Title V Air Operation Permit Revision
Permit No. 1290003-017-AV

APPLICANT

The applicant for this project is St. Marks Powder, Inc. The applicant's responsible official and mailing address are: John J. Nichols, Director of Operations, St. Marks Powder, Inc., P.O. Box 222, St. Marks, Florida 32355.

FACILITY DESCRIPTION

The applicant operates the St. Marks Powder facility located at 7121 Coastal Highway, Crawfordville, Wakulla County, at the intersection of U.S. 98 and S.R. 36; UTM Coordinates: Zone 16, 767.6 km East and 3342.1 km North; Latitude: 30° 10' 45" North and Longitude: 84° 13' 25" West.

This facility consists of a propellant manufacturing process, a nitroglycerin manufacturing process, and supporting utilities and operations. Volatile organic compounds (VOC) and sulfur dioxide (SO_2) are the major pollutants emitted. Both single base (mostly nitrocellulose) and double base (nitrocellulose and nitroglycerin) propellants are produced for a wide range of small caliber and medium caliber ammunition applications. The propellant manufacturing process involves dissolving nitrocellulose to form a lacquer, graining the lacquer, and coating and drying the grains to the appropriate specifications. The grains are impregnated with nitroglycerin in the double base process. Emission controls include medium efficiency venturi scrubbers and medium efficiency packed column scrubbers plus demister pads.

Emissions Unit No. 011 includes two Cleaver-Brooks steam boilers (Nos. 1 and 2), each with a maximum heat input of 33.45 MMBtu/hr, that burn fuel oil (No. 2 or No. 6) with a maximum sulfur content of 2.5% by weight or, alternatively, natural gas. These boilers were initially permitted by construction permit AC65-42779 issued July 9, 1981, and predate requirements of 40 CFR 60 subpart Dc and Rule 62-296.406, F.A.C. Emissions are controlled by good operational practice and combustion control. The requirement for a compliance assurance monitoring (CAM) plan does not apply to this emissions unit, since a pollution control device is not installed.

Emissions Unit 012 includes emissions points associated with propellant surface coating operations at the North Coater, South Coater and North Sweetie Barrel. The North East Sweetie Barrel production line is not used for surface coating, but the product is conveyed through the barrel to the next process step.

Also included in this permit are miscellaneous unregulated/insignificant emissions units and activities.

This facility is considered a major stationary source with respect to PSD, because it emits or has the potential to emit 100 tons/year or more of any regulated air pollutant and the facility is a chemical process plant, one of the 27 Prevention of Significant Deterioration (PSD)-major facility categories.

Based on the Title-V Air Operation Permit Revision application, received April 26, 2012, this facility is not a major source of hazardous air pollutants (HAP).

PROJECT DESCRIPTION

The purpose of this permitting project is to revise the existing Title V air operation permit for the above referenced facility to incorporate provisions of air construction permit 129003-016-AC issued January 13, 2011, to reactivate propellant surface coating at the North Sweetie Barrel.

Process changes made under air construction permit 129003-016-AC, issued January 13, 2011:

1. At the existing North Sweetie Barrel, for surface coating propellant, a 15-gallon tank with agitator and piping was installed for batch application of inorganic salts in isopropyl alcohol (IPA).
2. At the Wet Line, an evaporator designated E-evaporator was re-piped to be used to make Hybrid propellant. In addition, a solvent receiver and vacuum pump were installed such that E-evaporator can be operated under vacuum during the distillation portion of the Hybrid propellant batch cycle.

3. At the Wet Line, a small over-flow receiver and liquor pump were installed to receive excess liquor from E-evaporator during the filling portion of the Hybrid propellant batch cycle and to return that liquor to the Hybrid propellant process.
4. At the Wet Line, a 5,000-gallon evaporator was installed and is serving the function previously served by E-evaporator.
5. At the Wet Line, one of the existing 13,000-gallon impregnation vessels was replaced with a 20,000-gallon vessel.
6. At the Wet line, because of improvements in process control and replacement of the impregnation vessel, a comprehensive review of impregnation recipes was initiated with the object of shortening the batch cycle times. A 10% reduction in cycle time and an increase in production rate throughout the plant are expected overall, because the impregnation operation is a plant bottleneck.
7. At the pilot plant batch drying facility, one of the two bays was converted to cart drying.

Process changes listed below were not implemented under air construction permit 1290003-016-AC and are not being considered for future implementation.

1. At the pilot plant, for surface coating propellant, a 125 lb capacity sweetie barrel was to be replaced with a 250 lb capacity barrel. This change was not made.
2. At the production batch drying facility, six cart dryers were to be added to the existing four cart dryers. This change was not made.

Pre-Project Potential Emissions
Potential emissions prior to reactivation of propellant surface coating at North Sweetie Barrel are summarized below:

Title V air operation permit 1290003-015-AV issued May 19, 2009, incorporated various changes requested by the applicant. These changes, documented in the Summary of Anticipated Manufacturing and Emissions Changes dated August 18, 2009, are on file with the permitting authority. The changes did not require a construction permit and were either a change in the process or in the method of estimating emissions. Estimated pre-project potential emissions are summarized in the table below.

