

**NORTH CAROLINA DIVISION OF  
AIR QUALITY**

**Air Permit Review**

**Permit Issue Date: 19 May 2008**

**Region:** Fayetteville Regional Office  
**County:** Cumberland  
**NC Facility ID:** 2600013  
**Inspector's Name:** Tien Nguyen  
**Date of Last Inspection:** 02/15/2008  
**Compliance Code:** 3/In Compliance - Inspection

<b>Facility Data</b>			<b>Permit Applicability (this application only)</b>
<b>Applicant (Facility's Name):</b> Carolina By-Products Fayetteville Division  <b>Facility Address:</b> Carolina By-Products Fayetteville Division 1309 Industrial Drive Fayetteville, NC 28301  <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> 2D .0503, .0516, .0521 <b>NSPS:</b> Subpart Dc <b>NESHAP:</b> <b>PSD:</b> <b>PSD Avoidance:</b> Yes, SO <sub>2</sub> and NO <sub>x</sub> <b>NC Toxics:</b> <b>112(r):</b> <b>Other:</b>
<b>Contact Data</b>			<b>Application Data</b>
<b>Facility Contact</b>	<b>Authorized Contact</b>	<b>Technical Contact</b>	<b>Application Number:</b> 2600013.08B <b>Date Received:</b> 04/02/2008 <b>Application Type:</b> Modification <b>Application Schedule:</b> TV-Sign-501(c)(2) <b>Existing Permit Data</b> <b>Existing Permit Number:</b> 00951/T26 <b>Existing Permit Issue Date:</b> 03/28/2008 <b>Existing Permit Expiration Date:</b> 11/30/2008
C. Reed Parks General Manager (910) 483-0473 1309 Industrial Drive Fayetteville NC, 28301	C. Reed Parks General Manager (910) 483-0473 1309 Industrial Drive Fayetteville NC, 28301	Adam Maxwell Environmental Supervisor (910) 483-0473 P O Drawer 169 Fayetteville NC, 28301	
<b>Review Engineer:</b> Kevin Godwin  <b>Review Engineer's Signature:</b> _____ <b>Date:</b> _____		<b>Comments / Recommendations:</b> <b>Issue 00951/T27</b> <b>Permit Issue Date:</b> 05/19/2008 <b>Permit Expiration Date:</b> 11/30/2008	

**I. Introduction and Purpose of Application**

Carolina By-Products (CBP) operates a plant in Fayetteville, North Carolina that renders inedible animal by-products and used restaurant grease to produce protein solids and fats that are sold to feed mills. CBP submitted an application received by DAQ on April 2, 2008 for the installation of a temporary back-up boiler (< 30 million Btu/hr heat input) fired with natural gas, No. 2, No. 4 equivalent, No. 5, No. 6 fuel oils, or saleable fat.

Presently, CBP-Fayetteville operates six boilers to provide process steam. This temporary back-up boiler is being installed in the event one of the existing boilers has to be taken out of service for maintenance, repair or replacement. The back-up boiler is mounted on a flat bed trailer that can be parked outside the boiler house when needed. Exhaust will be vented through the existing boiler emission point.

To avoid the facility having to go through multiple permit revisions for a future back-up boiler, the DAQ decided to permit a 'generic' boiler with a maximum heat input of less than 30 million Btu/hr. The back-up boiler mentioned in this application was constructed prior to June 9<sup>th</sup> 1989 and is not subject to NSPS Subpart Dc, however language referencing the requirements of Subpart Dc is included in this revision in the event a different boiler that is NSPS-affected is used as back-up.

Since this modification involves a significant change in existing monitoring permit terms, it is considered a significant modification under 15A NCAC 2Q .0516. For a significant modification, Rule 15A NCAC 2Q .0501(c)(2) allows an existing facility to receive a construction and operation permit following the procedures of Rule 2Q .0504 and file a complete application within 12-months of commencing operation to modify the permit to comply with the requirements of 15A NCAC 2Q .0500 (Title V). The applicant has requested that the application follow this procedure.

