GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway
Suite 120
Atlanta, Georgia 30354
404-363-7000

NARRATIVE

TO: Heather Brown

FROM: Anna Gray

DATE: October 30, 2022

Facility Name:	**Harcros Chemicals, Inc.**
AIRS No.:	31300116
Location:	Dalton, GA (Whitfield County)
Application #:	28534
Date of Application:	08/09/2022

Background Information

Harcros Chemicals, Inc. operates a chemical manufacturing and distribution facility. The facility is currently a synthetic minor (SM) facility that has a 10/25 tpy limit for HAP emissions and a less than 100 tpy limit on VOC emissions. The facility is located in Dalton, Whitfield County and currently operates under Air Quality Permit No. 2843-313-0116-S-07-0 issued on June 25, 2018, and Permit Amendment Nos. 2843-313-0116-S-07-1 issued on November 28, 2018. Permit Amendment No. 2843-313-0116-S-07-1 proposed installation of control equipment, and it had no impacts upon processes, potential throughputs or emissions rates.

Purpose of Application

Application No. 28534 was received on August 9, 2022. The purpose of the application is to add the production of five new products: Phosphoric acid butyl ester sodium salt, calcium sulfonate 70HF, Sorbitol ethoxylated fatty acid ester, 2-HEMA phosphate ester, and ethoxylated nonylphenol phosphate ester. In addition, the facility intends to make changes to several existing processes, and eliminate fatty acid chlorides and phosphorus acid production. The facility no longer will produce polyethylene products or handle toluene. Also, the facility performed a thorough emission inventory for existing equipment and processes. All sources (reactors and tanks) and pollution control systems are existing and previously permitted. No construction will be completed as part of these changes.

A public advisory was issued for Application Number 28534 on August 16, 2022, and it expired on September 16, 2022. No comments were received.

Emissions Summary

The following emissions estimates are as provided on page three of Georgia SIP Application Form 1.00 –
General Information. For detailed potential emission calculations see Tables 2 through 10 in Attachment B of Application Number 28534.

Facility-Wide Emissions
(in tons per year)

Pollutant	Potential Emissions			Actual Emissions		
	Before Mod.	After Mod.	Emissions Change	Before Mod.	After Mod.	Emissions Change
$PM/PM_{10}/PM_{2.5}$	1.90	1.90	0.0	<1.9	<1.9	
NOx	7.27	7.27	0.0	<7.27	<7.27	
SO_2	0.0436	0.0436	0.0	<0.0436	<0.0436	
CO	6.11	6.11	0.0	<6.11	<6.11	
VOC[1]	19.8	22.6	+2.78	<19.8	<22.6	+2.78
Max. Individual HAP[2]	8.0	8.0	0.0	<8.0	<8.0	
Total HAPs	10.5	10.8	+0.328	<10.5	<10.8	+0.328
Total GHG (if applicable)	-	-	-			

[1]The facility avoids Title V source status applicability for VOC emissions by operating under a facility wide emissions limitation of less than 100 tons per year. Maximum VOC actual emissions are 22.6 tons per year, according to Application Number 28534[2] The facility currently operates under applicable emission limitations to avoid Title V and/or HAP major source status applicability for HAPs. Maximum individual HAP potential emissions are hydrochloric acid emissions (8 tons per year).

Conducting this inventory, a worst-case scenario was assumed for each individual pollutant (i.e., all available equipment was dedicated to processes emitting that pollutant). For pollutants that are a summation of individual pollutants (i.e., VOCs and HAPs), the potential emission rates are not physically possible since equipment would be needed continuously for different processes. Therefore, these values are conservatively high estimates.

Note that the emission inventory does not include methanol emissions from the wastewater treatment lagoons. Methanol was previously discharged to the lagoons after use as a solvent for filters in the calcium sulfonate (Witconate) processes. Methanol was eliminated from the filter wash in October 2021, eliminating the discharge of methanol from this process.

Regulatory Applicability

The regulatory applicability discussed below is in reference to the proposed modification only. For a detailed discussion of the facility's regulatory applicability, please see the narrative associated with Application Number 26504.

40 CFR 60 Subpart VVa, NSPS for Equipment Leaks of VOC in Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006

This regulation is applicable to facilities in the synthetic organic chemicals manufacturing industry. Per 40 CFR 60.481a, *synthetic organic chemicals manufacturing industry* means the industry that produces, as intermediates or final products, one or more of the chemicals listed in 40 CFR 60.489. This rule is applicable to the production of sodium acetate, one of the chemicals listed in 40 CFR 60.489. The production capacity of sodium acetate exceeds the exemption threshold of 1,102 tpy in 40 CFR 60.480a(d)(2). However, according to an email dated February 10, 2023, from Mr. Ian Lundberg, PE of Resolve Environmental Engineering, Inc., actual production of sodium acetate is about one quarter of the threshold, thus the facility requested a production limit of 1,000 tons/yr to avoid the applicability of 40 CFR 60 Subpart VVa.