Pre-Project Potential Emissions: Regulated, Unregulated and Insignificant

Pollutant	2003 Estimate Tons/yr	2008 Estimate Tons/yr	Increase (Decrease) 2003 to 2008	Regulated EUs Increase (Decrease)
CO	24	23	(1)	0
NO_x	57	55	(2)	0
PM	69	74	5	0
PM_{10}	14	18	4	0
SO_2	245	245	0	0
VOC	664	567	(97)	(21)
NH3	NA	0	NA	NA
Pb	NA	12 lbs/yr	NA	NA
Max HAP	NA	679 lbs/yr	NA	NA
Total HAP	NA	900 lbs/yr	NA	NA

Post-Project Potential Emissions and PSD Applicability
Potential emissions after reactivation of propellant surface coating at North Sweetie Barrel are summarized below.

Because air construction permit 1290003-016-AC, upon which this revision is based, avoided the requirements of Rule 62-212.400(4) through (12), Florida Administrative Code (F.A.C.), based in whole or in part on projected

actual emissions calculations, the permittee shall calculate and maintain a record of the annual emissions of VOC and PM/PM_{10}, in tons/year on a calendar year basis, for a period of ten years, beginning January 1, 2012.

Post-Project Potential Emissions and PSD Applicability

Pollutant	Existing Potential Emissions (TPY)	Post-Project Potential Emissions (TPY)	Project Potential Emission Increases (TPY)	Significant Emission Rate (TPY)	Subject to PSD?
CO	23	23		100	No
NO_x	55	55		40	No
PM	74	87	13	25	No
PM_{10}	36[a]	37	1	15	No
SO_2	245	245		40	No
VOC	567	577[b]	10	40	No
Pb	12 lbs/yr	12 lbs/yr			
Max HAP	679 lbs/yr	679 lbs/yr			
Total HAP	900 lbs/yr	909 lbs/yr			

a. The existing potential PM_{10} emissions of 36 TPY, listed in the post-project potential emissions table above, includes an additional 18 TPY that is not reflected in the pre-project potential emissions table. These updated PM_{10} emissions estimates, reported in the Title V Air Operation Permit Revision application, received April 26, 2012, have been added to the pre-project and post-project emissions estimates for the following emissions units: EU 011 (boilers) 1 TPY, EU 014 (plant fugitive emissions) 15 TPY, EU 024 (hooded process machinery) - 3 TPY, EU 022 (propellant pneumatic conveyers) 4 TPY and EU 022 (acid mists) 1 TPY.

b. Post-project VOC emissions increased by a total of 10 TPY as a result of the following changes.: EU 014 (plant fugitive emissions) decreased by 17 TPY, resulting primarily from new emissions estimates obtained using WATER9 software for the wastewater treatment plant, EU 012 (surface coating) increased by 1 TPY, EU 013 (vacuum distillation) increased by 8 TPY, EU 015 (process vessel venting) increased by 2 TPY, EU 017 (continuous dryers) increased by 11 TPY, EU 018 (lacquer preparation) increased by 4 TPY and EU 019 (solvent storage).increased by 1 TPY.

PROCESSING SCHEDULE AND RELATED DOCUMENTS

Renewed Title V Air Operation Permit 1290003-015-AV issued May 19, 2009
Summary of Anticipated Manufacturing and Emissions Changes, August 18, 2009
Title V Air Construction Permit 1290003-016-AC issued January 13, 2011
Title V Air Operation Permit Revision application received April 26, 2012
Notice of Intent to Issue Air Permit issued July 11, 2012
Public Notice Published **[Month day, year]**

PRIMARY REGULATORY REQUIREMENTS

Title III: The facility is not identified as a major source of HAP.
Title V: The facility is a Title V major source of air pollution in accordance with Chapter 62-213, F.A.C.
PSD: The facility is a PSD-major stationary source of air pollution in accordance with Rule 62-212.400, F.A.C.
NSPS: The facility does not operate units subject to the New Source Performance Standards (NSPS) of 40 Code of Federal Regulations (CFR) 60.
NESHAP: The facility does not operate units subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) of 40 CFR 63.
CAIR: The facility is not subject to the Clean Air Interstate Rule (CAIR) set forth in Rule 62-296.470, F.A.C.

CAM: Emissions Unit 012, which includes propellant surface coating operations at the North Coater, South Coater and North Sweetie Barrel, is subject to CAM for regulated emissions of VOC.

PROJECT REVIEW

Equipment modifications and additions documented in the Project Description section are part of this revision. This Title V permit revision uses the revised template with updated formatting, and Appendix TV-6 was replaced with Appendix TV.

CONCLUSION

This project revises Title V air operation permit 1290003-015-AV issued May 19, 2009, and incorporates changes made by air construction permit 129003-016-AC issued January 13, 2011, to reactivate propellant surface coating at the North Sweetie Barrel. This Title V air operation permit revision is issued under the provisions of Chapter 403, Florida Statues (F.S.), and Chapters 62-4, 62-204, 62-210, 62-212, 62-213 62-296 and 62-297, F.A.C.