## II. Changes to Existing Title V Air Permit

The following table provides a summary of changes made to existing permit.

Page No.	Condition No.	Changes
Cover	N/A	Amend permit revision numbers and issuance/effective dates.
5	Table of Emission Sources	Included temporary back-up boiler (ID No. ES21) to be operated <b>only</b> when another boiler is taken out of service.
5	2.1 A.	Included temporary back-up boiler (ID No. ES21) in equipment listing.
5	2.1 A. Table	Included PM standard calculated per 15A NCAC 2D .0503.
6	2.1 A. Table	Included PSD avoidance limits for SO <sub>2</sub> and NO <sub>x</sub> from the temporary back-up boiler (ID No. ES21).
7	2.1 A.1.a.	Included PM standard for (ID No. ES21) in existing table under 15A NCAC 2D .0503.
7	2.1 A.1.c. and d.	Included temporary back-up boiler (ID No. ES21).
7	2.1 A.2. a., c., d. and e.	Included temporary back-up boiler (ID No. ES21).
8	2.1 A.3.d.	Included statement “when boilers are firing No. 4 equivalent, No. 5, or No. 6 fuel oil.”
9	2.1 A.3.d. ii.	Updated Visible emission monitoring requirement to most recent shell version.
9	2.1 A.3.e.	Included statement “No monitoring or recordkeeping is required when the boilers are firing No. 2 fuel oil, natural gas, or saleable fat.”
9	2.1 A. 4.	Included requirement for Permittee to notify Regional Supervisor within 15 days after installation of the temporary back-up boiler (ID No. ES21).
11	2.1 A.4.k.	Replaced quarterly reporting requirement with semi-annual reporting.
16	2.1 A.10.	Included PSD avoidance condition for SO <sub>2</sub> and NO <sub>x</sub> emissions from temporary back-up boiler (ID No. ES21).
23	2.1 B.2.d.ii.	Updated Visible emission monitoring requirement to most recent shell version.
24	2.1 C.1.c.ii.	Updated Visible emission monitoring requirement to most recent shell version.
26	2.2 A.1.i.	Replaced quarterly reporting requirement with semi-annual reporting.
30	3	Updated General Conditions to most recent shell version.
38	Part II	Included Part II for temporary back-up boiler.

## III. Statement of Compliance

This facility was last inspected on February 15, 2008 by Mr. Tien Nguyen and Mr. James Moser of the Fayetteville Regional Office (FRO). According to the Regional P&O, the facility appeared to be operating in compliance with all requirements outlined in the current permit. The 5-year compliance history is provided in the P&O as follows:

- 2003 January 6 – NOV for late report.
- 2003 June 18 – NOV for odor violation of 2D .0539.
- 2003 October 17 – NOV for odor violation of 2D .0539.
- 2005 September 6 – NOV issued for odor violation of 2D .0539.

- 2007 March 12 – NOV for late submission of Annual Compliance Certification (ACC).

#### IV. Regulatory Review – Specific Emission Source Limitations

A. 15A NCAC 2D .0503 – “Particulates from Fuel Burning Indirect Heat Exchangers”

This regulation applies to particulate matter emissions from the combustion of a fuel that are discharged from any stack. This regulation sets an emission standard based on the maximum rated heat input as follows:

$$E = 1.090 * Q^{-0.2594} \quad \text{where, } E = \text{allowable emissions (lb/million Btu)}$$
$$Q = \text{maximum heat input (million Btu/hr)}$$

The maximum heat input is the total heat content of all fuels which are burned in the boiler. The sum of maximum heat input of all indirect heat exchangers at a plant site shall be considered the total heat input (Qtot) for determining the allowable emission limit for particulate matter. In this case, Qtot is the sum of all boilers (26.8 + 26.8 + 59.3 + 61.5 + 58.6 + 39.5 + 29.5 = 302) and E calculates to 0.24 lb/million Btu or 7.2 pounds per hour at maximum firing. The worst-case fuel is No. 6 fuel oil. Based on AP-42 factors, the total particulate matter emission rate (including filterable and condensable) is 4.8 lb/hr at maximum firing. Therefore, compliance is indicated. No monitoring or recordkeeping is required to demonstrate compliance with this regulation.

