265	440,000	0.008	-	4325	7.54	33.0
Flash 3 Mill	S/V 266	2,200	0.008	5:1 dscfm/ft ²	438	0.15	0.66
Starch Product Bins # 20, 21,22	S/V 76,77,78	2,100	0.008	5:1 dscfm/ft ²	438	0.14	0.64

Comment 4:

Operation Condition No. 12 requires Permittee to monitor the baghouses (40F88, 7F20, 7F21 & 7F22) for pressure drop by installing, calibrating and maintaining instruments approved by the agency. Based on the IDEM's compliance assurance monitoring guidance, the baghouses in the flash dryer # 3 system do not meet the criteria requiring monitoring. As stated in the CAM plan for the Sagamore plant (submitted September 1, 1996), Staley proposes monitoring emissions for these sources, under the Title V permit, by performing daily (40F88) and weekly (7F20, 7F21 & 7F22) visible emissions checks and also by performing semi-annual detailed inspections of the control equipment. Starch is a highly visible substance making malfunctions of baghouses easily noticeable by visual inspections. Staley considers any visible emissions from a bag filter to be an indication of a malfunction regardless of pressure drop. In terms of demonstrating compliance for these types of sources, Staley believes the only acceptable way to determine if there is a problem is through visible emission inspections. Pressure drop correlated to actual emission rates is in no way as reliable as direct visual examination. Regardless if the emission sources are subject to IDEM's CAM rule, Staley strongly opposes the type of monitoring proposed due to the nature of our operation and the flash dryer #3 system starch products. It is common practice in our industry to use baghouses for the pneumatic conveying of a product as well as for pollution control equipment and for this reason, the inlet grain loading of the unit is very high when compared to a baghouse operated solely for pollution control purposes. Baghouse pressure drop is a function of air to cloth ratio, bag material, cake thickness, inlet loading and cleaning frequency plus the characteristics (e.g., "stickiness") of the product being conveyed and controlled. The air to cloth ratio, bag material and cleaning frequency are fixed, however, the dryer operates at different rates and dries different products which will in turn have different effects on the filter cake thickness as starch is conveyed through the system. For this reason, the pressure drop range can vary dramatically depending on the rate of the dryer and the type of starch being dried. Staley strongly believes the pressure drop range specified in condition 12 is not an effective means of monitoring the operational efficiency of a baghouse. It is very possible a baghouse could be operating outside the specified pressure drop range and still be in full compliance with the allowable emission limit.

Response to Comment 4:

Operation Condition 11 of the proposed permit limit the potential to emit (PTE) from the baghouses identified as 40F88, 7F20, 7F21 and 7F22, so as per preventive maintenance plan, monitoring of the baghouses are necessary. IDEM agrees that some bag failures are immediately detected through visible emissions; however, the degree of bag failure may cause slow deterioration of the overall performance of the unit. When record keeping and monitoring practices incorporate baghouse operational data and maintenance activities, the overall performance can be tracked. The operator can utilize this data to evaluate trends in performance, and predict potential problem before emissions standards would be exceeded. OAM agrees with the source's comment to measure visible emissions from the baghouses identified as 40F88, 7F20, 7F21 and 7F22. OAM will make necessary change in the permit condition to incorporate visible emissions as a parametric monitoring in the condition.

Baghouse Operating Condition

12. That the baghouses identified as mill feed receiver (ID. 40F88), 7F20, 7F21 and 7F22 shall be operated at all times when the flash 3 mill and starch product bins identified as 20, 21 and 22 are in operation.

~~(a) The Permittee shall take readings of the total static pressure drop across the baghouses identified as 40F88, 7F20, 7F21 and 7F22, at least once per working shift. Unless operated under conditions for which the Preventive Maintenance Plan specifies otherwise, the pressure drop across the baghouses identified as 40F88, 7F20, 7F21 and~~

~~7F22, shall be maintained within the range of 1 and 4 inches of water. The Preventive Maintenance Plan for these baghouses shall contain troubleshooting contingency and corrective actions for when the pressure reading is outside of this range for any one reading.~~

