

Prevention of Significant Air Quality Deterioration Review
Koch Cellulose, LLC – Brunswick Cellulose Inc. Pulp and Paper Mill Crystallizer Project,
located in Brunswick, Georgia (Glynn County)

FINAL DETERMINATION
SIP/Title V Permit Application No. 16228
June 2006



State of Georgia
Department of Natural Resources
Environmental Protection Division

Air Protection Branch

Heather M. Abrams – Chief, Air Protection Branch

Stationary Source Permitting Program

James A. Capp
David M. Matos
Casie A. Britton

Planning & Support Program

James Boylan
Peter Courtney

BACKGROUND

On May 20, 2005, Koch Cellulose, LLC – Brunswick Cellulose Inc. Pulp and Paper Mill Crystallizer Project (hereafter “Brunswick Cellulose”) submitted an application for an air quality permit to install a chloride crystallizer at its pulp and paper mill. The facility is located at 1400 West Ninth Street in Brunswick, Glynn County.

The project is for the construction of a chloride crystallizer which will remove chlorides from the ash collected by the chemical recovery furnaces’ electrostatic precipitators. Both the No. 5 and No. 6 recovery furnaces operate electrostatic precipitators (ESPs) to control particulate matter emissions. The ash collected by the ESPs is mixed with black liquor prior to being burned in the furnace. This gives the furnace a second opportunity to recover the chemicals in the collected ash. This ash, however, has a high chloride concentration which results in a build-up of chlorides in the process loop. The removal of the chloride and potassium from the ESP ash will decrease the stickiness of the ash thereby decreasing the amount of ash that collects in the boiler tubes. The decrease in the ash collected in the boiler tubes will, therefore, reduce the number of water washes required on the recovery furnaces. With the decrease in downtime required for recovery furnace water washes, the overall mill uptime will increase. This project also allows for increased utilization of the chemical recovery operations resulting from the recovery of filtrate from the mill’s oxygen delignification system.

On March 1, 2006, the Division issued a Preliminary Determination stating that the modifications described in Application No. 16228 should be approved. The Preliminary Determination contained a draft Air Quality Permit for the construction and operation of the modified equipment.

The Division requested that Brunswick Cellulose place a public notice in a newspaper of general circulation in the area of the existing facility notifying the public of the proposed construction and providing the opportunity for written public comment. Such public notice was placed in *The Brunswick News* (legal organ for Glynn County) on March 13, 2006. The public comment period expired on April 12, 2006.

During the comment period, comments were received from the Federal Land Manager (U.S. Fish and Wildlife Service). There were no comments received from the U.S. EPA Region IV, the facility, or the general public.

A copy of the final permit is included in Appendix A. A copy of written comments received during the public comment period is provided in Appendix B.

U.S. EPA REGION 4 COMMENTS

No comments were received from U.S. EPA Region 4.

KOCH CELLULOSE, LLC – BRUNSWICK CELLULOSE INC. PULP AND PAPER MILL COMMENTS

No comments were received from Koch Cellulose, LLC – Brunswick Cellulose Inc. Pulp and Paper Mill.

OTHER COMMENTS

Comments were received from Federal Land Manager (U.S. Fish and Wildlife Service). No additional comments were received from the general public.

Prior to the submission of Application No. 16228, Brunswick Cellulose (via MACTEC) discussed the modeling to be completed (VISCREEN and CalPuff) with the U.S. Fish and Wildlife Service (FWS). The initial modeling (VISCREEN, CalPuff, and PLUVUE II), included in Application No. 16228, dated May 20, 2005, was reviewed by the Division.

Comments were received from Meredith Bond, Deputy Director, FWS, by a letter, dated and received via fax on April 12, 2006, and received via postal mail on April 20, 2006. Meredith Bond and Catherine Collins discussed these comments in a phone conversation (April 12, 2006) with Casie Britton and Peter Courtney, GA EPD, prior to faxing them in written form. The comments from the FWS and responses from Brunswick Cellulose (via MACTEC) are typed, verbatim, below.