B. 15A NCAC 2D .0516 – “Sulfur Dioxide Emissions from Combustion Sources”

This regulation applies to sulfur dioxide emissions from any source of combustion that is discharged from any stack. The allowable sulfur dioxide emission rate is 2.3 lb/million Btu or 69 lb/hr at maximum firing. The worst-case fuel is No. 6 fuel oil. Based on AP-42 factors, when firing No. 6 fuel oil with a maximum sulfur content of 2.1%, the sulfur dioxide emission rate is 65.9 lb/hr at maximum firing. Therefore, compliance is indicated. To ensure compliance, the Permittee is required to limit the sulfur content of the No. 5 and No. 6 oil to 2.1% and No. 4 oil to 2.0%. The Permittee shall monitor fuel sulfur content using fuel supplier certifications per shipment. Results of supplier certifications shall be recorded quarterly and reported semi-annually.

C. 15A NCAC 2D .0521 – “Control of Visible Emissions”

This regulation applies to all fuel burning sources. Pursuant to 2D .0521(d), for sources manufactured after July 1, 1971, visible emissions shall not be more than 20% opacity when averaged over a six-minute period. Sources subject to a visible emission standard in Rule 2D .0524 shall meet that standard instead of the standard found in 2D .0521. To ensure compliance, when the boiler is firing No. 4, No. 5, or No. 6 fuel oils, the Permittee shall observe on a weekly basis visible emissions for comparison to normal. The Permittee shall record the results of monitoring and submit reports semi-annually.

D. 15A NCAC 2D .0524 – “New Source Performance Standards – Subpart Dc”

As mentioned above the back-up boiler in this application is not subject to Subpart Dc, however a future back-up boiler may be subject, thus the requirements of Subpart Dc are included in this permit revision. In order to determine NSPS applicability, the Permittee is required to submit a written notification of the manufacture date of any temporary back-up boiler (**ID No. ES21**) within 15 days after installation to the Division of Air Quality, Regional Supervisor.

*Sulfur dioxide emissions*

1. Under provisions of 40 CFR 60 Subpart Dc: Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, and as specifically stated in 40 CFR 60.42c(d): "... no owner or operator of an affected facility that combusts oil shall combust oil in the affected facility that contains greater than 0.5 weight percent sulfur."
2. As specifically stated in 40 CFR 60.42c(i): "The ... fuel oil sulfur limits ... under this section apply at all times, including periods of startup, shutdown, and malfunction."
3. To ensure compliance, pursuant to 40 CFR 60.42c(h)(1) the Permittee shall monitor the sulfur content of distillate fuel oil by using fuel oil supplier certification per shipment received. The results of the fuel oil supplier certifications shall be recorded in a log (written or electronic format) on a quarterly basis and include the following information:

- a. the name of the fuel oil supplier;
- b. the maximum sulfur content of the fuel oil received during the quarter;
- c. a statement from the oil supplier that the oil complies with the specification under the definition of distillate oil in 40 CFR 60.41c and
- d. a certified statement signed by the responsible official that the records of fuel oil supplier certification submitted represent all of the fuel oil fired during the period.

The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0524 if the sulfur content of the distillate oil is not monitored and recorded. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0524 if the sulfur content of the fuel oil exceeds 0.5 percent sulfur by weight.

