

**NORTH CAROLINA DIVISION OF  
AIR QUALITY**

**Air Permit Review**

Permit Issue Date: **PROPOSED**

**Region:** Mooresville Regional Office  
**County:** Iredell  
**NC Facility ID:** 4900093  
**Inspector's Name:** Jennifer Manning  
**Date of Last Inspection:** 07/11/2006  
**Compliance Code:** C/In Compliance With Procedural Reqr

<b>Facility Data</b>			<b>Permit Applicability (this application only)</b>
<b>Applicant (Facility's Name):</b> Tyson Foods Inc Harmony  <b>Facility Address:</b> Tyson Foods Inc Harmony 501 Sheffield Road Harmony, NC 28634  <b>SIC:</b> 2077 / Animal And Marine Fats And Oil <b>NAICS:</b> 311613 / Rendering and Meat Byproduct Processing  <b>Facility Classification: Before:</b> Title V <b>After:</b> Title V <b>Fee Classification: Before:</b> Title V <b>After:</b> Title V			<b>SIP:</b> <b>NSPS:</b> <b>NESHAP:</b> Subpart DDDDD Avoidance <b>PSD:</b> <b>PSD Avoidance:</b> <b>NC Toxics:</b> <b>112(r):</b> <b>Other:</b> 2D .0614 (CAM Plan)
<b>Contact Data</b>			<b>Application Data</b>
<b>Facility Contact</b>	<b>Authorized Contact</b>	<b>Technical Contact</b>	<b>Application Number:</b> 4900093.06A and 07A <b>Date Received:</b> 01/30/2006 and 01/29/2007 <b>Application Type:</b> Renewal w/Significant Mod. <b>Application Schedule:</b> TV-Renewal <b>Existing Permit Data</b> <b>Existing Permit Number:</b> 03378/T25 <b>Existing Permit Issue Date:</b> 06/07/2007 <b>Existing Permit Expiration Date:</b> 10/31/2006
Daniel Crowe Plant Manager (704) 546-2602 P.O. Box 158 Harmony NC, 28634	Daniel Crowe Plant Manager (704) 546-2602 P.O. Box 158 Harmony NC, 28634	Daniel Wyatt  (336) 838-2171 P O Box 1396 Wilkesboro NC, 28697+0088	
<b>Review Engineer:</b> Kevin Godwin  <b>Review Engineer's Signature:</b> _____ <b>Date:</b> _____		<b>Comments / Recommendations:</b> <b>Issue</b> 03378/T26 <b>Permit Issue Date:</b> <b>Permit Expiration Date:</b>	

**1. Purpose of Application**

Tyson Foods Inc. - Harmony Rendering Plant is currently operating under air permit No. 03378T25 which was issued on June 7, 2007 and is set to expire on October 31, 2011, or on the date that Permit No. 03378T25 is renewed, whichever date is earlier. The renewal application (4900093.06A) was received on January 30, 2006 or at least nine months prior to the expiration date of Permit No. 03378T24. The application is deemed complete for processing. Therefore, Permit No. 03378T25 shall not expire until the renewed permit has been issued or denied.

The Permittee also submitted an application (4900093.07A) on January 29, 2007 for a significant modification to avoid MACT Subpart DDDDD (Industrial Boilers and Process Heaters) by limiting emissions of a single HAP (Hydrogen chloride) to less than 10 tpy and total combined HAP to less than 25 tpy. This request for a significant modification is consolidated with the renewal application.

**2. Facility Description**

This is a poultry by-products rendering plant.

### 3. Application Chronology

January 30, 2006	Renewal application received.
January 23, 2007	CAM plan for coal-fired boiler received.
January 29, 2007	MACT avoidance application received.
January 31, 2007	CAM applicability determination for remaining facility-wide sources equipped with control devices received.

### 4. Permit History

Tyson was issued its initial Title V Permit (**03378T16**) on November 16, 2001.

On November 1, 2002 P/N **03378T17** was issued as a 502(B)(10) change for the addition of two meal dryers (ID Nos. 6 and 7) and modification of two feather meal silos (ID Nos. 01 and 02).