Comment 1: Inconsistent Emission Rates Between Modeling and Draft Permit

The emission rates presented in the State's Preliminary Determination document appear to be inconsistent with the emissions utilized in the air quality modeling analyses submitted by Brunswick. There are two different modeling analyses performed – the VISCREEN model was used to assess impacts to visibility at Wolf Island, because it is within 50km of the facility, and the CALPUFF model was used for visibility impacts at Okefenokee. The model input data for each analysis shows different emission rates, and neither is consistent with the information listed in the preliminary determination. The emission rates used in each instance for particulate matter less than 10 micrometers in diameter (PM-10), sulfur dioxide (SO₂), and nitrogen oxides (NO_x), in tons per year (tpy) are listed in the following table:

	PM-10 (tpy)	SO ₂ (tpy)	NO _x (tpy)
Preliminary Determination/Draft Permit	135	39	152
VISCREEN inputs for Wolf Island analysis	55	2*	112
CALPUFF inputs for Okefenokee analysis	35	0	112

* The VISCREEN analysis included 2 tons per year primary sulfate (SO₄). In a conservative analysis, it is assumed that all the SO₂ converts quickly in the atmosphere to form sulfates.

In our discussion with your staff, we learned that the Preliminary Determination/Draft Permit emission figures included both the anticipated emission increases from this crystallizer project as well as emission from another PSD project within the “contemporaneous period” of the past five years. Since the earlier project was evaluated under PSD in its own accord, this action would only need to address the net emissions increase happening subsequent to that action. FWS requests that Georgia clarify the net emission subject to PSD review in this current action, and also ensure that the modeling analyses use the proper emission rates. As an additional note, modeling analyses for assessing impacts to visibility need to include emissions from all visibility affecting pollutants affected by the permit action (visibility affecting pollutants are PM-10, SO₂, NO_x, and sulfuric acid mist, as appropriate to the particular situation and model).

Brunswick Cellulose (via MACTEC) Response:

For the permit application MACTEC completed a VISCREEN analysis for the Wolf Island Class I area because it is located within 50 km of the facility and a CALPUFF modeling analysis for the Okefenokee Class I area because it is located greater than 50 km from the site. The FWS had three comments concerning the modeling evaluation. The first related to what they considered to be an inconsistency in the modeled emission rates that were evaluated for Wolf Island in the VISCREEN analysis and those that were used in the CALPUFF model runs. This is incorrect. We used the same emission rates in both runs. We modeled 55 TPY and 112 TPY of emissions for PM and NO_x respectively in both runs. The FWS indicated that a particulate emission rate of 35 tpy was used in the CALPUFF run but we believe that this comment is in error. The CALPUFF model was reviewed and as shown in Table 1 (below) the total PM emission rates in grams/second (g/s) when converted to tons/yr (TPY) is 55 TPY.

The second comment deals with how the 55 TPY and the 112 TPY PM and NO_x emission rates were derived. It is their comment that it would appear looking at Table 3-1 of the report that the net change in emissions for the project was not modeled because the bottom line of that table lists different emission rates. We agree that Table 3-1 is confusing and it was formatted in this manner only to address how the PSD rules require the emission to be listed as “significant net increase” versus “contemporaneous changes”.