- (a) That visible emission notations of all exhaust to the atmosphere from the baghouses identified as mill feed receiver (ID. 40F88), 7F20, 7F21 and 7F22 shall be performed once per working shift. A trained employee will record whether emissions are normal or abnormal.
- (i) For processes operated continuously, “normal” means those conditions prevailing, or expected to prevail, 80% of the time, the process is in operation, not counting start up or shut down time.
 - (ii) In the case of batch or discontinuous operation, readings shall be taken during that part of the operation specified in the facility’s specific condition prescribing visible emissions.
 - (iii) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal and abnormal visible emissions for that specific process.
 - (iv) The Preventive Maintenance Plan for this facility shall contain troubleshooting contingency and corrective actions for when an abnormal emission is observed
- ~~(b) The instrument used for determining the pressure shall be subject to approval by IDEM, OAM, and shall be calibrated at least once every six (6) months.~~
- ~~(c) The gauge employed to take the pressure drop across the baghouses identified as 40F88, 7F20, 7F21 and 7F22, shall have a scale such that the expected normal reading shall be no less than 20 percent of full scale and be accurate within $\pm 2\%$ of full scale reading. The instrument shall be quality assured and maintained as specified by the vendor.~~
- ~~(b)~~ (b) An inspection shall be performed each calendar quarter of the all the baghouses identified as mill feed receiver (Id. 40F88), 7F20, 7F21 and 7F22. Defective bags shall be replaced. A record shall be kept of the results of the inspection and the number of bags replaced.
- ~~(c)~~ (c) In the event that a bag’s failure has been observed:
- (i) The affected compartments will be shut down immediately until the failed units have been replaced.
 - (ii) Based upon the findings of the inspection, any additional corrective actions will be devised within eight (8) hours of discovery and will include a timetable for completion.

Comment 5:

Condition No. 13 states that the permittee must monitor the scrubber (43F80) for pressure drop and flow rate by installing, calibrating and maintaining instruments approved by the agency. Also stated in the condition are specific requirements for quarterly APC equipment inspections, the preventive maintenance plan, corrective action plans and allowable operating ranges for pressure drop and flow rate. Based on IDEM's CAM guidance, the flash dryer #3 scrubber does not meet the criteria requiring enhanced monitoring (i.e., equipment having controlled emission greater than 10 lb/hr). Staley does not believe such stringent monitoring requirements should be included in the conditions of the construction permit particularly if the sources do not meet the states CAM plan criteria. As stated in the Sagamore Plant CAM plan, Staley proposes monitoring emissions for this source by performing daily inspections to ensure water flow is being maintained to the scrubber and also performing semi-annual detailed inspections of the unit as a condition of the Title V permit.

There is no requirement in the preventive maintenance plan regulations or any other existing regulations requiring troubleshooting contingency and corrective actions.

Staley maintains that pressure drop is not an appropriate surrogate for monitoring emissions and is, in fact, not an independent or controllable variable affecting the emission rate in the type of wet scrubber used to control the flash dryer #3 emissions. The flash dryer #3 scrubber is a fixed cage Entoleter centrifugal scrubber. As such, pressure drop is a function of airflow rate, which is a function of process rate and conditions. Maximum production rates will result in maximum pressure drops. At lower flow rates, which occur when production or drying rates are lower, the pressure drop will be reduced but so will inlet emission rates. Pressure drop is thus not an indicator of the compliance status of the emission source.

Staley agrees that monitoring scrubbant flow rate provides an effective means of demonstrating compliance. Staley proposes to continuously monitor the system with a flow meter on the scrubber recycle line that would alarm if the scrubbant flow rate fell below a set parameter therefore eliminating the task of physically reading the flow rate during each working shift. In the event a low flow alarm would occur, it is the common practice of Staley to shutdown the dryer until the proper repairs are made and the scrubber can operate properly. Operating condition (13)(a) indicates a minimum scrubbant flow rate of 350 g.p.m. The rate of 350 g.p.m. is the typical flow rate of the scrubber not a minimum flow rate. Staley requests that the minimum flow rate be revised to 300 g.p.m. to more accurately reflect the operation of the scrubber.

Response to Comment 5:

Static pressure drop of the gas stream passing through a particulate wet scrubber is used extensively by both operator and inspectors to evaluate scrubber performance. According to the Contact Power Theory, scrubber efficiency is directly related to the total energy consumption of the system. The power can be expended by the gas stream, the liquid stream, by a mechanical rotor, or by a combination of all three. This theory assumes other variables such as collector size, scrubber design characteristics, liquid to gas ratio, liquid surface tension, and gas velocity are assumed to have no independent effect on scrubber performance. Water flow and pressure drop are acceptable parameters provided the collection system is operated as designed for its intended purpose. The OAM will make the necessary change in the minimum flow of the wet scrubber requested by the applicant.

