

RCRA Compliance Evaluation Inspection Report

1) **Inspector and Author of Report**

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2) **Facility Information**

St. Marks Powder, Inc.
7121 Coastal Highway
Crawfordville, Florida 32355
EPA ID Number: FLD047096524

County: Wakulla
Latitude: 30° 10' 06"
Longitude: 84° 13' 11"
Primary NAICS: 325920-Explosives Manufacturing
SIC Code: 2892 - Explosives

3) **Responsible Official**

Scott Nelson, St. Marks Powder, Inc., Senior Environmental Engineer
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(850) 577-2302

4) **Inspection Participants**

Parvez Mallick, U.S. EPA, Region 4
Monica Hardin, Florida Department of Environmental Protection (FDEP)
Jeff Gregg, FDEP
Sarah Keith Valentine, FDEP
Courtney Triplett, FDEP
Scott Nelson, St. Marks Powder, Inc., Senior Environmental Engineer
Dana O'Meara, St. Marks Powder, Inc., Operations

5) **Dates of Inspection**

March 1, 2022, 9:00 a.m.

6) **Applicable Regulations**

Resource Conservation and Recovery Act (RCRA) Sections 3002, 3005 and 3007 (42 U.S.C. §§ 6922, 6925 and 6927), and the regulations promulgated pursuant thereto at 40 Code of Federal Regulations (C.F.R.) Parts 260-270, 273 and 279.

Florida Statutes (F.S.) Chapter 403.702 *et seq.*, and the regulations promulgated pursuant thereto and set forth at the Florida Administrative Code (Fla. Admin. Code Ann. r.), Chapters 62-710, 62-730 and 62-750.

Chapter 403 of the Florida Statutes, Fla. Stat. § 403.702 *et seq.*, and rules 62.710.210 -.901, and 62-730 *et seq.* of the Florida Administrative Code Annotated (Fla. Admin. Code Ann.). RCRA Permit No.: 0066244-013-HO, expires on October 1, 2026.

As the State's authorized hazardous waste program operates in lieu of the federal RCRA program, the citations of those authorized provisions alleged herein will be to the authorized State program; however, for ease of reference, the federal citations will follow in brackets.

7) **Purpose of Compliance Evaluation Inspection**

On March 1, 2022, Monica Hardin, Jeff Gregg, Sarah Keith Valentine, Courtney Triplett of Florida Department of Environmental Protection (FDEP) and Parvez Mallick of the EPA conducted a routine compliance evaluation inspection (CEI) of St. Marks Powder, Inc. (SMP or the facility) to determine the facility's compliance with state and federal hazardous waste regulations. This was an EPA lead inspection. St. Marks was represented by Scott Nelson and Dana O'Meara of St. Marks Powder, Inc. Upon entering the facility, the inspectors introduced themselves, showed their credentials and explained the purpose of the visit and a description of the facility's process was discussed. The inspectors described the anticipated use of digital camera during the inspection. The inspectors briefly discussed the company's ability, pursuant to 40 C.F.R. § 2.203, to assert a business confidentiality claim for information submitted to the EPA. The company did not assert a business confidentiality claim. After introductions, the facility's representatives showed a safety video and provided a brief description of SMP's operations. The inspection participants also discussed health and safety protocols and required personal protective equipment before Mr. Nelson led the inspectors on a tour of the facility operations.

8) **Previous Inspection History**

On December 11, 2020, FDEP conducted a RCRA CEI at the facility and no RCRA deficiencies were discovered.

9) **Facility Description**

St. Marks Powder Inc. (SMP) is located on 1,760 acres of land owned by General Dynamics Corporation, in Crawfordville (Wakulla County), Florida. SMP is a business unit in General

Dynamics Ordnance and Tactical Systems, Inc., a division of the Combat Systems Group of General Dynamics. Processes at the facility consist of an ammunition propellant (marketed as Ball Powder®) manufacturing process, a nitroglycerin manufacturing process, and supporting utilities and operations. 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 further impregnated with nitroglycerin in the double-base process. SMP employs approximately 400 people, and operates 24 hours a day, seven days a week.