On April 10, 2003 P/N **03378T17** was issued as a 502(B)(10) change for the addition of a venturi scrubber in series with a high intensity scrubber installed on two fat centrifuges (ID Nos. 30A and 30B), fat centrifuge storage tank (ID No. 31), tricanter (ID No. 32), sludge tank and SWECO (ID No. 33), three presses (ID Nos. 34A, 34B, and 34C), condensate junction box (ID No. 35), sludge concentration tank (ID No. 37), stickwater tank (ID No. 36), and seven fat storage tanks (ID Nos. 38A through 38G). *Note: This revision was inadvertently issued as T17 while it should have been T18.*

On July 8, 2003 P/N **03378T19** was issued as an administrative amendment to make corrections in the permit and also to correct the permit revision number.

On November 14, 2003 P/N **03378T20** was issued as a 502(B)(10) change to modify visible emissions observations for the boiler (ID No. 21) from daily to weekly.

On April 14, 2004 P/N **03378T21** was issued as a significant modification [15A NCAC 2Q .0516] for the installation of a No. 2 fuel oil-fired boiler (ID No. ES-39).

On July 2, 2004 P/N **03378T22** was issued as a 502(B)(10) change for the addition of a blood storage tank (ID No. 40) and changes to General Condition H.

On August 6, 2004 P/N **03378T23** was issued as an administrative amendment to correct the description of the control system installed on the blood storage tank (ID No. 40) to include only the packed bed scrubber (ID No. 16C).

On August 27, 2004 P/N **03378T24** was issued as an administrative amendment to remove several redundancies.

On June 7, 2007, P/N **03378T25** was issued as a minor modification [15A NCAC 2Q .0515] for the installation of a flyash silo (ID No. ES-49) equipped with a bagfilter (ID No. CD-49C).

### 5. Facility Compliance Status/Statement of Compliance

This facility was last inspected on April 18, 2007 by Jennifer Manning of the Mooresville Regional Office (MRO). Ms. Manning was accompanied by Ron Slack of the MRO, Robert Fisher of Raleigh Central Office (RCO), and Kevin Godwin of the RCO. Based on observations at the time of inspection, the facility appeared to be operating in compliance with the air permit. The five-year compliance history is detailed in the April 20, 2007 inspection report as follows:

February 14, 2002- A NOV was issued to Tyson Foods, Inc. - Harmony Rendering Plant for failure to maintain the scrubber pH in the permitted range. A civil penalty of \$2,576 was assessed on July 10, 2002.

May 3, 2002- A NOV was issued to Tyson Foods, Inc. - Harmony Rendering Plant for excessive odors on April 23, 2002. Enforcement was not pursued because the facility was working on the odor scrubber electronic controls at the time of the violation.

August 2, 2002- A NOV was issued to Tyson Foods, Inc. - Harmony Rendering Plant for failure to conduct an annual baghouse inspection, failure to record several visible emission observations, failure to record a weekly visible emission observation, and for not reporting these discrepancies in semiannual reports. A settlement of \$11,236 was reached with the company.

August 5, 2003- A NOV was issued to Tyson Foods, Inc. - Harmony Rendering Plant for failure to record a daily visible emission observation, for failure to store one raw material load within 24 hours, and for failure to provide a quarterly report on time. A civil penalty of \$5,273 was assessed on December 10, 2003.

July 7, 2004- A NOV was issued to Tyson Foods, Inc. - Harmony Rendering Plant for odor from wastewater lagoon. Enforcement was not pursued due to the facilities construction plan currently being implemented.

August 30, 2004- A NOV was issued to Tyson Foods, Inc. – Harmony Rendering Plant for two violations of permit conditions (2.2-A.1.f and 2.2-A.1.d) and one odor violation. A civil penalty of \$10,341 was assessed on November 30, 2004.

April 9, 2007- A NOV was issued to Tyson Foods, Inc. – Harmony Rendering Plant for one violation of permit condition 2.1.A.1. The facility exceeded their limit for particulates during a stack test on the coal-fired boiler (ID No. 21). Enforcement is currently not being pursued; however, the facility is required to have another stack test performed on the boiler, and have limits set in their permit to ensure that the limit is not exceeded.

During the inspection, all operating sources and related parameters were observed. Through this, the permit writer gained a better understanding of the processes. A detailed description of each source is included in the compliance inspection report. All monitoring parameters were within the permitted range. According to the inspection report, a file review indicated compliance with all applicable monitoring and recordkeeping requirements.