Condition 13 has been changed as follows:

Centrifugal Scrubber Operating Condition

13. That the centrifugal scrubber shall be operated at all times when the flash dryer No. 3 is in

operation.

- ~~(a)~~ The Permittee shall monitor and record the pressure drop and flow rate of the centrifugal scrubber, at least once per working shift. Unless operated under conditions for which the Preventive Maintenance Plan specifies otherwise, the pressure drop and flow rate across the centrifugal scrubber shall be maintained not less than 4 inches of water and minimum of 350 gallons liquid per minutes. The Preventive Maintenance Plan for the centrifugal scrubber shall contain troubleshooting contingency and corrective actions for when the pressure drop and flow rate readings are outside of the normal range for any one reading.
- ~~(b)~~ The instruments used for determining the pressure drop and flow rate shall be subject to approval by IDEM, OAM, and shall be calibrated at least once every six (6) months.
- ~~(c)~~ The gauge employed to take the pressure drop across the centrifugal scrubber or any part of the facility shall have a scale such that the expected normal reading shall be no less than 20 percent of full scale and be accurate within $\pm 2\%$ of full scale reading. The instrument shall be quality assured and maintained as specified by the vendor.
- ~~(d)~~(a) An inspection shall be performed each calendar quarter of the centrifugal scrubber. Defective scrubber part(s) shall be replaced. A record shall be kept of the results of the inspection and the number of scrubber part(s) replaced.
- ~~(e)~~(b) In the event that a centrifugal scrubber's failure has been observed:
 - (i) The affected process will be shut down immediately until the failed unit has been replaced.
 - (ii) Based upon the findings of the inspection, any additional corrective actions will be devised within eight (8) hours of discovery and will include a timetable for completion.

Comment 6:

Operation Condition No. 14 in the proposed permit states that the permittee shall perform visible emission notations of the scrubber (43F80) exhaust stack at least once per working shift. This notation shall be judged by either "normal" or "abnormal" exhaust from the scrubber. This condition goes on to specify the requirements of a trained employee eligible to perform such notations. Also stated in the condition are specific requirements for the preventive maintenance plan.

The flash dryer #3 scrubber is a wet control device producing a saturated exhaust gas. For this reason, the appearance of the scrubber plume will vary based on atmospheric conditions (i.e., temperature and humidity). A condensed vapor plume makes the evaluation of starch losses difficult because of the similarity in color. Even Indiana air regulations recognize the difficulty of measuring opacity from a condensed water vapor plume such as created by a wet scrubber (326 IAC 5-1-4). Therefore, it becomes a very subjective call for even a trained employee to make as to whether or not the plume is normal or abnormal. This condition also requires a check of the scrubber exhaust to be performed once per working shift, therefore requiring one of the notations to be performed during the night shift. This requirement is obviously an inappropriate method of determining compliance. Both condition nos. 13 and 14 propose monitoring requirements for the flash dryer #3 scrubber. Staley believes this approach is

not only overly aggressive but is also of little additional value in demonstrating proper operation of the scrubber. The subjectivity of the visible emission notations leaves little doubt that the proper and most effective means of monitoring the operation of the scrubber is by means of scrubbant recycle flow rate.

Response to Comment 6:

There is a source-specific correlation between emission levels and visible emissions. The observation of abnormal visible emissions indicates that source may not be operating in a manner that is consistent with the information used to determine compliance with opacity and PM emission limitations. Responding to this abnormal situation can provide information that can be used to provide an assurance that the compliance status has not been affected. To determine compliance with rule 326 IAC 6-3-2 (Process Operation: particulate emission limitations), visible emission notation is necessary. Therefore, this condition will not be deleted.

Comment 7:

Condition No. 3 states that the permittee shall prepare and maintain a preventive maintenance plan pursuant to 326 IAC 1-6-3. The proposed changes to the flash dryer #3 system do not modify any of the air pollution control equipment in such a way that the current preventive maintenance plan, applicable to the entire plant (submitted on September 1, 1996) would require revisions.