SMP is a Large Quantity Generator (LQG) of hazardous waste and a RCRA permitted facility. The previous operating permit, 0066244-HO-008, issued on November 16, 2016, and expired on October 1, 2021. The facility has been working to renew their permit. A notice of intent to issue a renewed permit was issued on January 14, 2022, and the final issuance of permit No.: 0066244-013-HO was on March 11, 2022. The permit authorizes SMP to continue operation of a hazardous waste miscellaneous open burn unit (OBU), post-close a hazardous waste landfill, and continue site wide corrective actions. The major waste streams from the powder process include wastewater, reject product, waste powder, and powder contaminated materials. Hazardous waste is accumulated in various less than 90-day areas throughout the plant which are also referred to as “Explosive/Solvent Scrap Pads” and in satellite accumulation areas.

The RCRA Subpart X Operating Permit allows SMP the operation of a miscellaneous OBU for the treatment of detonable waste from the smokeless powder propellant production areas (D003). The OBU consists of three steel pans on a concrete pad, with a propane delivery piping system used to ignite the waste, and a “popping kettle” for detonation of explosive devices. The reactive waste (D003) generated in the manufacturing process is collected in 20-gallon drums and transported to the OBU where the contents of the drums undergo thermal treatment. The major waste streams from the ball powder process include wastewater, reject product, waste powder, and powder contaminated materials.

The facility’s current Title V Air Operation Permit No. 1290003-018-AV was issued on December 11, 2018, and expires on December 11, 2023. The Permit was issued under the provisions of Chapter 403, Florida Statutes (F.S.), and Chapters 62-4, 62-210, and 62-213, F.A.C. Volatile organic compounds (VOC) and sulfur dioxide (SO₂) are the major pollutants emitted at the facility. Emission controls include medium efficiency venturi scrubbers and medium efficiency packed column scrubbers with de-mister pads.

SMP operations include four production areas: nitroglycerin, Wet Line, Dry Line, and a Pilot Plant. The medium caliber (Med Cal) test range, quality assurance (QA) and powder pits are located within the Pilot Plant. The production process uses nitrocellulose and nitroglycerin. The nitrocellulose is either virgin material or on-site recycled material and the nitroglycerin is manufactured on-site.

Nitroglycerin is manufactured from a mixture of nitric acid and glycerin. Once produced, the nitroglycerin is stabilized by mixing it with ethyl acetate. The nitroglycerin is then transferred to the wet line in a water matrix.

Wet line operations consist of graining, screening, coating/impregnation, and rolling operations. The production process begins with nitrocellulose and a chemical stabilizer which are dissolved in a solvent to a viscous, dough-like lacquer. The lacquer is filtered and palletized into cylindrical grains. The lacquer grains are transported through a set of shapers by a solution called liquor. From the shapers, the liquor flows through a series of evaporators to remove the solvent and harden the grains. From the evaporators the liquor flows to a vibrating screen where a portion of the liquor is recovered for reuse. The grains are water-washed and then directed to a powder storage tub. Grain sizes are then sorted by “cut size.” The cut size powder is then impregnated with nitroglycerin and a chemical to control the burning rate of the grains. The ball powder then proceeds through the rolling operation and are shaped into discs. From here, the ball powder is sent to the dry line.

In the dry line, the wet powder is dried in a series of dryers. Next, the dried powder is coated with graphite to adjust the powder burn rate. At this stage of the manufacturing process, additional surface coatings may be added depending on product specifications. The powder is then dry blended to adjust ballistic characteristics by blending different products. After blending, the ball powder is packaged for shipping. The powder is then tested for quality assurance and is shipped to the customer.

The quality assurance (QA) operation consists of laboratories as well as test firing ranges. The powder storage pits are on the south side of the main plant area. The major waste streams from these areas include wastewater, spent solvents, lead-contaminated sand, and reject materials.

10) Inspection Findings

Following the opening conference, the inspection team proceeded with the inspection. Below is a description of the observations made during the inspection.

Wet Line

Throughout the entire wet line process, all material is stored and moved through with water. Lacquer, powder, and ethyl acetate are collected in drums in the wet line area to be recycled in the powder process. These materials are referred to as “rework.” A solvent recovery area is maintained in which the system adds water to solvent and strips/dries, generating a clean ethylacetate for use back in the production process. The tank receiving the still bottoms from the distillation unit is not a RCRA regulated tank because the still bottoms in the tank are under a water blanket and do not exhibit the characteristic of reactivity until separated from the water and accumulated in the containers.