## 6. Regulatory Review

The facility is currently subject to the following regulations:

Emission Source ID	Applicable Regulations	Title
18, 19, 20, and 21	15A NCAC 2D .0503	Particulates from Fuel Burning Indirect Heat Exchangers (0.2458 lb/million Btu heat input)
	15A NCAC 2D .0516	Sulfur Dioxide Emissions from Combustion Sources (2.3 lb/million Btu heat input)
	15A NCAC 2D .0521	Control of Visible Emissions
	15A NCAC 2Q .0317	PSD Avoidance for Sulfur Dioxide Emissions (less than 368.93 tpy)
	15A NCAC 2D .0614	Compliance Assurance Monitoring (CAM) (ID No. 21 only)
26	15A NCAC 2D .0503	Particulates from Fuel Burning Indirect Heat Exchangers (0.2472 lb/million Btu heat input)
	15A NCAC 2D .0524	NSPS Subpart Dc – fuel sulfur content 0.5% by weight
	15A NCAC 2D .0521	Control of Visible Emissions
	15A NCAC 2Q .0317	PSD Avoidance for Sulfur Dioxide Emissions (less than 40 tpy)
01, 02, 03, 04, 05, and 22	15A NCAC 2D .0515	Particulates from Miscellaneous Industrial Processes
	15A NCAC 2D .0521	Control of Visible Emissions
Rendering Plant Operations	15A NCAC 2D .0515	Particulates from Miscellaneous Industrial Processes
	15A NCAC 2D .0521	Control of Visible Emissions
	15A NCAC 2D .0539	<b>State-only:</b> Odor Control of Feed Ingredient Manufacturing Plants

Emission Source ID	Applicable Regulations	Title
39	15A NCAC 2D .0503	Particulates from Fuel Burning Indirect Heat Exchangers (0.2319 lb/million Btu heat input)
39	15A NCAC 2D .0524	NSPS Subpart Dc – fuel sulfur content 0.5% by weight
	15A NCAC 2D .0521	Control of Visible Emissions
	15A NCAC 2Q .0317	PSD Avoidance for Sulfur Dioxide Emissions (less than 40 tpy)

As requested by the Permittee, a MACT avoidance condition has been included for the coal-fired boiler (ID No. 21) in Section 2.2 of the renewed permit.

## 7. NSPS, NESHAPS/MACT, PSD, 112r, CAM

NSPS – The existing No. 2 fuel oil-fired boilers (ID Nos. 26 and 39) are subject to NSPS Subpart Dc. This regulation limits the sulfur content of any fuel oil burned in the boiler to 0.5% by weight. Also, the Permittee must record the amount of fuel burned during each month. The existing permit includes a condition referencing applicable requirements under Subpart Dc. This condition will remain in the renewed permit.

NESHAPS/MACT – Facility-wide combined HAP emissions are less than 25 tpy. Tyson has requested a limit of less than 10 tpy hydrogen chloride (HCl) emissions from the coal-fired boiler to avoid applicability of MACT Subpart DDDDD (*final compliance date September 13, 2007*). Results of stack testing performed on September 26, 2006 and approved by DAQ Stationary Source Compliance Branch (SSCB) on March 14, 2007 were used to develop an HCl emission factor based on chlorine content of the coal. According to the approval memo from SSCB, the boiler was operating at 122 million Btu/hr or 86% of the maximum firing rate when tested. The chlorine content of the coal was 249 ppm. The HCl emission factor developed is 0.64 lb/ton of coal burned. Using this factor, the amount of coal that can be burned to yield 9.5 tpy of HCl is 29,688 tpy. A MACT avoidance condition limiting coal usage to 29,688 tons/12-months along with appropriate provisions for monitoring, recordkeeping, and reporting is placed in this renewed permit. The applicant will monitor and record chlorine content of each coal shipment, the amount of coal burned per year, the boiler firing rate, and the resulting HCl emissions.