Response to Comment 7:

Page 1 of 11 the proposed permit specifies that this permit supersedes (CP# 157-4160-00003) conditions related to flash dryer no. 3 system issued on April 5, 1995. The OAM believes that the requirement to maintain a Preventive Maintenance Plan is applicable to any facility that is required by 326 IAC 2-1-2 (Registration) and 326 IAC 2-1-4 (Operation Permit), to obtain permit. The proposed changes to the flash dryer # 3 system do not modify any of the air pollution control equipment, the source will make necessary changes to reflect the changes of the parameters associated with modification. The OAM believes that reiteration of this condition in the permit is necessary.

Comment 8:

Operation Condition No. 9 of the proposed construction permit states, pursuant to 326 IAC 2-6 (Emission Reporting), that the permittee must annually submit an emission statement for the source. Staley currently complies with the requirements of this rule for all permitted emission sources at the Sagamore facility. Annual emission reporting is applicable to the entire plant not a few particular sources.

Response to Comment 8:

The intent of the operating condition no. 9(Annual Emission Reporting) of the proposed permit is to report the annual emissions from the modification of the flash dryer no. 3 system. The OAM believes that the annual emission reporting is applicable to the entire plant. There will be no change due to this comment.

Comment 9:

Operation Condition No. 16 references open burning regulations pursuant to 326 IAC 4-1-4.1. Staley believes this condition to be irrelevant to this construction permit. Staley has not in the past, nor intends to in the future, to make any attempt to perform open burning of any of the materials associated with the starch flash dryer # 3 system.

Response to Comment 9:

The Office of Air Management (OAM) includes all applicable requirements contained in Title 326 of the Indiana Air Code (IAC) in the Construction Permit. There will be no changes to this condition in the final permit, due to this comment.

Comment 10:

Condition No. 17 states the requirements for an emergency reduction plan pursuant to 326 IAC 1-5-2. Staley believes this condition to be immaterial to this permit due to the fact that it has been a requirement applicable to the plant for many years.

Response to Comment 10:

The Office of Air Management (OAM) includes all applicable requirements contained in Title 326 of the Indiana Air Code (IAC) in the Construction Permit. The OAM believes that the condition will serve as to modify or make necessary change under the facility to accommodate in ERP. There will be no changes to this condition in the final permit, due to this comment.

Comment 11:

The following statements are in regards to the information in the Emission Increases Table, Appendix : B of the TSD. The Dry Starch Reaction System, Permit ID # 157-3233 having PM/PM₁₀ emissions of 3.90 ton/yr is erroneously included in the total emission increases for the Sagamore plant. Permit 157-3233 has been superseded by permit 157-4195 and therefore the particulate emissions of 3.90 ton/yr should not be included in this table.

The Dry Starch Reaction System, Permit ID # 157-4195 (issued August 25, 1995) having PM/PM₁₀ emissions of 6.15 ton/yr is an incorrect total. The total emissions from the dry starch reaction system should be as stated in the amendment (A 157-6170) to CP 157-4195, issued July 26, 1996 (5.95 ton/yr). The total allowable emission rate of the flash dryer #3 system, including the proposed modifications, is 34.30 ton/yr (see the Technical Support Document, page 2 of 5). The total emissions before the proposed modification were 27.53 ton/yr. Therefore the net increase resulting from this proposed modification is 6.77 ton/yr. On the Emissions Increases table, the Flash Dryer #3 System, Permit ID # 157-4160 is shown to have PM/PM₁₀ emissions of 27.80 ton/yr. This number should be changed to reflect the correct emissions from the system prior to modification (27.53 ton/yr). Otherwise, if the emission rates of 27.80 ton/yr and 6.77 ton/yr are totaled, the resulting sum is 34.57 ton/yr which exceeds the allowable emissions in the proposed construction permit (34.30 ton/yr).

Taking into account the corrections mentioned above, the contemporaneous emissions increases for the Sagamore plant is 65.98 ton/yr. The total emission decreases is 87.20 ton/yr. Therefore, the contemporaneous emission netting demonstration results in -21.22 ton/yr PM/PM₁₀ not including the increase from the flash dryer #3 modification (+6.77 ton/yr).

Response to Comment 11:

The OAM has agreed and made the necessary change in the in the Appendix B: Contemporaneous Emission Netting calculation. The new Appendix B is attached with this addendum.

A. E. Staley Manufacturing Company
Lafayette, Indiana
Permit Reviewer: Manoj P. Patel

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