In this area, SMP operates two shakers (de-sanding tables) that generate a propellant contaminated sand. De-sanding is conducted in a bermed area with sloped floors and drains leading to the on-site wastewater treatment plant. The inspectors observed two 30-gallon containers that were in use to accumulate the contaminated sand (Photograph #1). The powder from this operation is continuously accumulated in the containers which are then re-worked back into the process at the lacquer mixing tanks. The 30-gallon containers are managed as “Hazardous Waste” while being stored prior to being reused.

Near the ethylacetate batch distillation unit, SMP operates a 90-day hazardous waste containers accumulation area. No hazardous waste was observed in the accumulation area during the inspection.

Dry Line

The dry line is the second step in the powder production process and is physically located west of the wet line. The dry line consists of drying, coating, and blending operations. The dryers are used to dry the powder, and the coaters are used to adjust product burn rate by the addition of surface coatings. The blenders are used to adjust ballistic characteristics by blending different products. The powder is then packaged for shipping. The inspectors did not inspect the Dry Line during the inspection.

Pilot Plant

At the pilot plant, SMP runs small scale production units to develop new products and for process improvements. In Building 07-2, SMP has a 90-day accumulation area for storage of scrap propellant powder containers (“Explosive Scrap Pad”). No hazardous waste was observed in the accumulation area during the inspection.

Open Burn Unit (OBU)

The OBU (SWMU 26) is located southeast of the production areas (Photograph #2). The hazardous wastes SMP is permitted to treat in the OBU and operation requirements are described in Part II of the current operating permit. Propellant, lacquer/nitroglycerin-contaminated paper products, and ball powder are the common materials combusted in the OBU via the permit. The OBU is a concrete circular pad approximately 200 feet in diameter encircled by a moat which contains tidally influenced surface water. There are three steel pans on the pad connected to a propane delivery piping system, which facilitates start-up of burn events. There is also a “popping kettle” on the pad. Reactive waste (D003) generated on-site in the manufacturing process is collected in 30-gallon drums and transported to the OBU where the drums are placed in the burn pans for treatment. Waste explosive devices are placed in the “popping kettles” for treatment by ignition. At the time of the inspection, three steel pans were in operation with one containing drums (Photograph #2). The facility stated that drums are burned to ensure no residues left in the drums and are reused until no longer viable. Unviable and damaged drums are recycled. There was no waste staged at the OBU pad.

Pilot Plant

At the pilot plant, SMP runs small scale production units to develop new products and for process improvement modification. Rework material is staged in containers and totes in this area for use in Pilot Plant projects. In Building 07-2, SMP has a 90-day accumulation area for storage of scrap propellant powder containers (“Explosive Scrap Pad”) for the OBU. No hazardous waste was observed in the accumulation area during the inspection.

The Pilot Plant houses both the raw materials lab and the environmental Quality Assurance/Quality Control (QA/QC) Lab. In the Environmental Lab, the inspectors observed one 12.5-gallon plastic container for mercury containing “COD” (chemical oxygen demand) testing residues (Photograph #3). The container appeared to be in good condition and was closed, marked “Hazardous Waste” and had hazard indications.

Research and Development Area

The primary solvents used in the labs are methanol and acetone. The inspectors visited the Instrument Laboratory. The lab manager assisted the inspectors in this area. In the lab, SMP generates a spent methanol solution contaminated with propellant powder. This hazardous waste

stream is accumulated in a plastic container. From the accumulation container, the waste is passed through a muslin cloth filter to separate the powder from the methanol. The filtrate (spent methanol) is collected in a 20-liter plastic container and the spent filter is accumulated in a metal container (Photograph #4). SMP manages the accumulation containers as a 90-day hazardous waste accumulation area. All containers were closed, marked "Hazardous Waste," dated, and appeared to be in good condition.