PSD/NAA - Tyson is an existing PSD major stationary source subject to a 250 tpy major source threshold. In the past, three PSD avoidance conditions have been placed in the permit. One condition limits sulfur dioxide emissions from the boilers (ID Nos. 18, 19, 20 and 21) to less than 386.93 tons per consecutive 12-month period. The second limits sulfur dioxide emissions from boiler (ID No. ES-26) to less than 40 tons per consecutive 12-month period. The third limits sulfur dioxide emissions from boiler (ID No. ES-39) to less than 40 tons per consecutive 12-month period. These conditions will remain in the renewed permit. Portions of Iredell County are in non-attainment with the 8-hour ground level ozone standard. Tyson is located in the portion of Iredell County that is in attainment.

112r – According to the renewal application, Tyson does not store any listed chemicals above the 112r applicability thresholds.

CAM – Pursuant to 15A NCAC 2D .0614, a compliance assurance monitoring (CAM) applicability determination is required for this renewal because: (1) the facility is a Title V source with potential emissions that exceed the Title V major source thresholds without considering controls; and (2) there are sources subject to an emission standard that require controls in order to comply with that standard. Documentation provided by the applicant on January 31, 2007 indicates that only the coal-fired boiler is subject to CAM. Since after control PM<sub>10</sub> emissions are calculated to be less than the major source threshold, the coal-fired boiler is considered an ‘other’ pollutant specific emission unit (PSEU) as defined in 64.3(b)(4)(iii). For ‘other’ PSEU, the required monitoring frequency is one data point per 24-hour period.

**Background**

CAM is applicable to the bagfilter and multicyclone when operating the coal-fired boiler. Issuance of Tyson’s Harmony Rendering facility Title V permit renewal requires a CAM plan for the existing bagfilter and multicyclone as outlined below.

- a. Emission unit: coal-fired boiler (ID Nos. ES-21)
- b. Applicable regulations: 15A NCAC 2D .0503 and 2D .0521

Emission limits: 0.2458 pounds per million Btu heat input (2D .0503, particulate matter)  
20 percent opacity (2D .0521, visible emissions)

Control Technology: bagfilter and multicyclone (ID Nos. 21C2, and 21C1)

**Monitoring Approach** The key elements of the monitoring approach are presented in the following table.

	<b>Indicator No. 1</b>	<b>Indicator No. 2</b>	<b>Inspection/Maintenance</b>
Indicator [64.6(c)(1)(i)]	Pressure drop ( $\Delta P$ ) across bagfilter (21C2) and multicyclone (21C1)	Visible emissions	Monthly maintenance and structural integrity inspection. Maintenance and inspection as recommended by the manufacturer, or if there is no manufacturer’s inspection and maintenance inspection and maintenance requirement shall include an annual internal inspection of the bagfilter’s and multicyclone structural integrity and a monthly external visual inspection of the system duct work and the material collection unit for leaks.
Measurement Approach [64.6(c)(1)(ii)]	A pressure drop indicator shall be used to measure $\Delta P$ across the bagfilter (21C2) and multicyclone (21C1)	Visible emissions will be monitored daily using EPA Reference Method 9 for visual observations only.	
Indicator Range [64.6(c)(2)]	An excursion for the bagfilter or multicyclone is defined as any operating condition where the $\Delta P$ is less than 0.5” H <sub>2</sub> O or greater than 8” H <sub>2</sub> O based on a hourly average	An excursion for visible emissions is defined as the presence of any visible emissions above normal.	
Bypass [64.3(a)(2)]	If the $\Delta P$ falls below 0.5” H <sub>2</sub> O, the possibility of bypass is investigated.		
QIP Threshold [64.8]	Hourly average $\Delta P$ readings outside range 3 times within a 6-month period	Visible emissions greater than normal for more than 30 minutes 3 times	

	<b>Indicator No. 1</b>	<b>Indicator No. 2</b>	<b>Inspection/Maintenance</b>
	6-month period	within a 6-month period	
Performance criteria/data representativeness [64.6(c)(1)(iii)]	$\Delta P$ : minimum acceptable accuracy of pressure drop indicator per manufacturers specifications	Measurements are made at the exhaust stack exit	Inspections are made at the control system
Verification of operational status [64.3(b)(1)]	N/A	N/A	
QA/QC Practices and Criteria [64.3(b)(3)]	$\Delta P$ : visual inspections and routine maintenance per manufacturers recommendations  Bagfilter and multicyclone: inspect and maintain per manufacturers recommendations	The observer will be certified in Method 9 procedures	Qualified personnel perform inspection
Monitoring frequency [64.3(b)(4)]	$\Delta P$ measured continuously	A modified Method 9 for visual observations is performed daily	Monthly inspection
Data collection procedures [64.3(b)(4)(iii)]	Recorded manually once per 24-hour period	Visible emission observation is documented by observer	Records are maintained to document monthly inspections and required maintenance.