Source	Source Code	PM Emission Rate
No. 4 Power Boiler	U700	0.06 g/s
No. 5 Lime Kiln	L537	0.42 g/s
No. 1 Lime Slaker	L514	0.0033 g/s
No. 2 Lime Slaker	L511	0.0033 g/s
No. 5 Recovery Boiler – North	R401	0.16 g/s
No. 5 Recovery Boiler – South	R402	0.16 g/s
No. 6 Recovery Boiler	R407	0.31 g/s
No. 5 Smelt Dissolving Tank	R403	0.33 g/s
No. 6 Smelt Dissolving Tank	R408	0.113 g/s
Primary Incinerator	R488	0.033 g/s
	Total	1.59 g/s
	Total	55 tpy

When considered by itself, the crystallizer project exceeded the PSD trigger levels for PM₁₀, NO_x, SO₂, and CO. Rather than proceed with a PSD review for SO₂ emissions, the project avoided PSD for SO₂ by taking a new SO₂ emission limit for the No. 4 power boiler. This new limit will generate sufficient SO₂ reductions to keep the crystallizer project from triggering PSD for SO₂. The SO₂ reduction was calculated by subtracting the future potential emission for the No. 4 power boiler from the actual emissions from the unit for the last two years. This is further explained on page 3-6 of the permit application.

The project with the imposed limit on No. 4 Power Boiler did exceed PSD significance levels for PM₁₀, NO_x, and CO and thus we were required to proceed to a netting calculation and list all of the other contemporaneous projects in the PSD applicability analysis that affected these pollutants. The contemporaneous period included a project that the Brunswick mill completed on the No. 4 power boiler under a separate PSD permit. This project's emission increases for PM₁₀, SO₂, and NO_x were 80 tpy, 39 tpy, and 39.7 tpy respectively. In that No. 4 Power Boiler PSD permit we included a Class I assessment that was acceptable to the FWS. FWS is in agreement that if emission increases had previously been evaluated then they need not be included in this modeling. The only other contemporaneous projects included only very minor increases in emission (0.06 tpy of PM₁₀, 1.13 tpy of SO₂). Therefore to avoid double counting emissions from the previous modeling analysis, the modeling for the crystallizer project was based just on the increase from the crystallizer project taking into account the new permit limit on the No. 4 Power Boiler which reduces SO₂ by 1 TPY resulting in a net increase in emissions of 55 tpy, 0 tpy, and 112 tpy for PM₁₀, SO₂, and NO_x respectively. Based on this explanation, MACTEC has not changed the modeled emission rates for additional runs requested by FWS.

EPD Response:

An updated emissions table is included below to reflect only the corrected potential emissions. The potential emissions for PM₁₀ and PM have been changed. The updated potential emissions are only the emissions associated with the crystallizer project as all other contemporaneous increases or decreases have been evaluated in another PSD project.

Table 1: PSD Applicability Table

Pollutant	Potential Emission Increase (tpy)	PSD Significant Emission Rate (tpy)	Subject to PSD Review
PM ₁₀	55*	15	Yes
PM	55*	25	Yes
SO ₂	39	40	No
NO _x	152	40	Yes
CO	443	100	Yes
VOC	33	40	No
TRS	-99	10	No
H ₂ S	7	10	No
Pb	1.65 x 10 ⁻²	0.60	No
H ₂ SO ₄ Mist	2	7	No
Be	1.88 x 10 ⁻⁴	4 x 10 ⁻⁴	No
Hg	3.22 x 10 ⁻⁴	0.10	No
Vinyl Chloride	4.92 x 10 ⁻³	1	No
Fluorides	9.74 x 10 ⁻³	3	No

* The potential emissions have been changed to reflect only the emissions associated with the crystallizer project.

The remainder of the comments address visibility modeling and request additional modeling be performed. The additional modeling requested is outside the scope of this permitting action and is being addressed in the upcoming permitting action.

No changes were made to the Permit as a result of any comments made by the Federal Land Manager.

EPD CHANGES

EPD corrected a typographical error that was found in the draft permit. Condition No. 6.1.7.a.iii.(A) was incorrectly numbered and has been changed to Condition No. 6.1.7.a.iii.(F) so as to not replace an existing condition.

APPENDIX A

AIR QUALITY PERMIT

2631-127-0003-V-04-5

APPENDIX B

**WRITTEN COMMENTS
RECEIVED DURING
COMMENT PERIOD**