

**SIP CONSTRUCTION & OPERATING PERMIT AND TITLE V 502(b)10 CHANGE APPLICATION REVIEW**

Facility Name: **SNF – Riceboro**

City: Riceboro

County: Liberty County

AIRS #: 04-13-179-00011

Application #: 17920

Date SIP Application Received: January 11, 2008

Date Title V Application Received: January 11, 2008

Permit No: 2899-179-0011-V-01-6

<b>Program</b>	<b>Review Engineers</b>	<b>Review Managers</b>
<b>SSPP</b>	Heather Cottrell	David Matos
<b>SSCP</b>	Lewis Hays	Douglas Waldron
<b>ISMP</b>	Marcus Cureton	Richard Taylor
<b>TOXICS</b>	Sherry Waldron	Karen Hays

**Introduction**

This narrative is being provided to assist the reader in understanding the content of the referenced SIP permit to construct and operate and Section 502(b)(10) change to the Part 70 source. Complex issues and unusual items are explained in simpler terms and/or greater detail than is sometimes possible in the actual permit. This permit is being issued pursuant to: (1) Sections 391-3-1-.03(1), 391-3-1-.03(2), and 391-3-1-.03(10). of the Georgia Rules for Air Quality Control, (2) Part 70 of Chapter I of Title 40 of the Code of Federal Regulations, and (3) Title V of the Clean Air Act Amendments of 1990. The following narrative is designed to accompany the permit and is presented in the same general order as the permit amendment. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

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**I. Facility Description**

A. Existing Permits

Table 1 below lists the current Title V permit, all administrative amendments and minor and significant modifications to that permit, and any 502(b)(10) changes. Comments are listed in Table 2 below.

**Table 1: Current Title V Permit and Amendments**

Permit/Amendment Number	Date of Issuance	Comments	
		Yes	No
2899-179-001-V-01-0	March 19, 2003	X	
2899-179-001-V-01-1	February 24, 2004	X	
2899-179-001-V-01-2	July 7, 2004	X	
2899-179-001-V-01-3	December 16, 2004	X	
2899-179-001-V-01-4	Drafted June 13, 2006	X	
2899-179-001-V-01-5	Pending	X	

**Table 2: Comments on Specific Permits**

Permit Number	Comments
2899-179-001-V-01-0	Initial Title V permit.
2899-179-001-V-01-1	502(b)(10) Change for reconstruction of the Powder Plant Line P3.
2899-179-001-V-01-2	The addition of Dispersant Product Lines DP01 – DP04 with scrubber SE3A/B and Tanks T624 – T631; the change in control device for Emulsion Lines EM51 – EM62; the addition of Tank TAC9; the addition of Emulsion Line EM31; the update of the permit with respect to 40 CFR 60 Subpart Kb and 40 CFR 63 Subpart G applicability; the change in contents of Tanks BT1 and BT2; the increase in the allowable emission rate of acrylic acid from Emulsion Plant Stack (SE19); the update in methanol test methods for Boiler B2; the addition of general applicability statements for 40 CFR 63 Subpart FFFF; the update of template conditions 4.1.1, 4.1.2, and 8.14.1; and the update of the insignificant activity lists in Appendix B of the permit.
2899-179-001-V-01-3	The installation of Powder Plant Lines P10 and P11 with associated dryers and baghouses. The amendment was also for the change in monitoring parameters for the Chloromethylation Plant venturi/quench system, the change in monitoring frequency for the Mannich/NMA Scrubbers, and the addition of alternative fuel monitoring requirements for Boilers B7CH, B8CH, B9CH, B10C, and B11C.
2899-179-001-V-01-4	See the description for Application No. TV-15963 below. This amendment will be revoked by the fifth amendment.
2899-179-001-V-01-5	The modifications proposed in Application No. 15963 including addition of production flexibility for the permitted Dispersant Product Line equipment, installation of three new emulsion/solution polymer manufacturing lines, installation of three new packed tower scrubbers, installation of associated storage tanks, the inclusion of past off-permit changes, and the change in source codes for existing equipment. The permit is also for the modification proposed in Application No. 17096 including the addition of dehumidified air dryers for Powder Plant Lines P1, P2, P4, P8, and P9; the addition of flash dryer sections on Powder Plant Lines P5, P6, and P7 to increase production; the installation of miscellaneous Powder Plant baghouses; the change in the methyl chloride rail car fittings; the change in storage for existing tanks; the removal of Carbon Beds CI1 through CI4; and the inclusion of off-permit changes.