The Instrument Lab also generates a spent solvent from the liquid chromatography (LC) and from the infrared spectrometer. SPM accumulates the spent solvent in one-gallon containers. During the inspection, the inspectors observed three 1-gallon containers that contained spent solvent from two liquid chromatography units and from one infrared spectrometer unit. Each unit had one container attached through soft tubing with a specialized lid to allow the container to be closed while remaining attached to the unit. All containers were marked "Hazardous Waste", with a hazard indication, and appeared to be in good condition. One unit had an additional glass container with soft tubing directly into the opening of the container. The glass container was open at the time of inspection (Photograph #5).

Pursuant to Fla. Admin. Code Ann. r. 62-730.160(1) [40 C.F.R. § 262.15(a)], a generator may accumulate as much as 55 gallons of non-acute hazardous waste in containers at or near the point of generation where wastes initially accumulate, which is under the control of the operator of the process generating the waste, without a permit or without having interim status, as required by Section 403.722 of the Florida Statutes, Fla. Stat. § 403.722 [Section 3005 of RCRA, 42 U.S.C. § 6925], and without complying with Fla. Admin. Code Ann. r. 62-730.160(1) [40 C.F.R. § 262.16(b) or §262.17(a)], except as required in Fla. Admin. Code Ann. r. 62-730.160(1) [40 C.F.R. § 262.15(a)(7) and (8)], provided that the generator complies with the satellite accumulation area conditions listed in Fla. Admin. Code Ann. r. 62-730.160(1) [40 C.F.R. § 262.15(a)] (hereinafter referred to as the "SAA Permit Exemption").

Pursuant to Fla. Admin. Code Ann. r. 62-730.160(1) [40 C.F.R. § 262.15(a)(4)(i)], which is a condition of the SAA Permit Exemption, a generator is required to keep a container holding hazardous waste be closed at all times during accumulation except when adding, removing, or consolidating waste. On March 2, 2022, SMP provided a photograph of the glass container showing the tubes conveying solvent waste into the container is secured and closed with a specialized cap/lid. The two chromatography units have the same SAA container set-up each with a closed container with a specialized lid to secure tubing.

In Building 13-1, the inspectors visited the Chem Lab and the Ballistics Lab. In the Ballistic Lab, the inspectors observed one 2-gallon container of scrap powder. The container was closed, marked "Hazardous Waste," "Explosive", and appeared to be in good condition (Photograph #6). In the Ballistics Lab, the inspectors observed a 90-day accumulation area for "Explosive Scrap Pad" powder in containers. There were three empty containers with labels readily available.

In the Ballistic Lab for medium size calibers, the inspectors observed one 1-gallon container that contained floor sweepings. The container was closed, marked "Hazardous Waste," hazard indication, dated 2/1/22, and appeared to be in good condition.

SMP consolidates the spent solvent from the Research and Development Area laboratories in the Solvent Storage Pad. In the pad, the inspectors observed two 55-gallon containers of scrap

solvent. The containers were closed, marked “Flammable Hazardous Waste,” dated January 21, 2022 and February 21, 2022. Both containers appeared to be in good condition.

Records Review

Following the facility’s tour, the EPA and FDEP proceeded with records review. The records reviewed included a copy of the permit, hazardous waste manifests/associated land disposal restriction (LDR) records, universal waste manifests, weekly inspection logs, waste minimization plan, personnel training documents, contingency plan, waste determinations, and open burn unit activity records.

The inspectors reviewed uniform hazardous waste manifests. Manifests were reviewed for December 2020 through January 2022 and indicated Univar Solutions (TXR000084869), Action Resources (ALR000007237), Robbie D. Wood (ALD067138891), Freehold Cartage (NJD054126164), and American Transport Solutions (PAR000521740) were the hazardous waste transporters and Clean Earth of Calvert (KYD985073196) and Alabama (ALD981020894) were the designated facilities. Waste Minimization Program dated November 18, 2021, universal waste manifests dated June 2021, OBU ash waste determination dated January 19, 2018, wastewater sludge determination dated November 6, 2019, were reviewed, and appeared to meet the permit conditions.