	<b>Indicator No. 1</b>	<b>Indicator No. 2</b>	<b>Inspection/Maintenance</b>
Recordkeeping and Reporting [64.9]	Excursion reports and corrective actions, boiler shift reports, I&M logs for $\Delta P$ monitoring and recording system, bagfilter and multicyclone inspection and maintenance reports  Semi-annual reports include:  Investigative and corrective action report,  Date, time, and duration of excursion,  Cause of and corrective actions taken to eliminate excursion, and  Measures taken to prevent re-occurrence  A description of the actions taken to implement a QIP (as applicable)	Excursion reports and corrective actions, visible emission observation logs  Semi-annual reports include:  Investigative and corrective action report,  Date, time, and duration of excursion  Cause of and corrective actions taken to eliminate excursion, and  Measures taken to prevent re-occurrence  A description of the actions taken to implement a QIP (as applicable)	

**Justification**

**Background:** The pollutant specific emission source control devices at the facility consist of a multicyclone installed in series with a bagfilter, which are used to control particulate matter emissions.

**Rationale for Selection of Performance Indicators:** Pressure drop and visible emissions were selected as performance indicators because, in combination, they are indicative of good operation and maintenance. When the system is operating properly, there will be very little to no visible emissions. This is a good indicator, because any increase in visible emissions indicates reduced control system performance.

**Rationale for Selection of Indicator Ranges:** The selected  $\Delta P$  range for the bagfilter and multicyclone is 0.5" to 8" H<sub>2</sub>O. These values are based on manufacturer's recommended specifications for proper operation of the control devices. When an excursion occurs, corrective action will be initiated, beginning with an evaluation of the occurrence. All excursions will be documented.

**Quality Improvement Plan (QIP) Threshold:** The selected QIP threshold is three excursions per six-month period. If the QIP threshold is exceeded in a semi-annual period, a QIP will be developed and implemented.

### 8. Facility-wide Toxic Air Pollutants

North Carolina toxic air pollutant (TAP) regulations are not triggered with the significant modification included with this renewal.

### 9. Facility Emissions Review

The following table provides a summary of the 2005 emission inventory:

Pollutant	Actual Emissions (tpy)
CO	74.3
NO <sub>x</sub>	95.3
PM <sub>10</sub>	13.3
SO <sub>2</sub>	313.6
VOC	12.9

### 10. Stipulation Review/Permit Modifications/Changes

New stipulations included in this renewed permit are as follows:

Section 2.1 A.1.b. – Since the coal-fired boiler has tested out of compliance with 2D .0503 in the recent past, a standard condition requiring testing within the first year of permit issuance is included, Throughout permit – Updated “Control of Visible Emissions” [2D .0521] condition to most recent shell version and removed requirement to establish ‘normal’ visible emissions, Section 2.2 B. – Compliance Assurance Monitoring (CAM) plan requirements, and Section 2.2 C. – MACT Subpart DDDDD avoidance condition.

According to the applicant, the following sources have different uses:

- ID No. 33 was the sludge tank and Sweco now it is the Drain H<sub>2</sub>O tank,
- ID No. 36 was the stickwater tank now it is the Wash down tank, and
- ID No. 37 was the sludge concentration tank now it is the Raw Blood tank.

According to the applicant, the following sources have been permanently removed from the facility:

- Two stage force flash evaporator (ID No. 27),
- Stickwater condensation operation (ID No. 29),
- Tricanter (ID No. 32), and
- Three fat storage tanks (ID Nos. 38E, F, and G).

IBEAM Emission Source Module (ESM) was updated on May 29, 2007 to reflect current sources.

### 11. Public Notice/EPA and Affected States Review

To be completed later.

### 12. Conclusions, Comments, Recommendations

All applicable DAQ air requirements should be met. Issuance of the renewed permit is recommended.