**B. Regulatory Status**

**1. PSD/NSR/RACT**

The facility is considered a major source under PSD. The facility has taken the following limits to avoid PSD review:

- a. Production of IPA-dispersants in Liquid Product Lines LQ01 through LQ12 is limited to no more than 262,800 tons per twelve consecutive month period.
- b. SO<sub>2</sub> emissions from Liquid Product Lines LQ01 through LQ12 are limited to less than 40 tons per twelve consecutive month period.

**2. Title V Major Source Status by Pollutant**

**Table 3: Title V Major Source Status**

Pollutant	Is the Pollutant Emitted?	If emitted, what is the facility's Title V status for the Pollutant?		
		Major Source Status	Major Source Requesting SM Status	Non-Major Source Status
PM	✓			✓
PM <sub>10</sub>	✓			✓
SO <sub>2</sub>	✓			✓
VOC	✓	✓		
NO <sub>x</sub>	✓	✓		
CO	✓	✓		
TRS				
H <sub>2</sub> S	✓			
Individual HAP	✓	✓		
Total HAPs	✓	✓		

**II. Proposed Modification**

**A. Description of Modification**

The application is for the construction and operation of a thermal oxidizer to control emissions from the existing Flocryl Acrylates Batch Plant. The thermal oxidizer is necessary to meet the requirements of the Miscellaneous Organic NESHAP (MON), which has a compliance date of May 10, 2008.

The MON Rule is a comprehensive regulation that applies to all equipment in a miscellaneous organic chemical manufacturing process unit (MCPU) used to handle or manufacture certain organic compounds. The goal of the rule is to reduce HAP emissions from batch process vents and processes that have not been subject to any previous NESHAP. The MCPU can include reactors (and similar process vessels), storage tanks, transfer racks, wastewater handling systems, and components such as pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, and instrumentation systems. The SNF – Riceboro facility operates a number of processes that must be evaluated for applicability to the MON. These processes include those located in the Chemtall portion of the plant, the Flocryl Acrylates Batch Plant, the Flocryl Acrylates Continuous Plant, and the Flocryl Acrylamide Plant. This permitting action will only address the new thermal oxidizer as it applies to the Flocryl Acrylates Batch Plant. The MON provisions for the remainder of the plant will be included in the Title V renewal permit.

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The thermal oxidizer will control the Flocryl Acrylate Batch Plant reactors (Source Code R1 through R4), the product distillation units (Source Code D1 through D4), the methanol recovery units (Source Codes M1 and M2), the shutdown tanks (Source Code T208 and T406), the process tanks (Source Codes T300, T303, T304, T306, T620, and T621) and the methanol co-product tanks (Source Code T220 and T221). The thermal oxidizer will be equipped with a natural gas burner with a capacity of 4.4 MMBtu/hr. It is expected that the outlet temperature of the oxidizer will be in the range of 1450 to 1600 degrees Fahrenheit and the control efficiency will exceed 99%.

Source Codes R1 through R4, D1 through D4, M1, M2, T208, T406, T300, T303, T304, T306, T620, and T621 are classified as Group 1 Batch Process Vents under the MON Rule. Therefore, the facility must operate a control device that reduces organic HAP emissions from the vents by a least 98% or to a concentration of 20 ppm or less as TOC or organic HAP. Storage tanks T220 and T221 are Group 1 Storage Tanks under the MON Rule. The storage tanks must be equipped with a control device that reduces organic HAP emissions by at least 98% or to a concentration of 20 ppm or less as TOC or organic HAP (according to the MON hierarchy for combined streams). As indicated above, the thermal oxidizer has been designed to exceed the percent destruction efficiency requirements.

**B. Emissions Change**

The emission reductions below have been calculated based on the input rate of pollutants from the process to the thermal oxidizer and a destruction efficiency of 98%. It is not expected that compliance with the 20 ppm control option would significantly impact the calculations. As noted previously, the manufacturer of the thermal oxidizer has indicated that the unit has been designed to reduce emissions by at least 99%. Regardless of the compliance option, the use of the oxidizer will result in a significant reduction in VOC and HAP emissions. The data below also includes the minor emissions of PM/PM<sub>10</sub>, SO<sub>2</sub>, VOC, NO<sub>x</sub>, and CO due to the combustion of natural gas in the thermal oxidizer burner.

**Table 4: Emissions Change Due to Modification**

<b>Pollutant</b>	<b>Is the Pollutant Emitted?</b>	<b>Net Actual Emissions Increase (Decrease) (tpy)</b>	<b>Net Potential Emissions Increase (Decrease) (tpy)</b>
PM	Yes	0.14	0.14
PM <sub>10</sub>	Yes	0.14	0.14
SO <sub>2</sub>	Yes	0.011	0.011
VOC	Yes	(138.6)	(138.6)
NO <sub>x</sub>	Yes	1.89	1.89
CO	Yes	1.59	1.59
TRS	No	N/a	N/a
H <sub>2</sub> S	No	N/a	N/a
Individual HAP	Yes	(60.1)	(60.1)
Total HAPs	Yes	(80.7 - 138.7)*	(138.7)

\*Total actual HAP reduction will depend on which raw materials are used in each production run.