On the Job Description positions were reviewed during the inspection. Training is conducted in-house with modules on regulations, hazardous waste management, handling, internal safety processes, emergency response and 90-day storage areas. New employees are “in training” for about six months where they shadow a senior employee. Employees are electronically notified of required training modules and associated due dates. The inspectors reviewed training records for Scott Nelson, Allison Solano, and the primary and secondary emergency coordinators identified in the contingency plan (CP). Weekly inspection records of the less than 90-day hazardous waste storage areas were reviewed for December 2020 through February 2022. The inspection logs appeared complete with all the required notations.

SMP has their contingency plan included in their Emergency and Disaster Operations Plan (EDROP). The current EDROP, reviewed and updated in December 2020 (Revision 28), was submitted to FDEP during the permit application renewal process to meet the Prevention and Preparedness Plan requirements of the facility’s RCRA permit. The EDROP includes the contingency plan and quick reference guide requirements per 40 C.F.R. 264 Subpart D and 262 Subpart M. The facility annually reviews their EDROP, providing an updated copy to the FDEP per their permit.

During the inspection, the facility could not provide an appropriate arrangement with the local police, fire department, and local emergency response agency [40 C.F.R. § 262.256(a)(1)].

Pursuant to Fla. Admin. Code Ann. r. 62-730.160(1) [40 C.F.R. § 262.17], a LQG may accumulate hazardous waste on-site for 90 days or less without a permit or without having interim status, as required by Section 403.722 of the Florida Statutes, Fla. Stat. § 403.722 [Section 3005 of RCRA, 42 U.S.C. § 6925], provided that the generator complies with the conditions listed in Fla. Admin. Code Ann. r. 62-730.160(1) [40 C.F.R. § 262.17] (hereinafter referred to as the “LQG Permit Exemption”).

Pursuant to Fla. Admin. Code Ann. r. 62-730.160(1) [40 C.F.R. § 262.17(a)(6)], which incorporates Fla. Admin. Code Ann. r. 62-730.160(1) [40 C.F.R. § 262.256], and is a condition of the LQG Permit Exemption, (a)(2) a LQG must attempt to make arrangements with the local emergency committee (police department, fire department, other emergency response teams, and emergency response contractors) to familiarize with the layout of the facility, the properties of the hazardous waste handled at the facility and associated hazards, and types of injuries or illnesses which could result from fires, explosions, or releases at the facility; (b) a LQG shall maintain records documenting the arrangements with the local fire department as well as any other organization necessary to respond to an emergency. This documentation must include documentation in the operating record that either confirms such arrangements actively exist or, in cases where no arrangements exist, confirms that attempts to make such arrangements were made. On March 2, 2022, Mr. Nelson indicated that SMP was in process of resending an updated CP and letter to the local authorities/stakeholders via certified mail.

11) **Closing Conference**

A closing conference was conducted at the conclusion of the inspection. Scott Nelson and Dana O'Meara of St. Marks Powder, Inc. participated in the closing conference. The observations made during the inspection were discussed and the inspection was concluded. SMP was inspected as a permitted treatment, storage, and disposal facility with an operation of a hazardous waste miscellaneous open burn unit (OBU), large quantity generator of hazardous waste and continue site wide corrective actions.

12) **Signed**

PARVEZ
MALLICK

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PARVEZ MALLICK
Date: 2022.04.26 16:00:35
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Parvez Mallick
Inspector and Author of Report

4/26/2022

Date

13) **Concurrence and Approval**

ARACELI
CHAVEZ

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Date: 2022.04.26 19:17:29
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Araceli B. Chavez
Chief
RCRA Enforcement Section

Date

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Compliance Evaluation Inspection photos taken by Mr. Scott Nelson of SMP

Due to safety concerns, Mr. Nelson of SMP used an intrinsically safe camera to take the following photographs.



Photograph #1 – De-sanding hazardous waste container in the Wet Line production area.



Photograph #2 – Open Burn Unit in operation.



Photograph #3: Satellite accumulation area container for COD testing residues generated in the Environmental Lab.



Photograph #4: Spent methanol 90-day accumulation area in the chemical's analysis section of the Instrument QA/QC Lab.



Photograph #5 – Open spent solvent in 1-gallon container – Instrument Lab LC1.



Photograph #6 – 2-gallon container of scrap powder stored in the medium caliber Ballistic Lab.