4. In addition to any other record keeping requirements of the Environmental Protection Agency (EPA), the Permittee is required to maintain records as follows:
  - a. the owner or operator of an affected facility shall record and maintain records of the amounts of each fuel combusted during each day; and
  - b. all records required under this section shall be maintained by the owner or operator of an affected facility for a period of two years following the date of such record.

The record of the amounts of fuel combusted during each day shall be made available to an authorized representative of DAQ upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0524 if the amounts of fuel combusted during each day are not recorded.

5. Semi-annually, **the Permittee must submit in writing** to the Regional Supervisor, Division of Air Quality, the sulfur content of the distillate oil combusted in an affected facility.
6. The Permittee shall submit a summary report of monitoring and record keeping activities postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December and July 30 of each calendar year for the preceding six-month period between January and June. All instances of deviations from the requirements of this permit must be clearly identified.

#### V. Regulatory Review – Multiple Emission Source Limitations

- A. 15A NCAC 2Q .0317 for avoidance of 15A NCAC 2D .0530 – “Prevention of Significant Deterioration”  
Under PSD, this is an existing “major” stationary source. The existing permit includes several conditions to avoid PSD review. The back-up boiler has the potential to emit SO<sub>2</sub> and NO<sub>x</sub> greater than the respective PSD significance level (40 tpy). In order to avoid PSD review, a condition is necessary to limit emissions to less than the significance levels. The avoidance condition is as follows:
  1. To comply with this permit and avoid applicability of 15A NCAC 2D .0530 Prevention of Significant Deterioration, as requested by the Permittee, rolling total sulfur dioxide and rolling total nitrogen oxide emissions from the temporary back-up boiler (**ID No. ES21**) shall each be less than 40 tons per consecutive 12-month period.
  2. The Permittee shall monitor and record the quantity of natural gas, No. 2/No. 4/No. 5/No. 6 fuel oil, and saleable fat fired in the affected boiler (**ID No. ES21**) during the previous calendar month. Records of monthly fuel combustion shall be recorded in a log (written or electronic format). The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if monthly fuel combustion is not monitored and recorded as provided above.

#### *Sulfur dioxide emissions:*

3. The Permittee shall monitor the sulfur content of the No. 2, recycled No. 4 equivalent, No. 5, and No. 6 fuel oils by using a fuel oil supplier certification per shipment received. The results of the fuel oil supplier certifications shall be recorded on a quarterly basis and shall include the following information:
  - a. the name of the fuel oil supplier;
  - b. the maximum sulfur content of the fuel oil received during the quarter;
  - c. the method used to determine the maximum sulfur content of the fuel oil; and
  - d. a certified statement signed by the responsible official that the records of fuel oil supplier certification submitted represent all of the No. 2, recycled No. 4 equivalent fuel oil, No. 5 fuel oil, and No. 6 fuel oil fired during the period.

Records of the fuel oil supplier certifications shall be recorded in a log (written or electronic format). The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the sulfur content of the oil is not monitored and recorded.

4. Each month, the Permittee shall calculate and record the total SO<sub>2</sub> emissions from temporary back-up boiler (**ID No. ES21**) for the previous calendar month, according to the following equation:

$$E_{SO_2} = 0.6 * V_{ng} + 157 * S_{FO6} * V_{FO6} + 157 * S_{FO5} * V_{FO5} + 150 * S_{FO4} * V_{FO4} + 142 * S_{FO2} * V_{FO2} + 2.25 * V_{fat}$$

Where;