**C. Title I Modification**

The project is not a modification under PSD/NSR, NSPS, or NESHAP.

**III. Facility Wide Requirements**

- A. Emission and Operating Caps: There are no new or modified facility wide emission or operating caps associated with this modification.
- B. Applicable Rules and Regulations: There are no new or modified facility wide rules or regulations associated with this modification.
- C. Compliance Status: Not Applicable.
- D. Operational Flexibility: The facility has not made any operational flexibility requests for this modification.
- E. Permit Conditions: There are no new or modified facility wide permit conditions associated with this modification.

**IV. Regulated Equipment Requirements**

- A. Brief Process Description

The Flocryl facility includes a cationic monomer manufacturing facility that produces water treatment intermediate chemicals, specifically dimethylaminoethylacrylate (ADAM) and dimethylaminoethylmethacrylate (MADAM). The batch facility has four batch processing trains (Trains 1, 2, 3, and 4) and two batch methanol recovery areas.

Raw materials are received by rail or by truck and are held in storage tanks. Major raw materials include methyl acrylate (MA), methyl methacrylate (MMA), dimethylaminoethanol (DMOH), and hexane. The reaction step (Source Codes R1 through R4) is a batch transesterification with a reactant ester (MA or MMA) reacting with an alcohol (DMOH) to produce the product ester (ADAM or MADAM) plus a co-product alcohol (methanol).

To begin the batch process the raw materials are reacted and the product is pumped to a distillation step. The distillation step consists of a kettle reboiler, distillation column, and other associated equipment. The product is distilled into various fractions and the fractions are either returned for additional processing or sent to storage. Bottoms from the product distillation step are pumped to the recycle catalyst process. The material remaining after product recovery is pumped out for off-site disposal. The methanol stream is drawn off from the distillation step described above and is sent to one of two batch reactor / distillation systems. The methanol can be sold or used as boiler fuel.

The thermal oxidizer will control emissions from the reactors, distillation steps, and several tanks associated with the process.

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**B. Equipment List for the New or Modified Process(es)**

Emission Units		Specific Limitations/Requirements		Air Pollution Control Devices	
ID No.	Description	Applicable Requirements/Standards	Corresponding Permit Conditions	ID No.	Description
<b>FLOCRYL PLANT (CATIONIC MONOMER PLANT)</b>					
<b>NCFB</b>	<b>Batch Process Operations</b>				
R1 R2 R3 R4	Trains 1 through 4 - Batch Reactor Process	40 CFR 63 Subpart FFFF 391-3-1-02(2)(a)	3.3.43 through 3.3.45, 3.3.47, 3.3.48, 4.2.19, 5.2.14, 6.1.8, 6.2.8, and 6.2.34 through 6.2.37*	TO01	Thermal Oxidizer
D1 D2 D3 D4	Trains 1 through 4 – Product Distillation Process	40 CFR 63 Subpart FFFF 391-3-1-02(2)(a)	3.3.43 through 3.3.45, 3.3.47, 3.3.48, 4.2.19, 5.2.14, 6.1.8, 6.2.8, and 6.2.34 through 6.2.37*	TO01	Thermal Oxidizer
M1 M2	No. 1 and 2 Methanol Purification Processes	40 CFR 63 Subpart FFFF 391-3-1-02(2)(a)	3.3.43 through 3.3.45, 3.3.47, 3.3.48, 4.2.19, 5.2.14, 6.1.8, 6.2.8, and 6.2.34 through 6.2.37*	TO01	Thermal Oxidizer
T304 T306	Methanol Co-Product Tank Methanol Wash Tank	40 CFR 63 Subpart FFFF 391-3-1-02(2)(a)	3.3.43 through 3.3.45, 3.3.47, 3.3.48, 4.2.19, 5.2.14, 6.1.8, 6.2.8, and 6.2.34 through 6.2.37*	TO01	Thermal Oxidizer
T300 T620 T303 T621	Methanol-Water Tank Methanol-Water Tank Methanol-Acrylate Tank Methanol-Acrylate Tank	40 CFR 63 Subpart FFFF 391-3-1-02(2)(a)	3.3.43 through 3.3.45, 3.3.47, 3.3.48, 4.2.19, 5.2.14, 6.1.8, 6.2.8, and 6.2.34 through 6.2.37*	TO01	Thermal Oxidizer
T220 T221	Methanol Co-Product Tanks	40 CFR 63 Subpart FFFF	3.3.43, 3.3.44, 3.3.46 through 3.3.48, 4.2.19, 5.2.14, 6.1.8, and 6.2.34 through 6.2.37*	TO01	Thermal Oxidizer
T208 T406	Shutdown Tanks	40 CFR 63 Subpart FFFF	3.3.43 through 3.3.45, 3.3.47, 3.3.48, 4.2.19, 5.2.14, 6.1.8, and 6.2.34 through 6.2.37*	TO01	Thermal Oxidizer