Permit Conditions

Only permit conditions modified as a result of this permit application are discussed below. For a detailed discussion of the facility's permit conditions, please see the narrative associated with Application Number 26504.

Section 1.0
No permit conditions were added, removed, and or modified as a result of this permit modification.

Section 2.0
No permit conditions were removed as a result of this permit modification.

Conditions 2.3 and 2.4 were modified to change the chemical trade name Witconate to the generic chemical name.

Condition 2.5 was modified to add carbon drum C11 and reactor R11. The facility intends to add carbon drum C11 and reactor R11 to the production of acid phosphate.

Permit Condition 2.12 was added to address the general applicability of 40 CFR 60, Subpart VVa to applicable equipment, as defined in 40 CFR 60.481a, used in the manufacture of synthetic organic chemicals.

Permit Condition 2.13 specifies the production limit threshold for sodium acetate, one of the chemicals listed in 40 CFR 60.489, to avoid the applicability of 40 CFR 60 Subpart VVa.

Section 3.0
No permit conditions were added, removed, and or modified as a result of this permit modification.

Section 4.0
No permit conditions were added, removed, and or modified as a result of this permit modification.

Section 5.0
Condition 5.2 was modified to add Tank T243 to the production of aqua ammonia.

Condition 5.4 was modified to add Carbon Drum C09. Also, this condition was updated to correct a clerical error in the current permit that wrongly references Condition 7.4, instead of 7.5.

Conditions 5.4.a, 5.10 and 5.11 were modified to change the chemical trade names, Witconate, Foamer HS and Coag 158 to their generic chemical names: Calcium sulfonate, Hydroxy sultaine and Flocculant 158 respectively.

Condition 5.12 was added to monitor and record the total production of sodium acetate yearly to comply with the production limit in Condition 2.13.

Section 6.0
No permit conditions were added, removed, and or modified as a result of this permit modification.

Section 7.0
Condition 7.3 was modified to add Tank T243.

Condition 7.4 was removed since the facility no longer produces fatty acid chlorides or phosphorous acid. Past fatty acid chlorides and phosphorus acid production logs will be retained for at least five (5) years following the date of entry, in compliance with Condition 1.4.

Condition 7.5 was modified to add Carbon Drum C09.

Conditions 7.12 through 7.17 were modified to substitute the chemical trade name Witconate by the generic chemical name.

Conditions 7.18 was added to calculate, notify and report the 12 consecutive month total production of sodium acetate to demonstrate compliance with Condition 2.13.

Condition 7.19 was added to provide written notification of startup and operation of the proposed modifications within 30 days of commencing startup and/or operation.

Toxic Impact Assessment

Toxic air emissions are not expected to increase as a result of this modification.

According to the application cover letter and an email dated October 14, 2022, from Mr. Ian Lundberg, PE of Resolve Environmental Engineering, Inc., the potential uncontrolled emissions from the new products will be insignificant, and will not affect the results of the facility's current toxics impact modeling, based specifically upon the following:

- For the sorbitol ethoxylated fatty acid Ester (Dynsol S40L), the reactants and final product are high molecular weight, non-volatile chemicals with no available vapor pressure data on PubChem, CAMEO or other chemical property resource websites. For example, the process primarily uses lanolin acid as a raw material, which is a waxy solid mixture of numerous fatty acids. The SDS lists the boiling point at 608 F.
- For the ethoxylated nonylphenol phosphate ester (T-Mulz), the reactant with the highest vapor pressure is phosphorous pentoxide (CAS 1314-56-3). CAMEO lists the vapor pressure as 1 mmHg at 723.2°F. The maximum reactor temperature during the process is 150°F, so vapor pressure at actual reactor temperatures will be diminishingly low.
- For the 2-HEMA phosphate ester, raw materials are primarily high molecular weight, low vapor pressure organic acids, emulsifiers and inhibitors and contain no hazardous air pollutants.

> Uncontrolled potential emissions were calculated for air sparging of a reactor after charging with the reactant with the highest vapor pressure (hydroxyethyl methacrylate, a component of Rocryl 400 HEMA-LA, which is a raw material in the production of 2-HEMA phosphate ester) and determined to be 0.16 tons per year.

Therefore, no toxic impact assessment will be required.

Summary & Recommendations

A public advisory was issued for Application Number 28534 on August 16, 2022, and it expired on September 16, 2022. No comments were received. It is recommended that Air Quality Permit Amendment No. 2843-313-0116-S-07-2 be issued to Harcros Chemicals, Inc. The facility will continue to be a synthetic minor source for HAPs and VOC emissions. The facility is currently inspected by the Stationary Source Compliance Program (SSCP) Mountain District Office-Cartersville and will continue to be handled by them.