- V<sub>ng</sub> = Total volume of natural gas fired in the affected boilers during the previous calendar month (in MMscf/mo);
- S<sub>FO6</sub> = Sulfur content of No. 6 fuel oil fired in the affected boilers during the previous calendar month [in % by weight (i.e., for 2% sulfur content, S<sub>FO6</sub> = 2)];
- V<sub>FO6</sub> = Volume of No. 6 fuel oil fired in the affected boilers during the previous calendar month (in 10<sup>3</sup> gal/mo);
- S<sub>FO5</sub> = Sulfur content of No. 5 fuel oil fired in the affected boiler during the previous calendar month [in % by weight (i.e., for 2% sulfur content, S<sub>FO5</sub> = 2)];
- V<sub>FO5</sub> = Volume of No. 5 fuel oil fired in the affected boilers during the previous calendar month (in 10<sup>3</sup> gal/mo);
- S<sub>FO4</sub> = Sulfur content of recycled No. 4 equivalent fuel oil fired in the affected boilers during the previous calendar month [in % by weight (i.e., for 2% sulfur content, S<sub>FO4</sub> = 2)];
- V<sub>FO2</sub> = Total volume of recycled No. 4 equivalent fuel oil fired in the affected boilers during the previous calendar month (in 10<sup>3</sup> gal/mo);
- S<sub>FO2</sub> = Sulfur content of No. 2 fuel oil fired in the affected boilers during the previous calendar month [in % by weight (i.e., for 2% sulfur content, S<sub>FO2</sub> = 2)];
- V<sub>FO2</sub> = Total volume of No. 2 fuel oil fired in the affected boilers during the previous calendar month (in 10<sup>3</sup> gal/mo); and,
- V<sub>fat</sub> = Total volume of saleable fat fired in the affected boilers during the previous calendar month (in 10<sup>3</sup> gal/mo).

*Nitrogen oxides emissions:*

5. Each month the Permittee shall calculate and record NO<sub>x</sub> emissions from the temporary back-up boiler (**ID No. ES21**) for the previous calendar month, according to the following equation:

$$E_{NO_x} = 100 * V_{ng} + 55 * V_{FO6} + 20 * (V_{FO4} + V_{FO2}) + 36.58 * V_{fat}$$

Records of the monthly calculations listed above shall be made in a log (written or electronic format) and retained on file. The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if the records of the monthly calculations, as provided above, are not created and retained.

6. The Permittee shall calculate the 12-month rolling SO<sub>2</sub> and NO<sub>x</sub> emissions for temporary back-up boiler (**ID No. ES21**) once per month for the previous 12 calendar months. Records of the 12-month rolling calculations shall be made in a log (written or electronic format). The Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530 if records are not created and retained or if the 12-month rolling emissions exceed any limit provided in Section 2.1 A.10 a. of this Permit.
7. Within 30 days after each calendar year half, the Permittee shall report the following information to the Regional Supervisor, Division of Air Quality:
- a. Monthly SO<sub>2</sub> and NO<sub>x</sub> emissions from temporary back-up boiler (**ID No. ES21**) for the previous 17 months; and,
  - b. 12-month rolling SO<sub>2</sub> and NO<sub>x</sub> emissions for each of the six 12-month periods over the previous 17 month period.

## VI. Other Regulatory Considerations

- An application fee of \$876.00 is required and was included with the application.
- The application was signed by the responsible official as designated in IBEAM.
- The appropriate number of application copies was received by DAQ on April 2, 2008.
- The application included the Reduction and Recycling Form (A4).
- A Professional Engineer's Seal is not required for this application.
- A zoning consistency determination is required and was included with the application (ref. Kenneth Sykes Jr., Code Enforcement Coordinator, Cumberland County, 3/31/08).

- Public notice is not required for this application since it is Step 1 of a two step process allowed under 15A NCAC 2Q .0501(c)(2). Public notice will be required for the 12-month submittal (Step 2).
- This facility does not store materials at a quantity greater than the 112r applicability threshold.

#### **VII.Recommendations**

This permit application has been reviewed by DAQ – Permits Section to determine compliance with all procedures and requirements. DAQ has determined that this facility appears to be complying or is expected to achieve compliance as specified in the permit with all applicable requirements. A draft was provided to the applicant on May 13, 2008 and the FRO on May 14, 2008. Comments from both parties involved changing reporting requirements from quarterly to semi-annual.

This Permit includes a Part II.

Issue Permit No. 00951T27.