\* Generally applicable requirements contained in this permit may also apply to emission units listed above.

**C. Equipment & Rule Applicability**

The Flocryl Acrylates Batch Plant is subject to the Miscellaneous Organic NESHAP (MON). Source Codes R1 through R4, D1 through D4, M1, M2, T208, T406, T300, T303, T304, T306, T620, and T621 are classified as Group 1 Batch Process Vents under the MON Rule. Therefore, the facility must operate a control device that reduces organic HAP emissions from the vents by a least 98% or to a concentration of 20 ppm or less as TOC or organic HAP. Storage tanks T220 and T221 are Group 1 Storage Tanks under the MON Rule. The storage tanks must be equipped with a control device that reduces organic HAP emissions by at least 98% or to a concentration of 20 ppm or less as TOC or organic HAP (according to the MON hierarchy for combined streams).

The facility will also need to comply with the MON Rule for any transfer racks, wastewater handling operations, and equipment components subject to LDAR; however, the equipment listed above is the only Flocryl Acrylates Batch Plant equipment that have been determined to require controls. The remainder of the MON will be addressed in the pending renewal permit.

**D. Compliance Status**

The application indicates that the facility will be able to comply with the control requirements of the MON with the thermal oxidizer. Compliance with the MON is required no later than May 10, 2008.

E. Operational Flexibility

The facility has not made any operational flexibility requests for this modification.

F. Permit Conditions

Condition 3.3.45 has been added to the permit. The condition specifies the control requirements for Group 1 batch process vents under the provisions of 40 CFR 63 Subpart FFFF

Condition 3.3.46 has been added to the permit. The condition specifies the control requirements for Group 1 storage tanks under the provisions of 40 CFR 63 Subpart FFFF.

Condition 3.3.47 has been added to the permit. The condition specifies the closed vent and control device requirements for the thermal oxidizer under the provisions of 40 CFR 63 Subpart FFFF.

Condition 3.3.48 has been added to the permit. The condition requires the facility to develop and follow a SSM Plan under the provisions of 40 CFR 63 Subpart A to comply with 40 CFR 63 Subpart FFFF.

**V. Testing Requirements (with Associated Record Keeping and Reporting)**

A. Individual Equipment: The facility must conduct a performance test under the provisions of 40 CFR 63 Subpart FFFF in order to demonstrate the control efficiency of the thermal oxidizer. Condition 4.2.19 has been added to the permit and requires the facility to conduct this performance test.

B. Equipment Groups (all subject to the same test requirements): Not Applicable.

**VI. Monitoring Requirements (with Associated Record Keeping and Reporting)**

A. Individual Equipment: The facility is required to monitor temperature for the thermal oxidizer on a continuous basis. Compliance is based on the daily average temperature as compared to the temperature measured during the performance test. Condition 5.2.14 has been added to the permit and specifies the monitoring requirements for the thermal oxidizer.

B. Equipment Groups (all subject to the same monitoring requirements): Not Applicable.

**VII. Other Record Keeping and Reporting Requirements**

Condition 6.1.8 has been added to the permit. The condition specifies the excursion criteria for the thermal oxidizer.

Conditions 6.2.34 through 6.2.37 have been added to the permit. The conditions specify to notification, reporting, and record keeping requirements under 40 CFR 63 Subpart FFFF.

**VIII. Specific Requirements**

A. Operational Flexibility: Not Applicable.

B. Alternative Requirements: Not Applicable.

C. Insignificant Activities: Not Applicable.

D. Temporary Sources: Not Applicable.

E. Short-Term Activities: Not Applicable.

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- F. Compliance Schedule/Progress Reports: Not Applicable.
- G. Emissions Trading: Not Applicable.
- H. Acid Rain Requirements: Not Applicable.
- I. Prevention of Accidental Releases: This modification does not change the source's applicability.
- J. Stratospheric Ozone Protection Requirements: This modification does not change the source's applicability.
- K. Pollution Prevention: Not Applicable.
- L. Specific Conditions: Not Applicable.