To: File
From: John Legg
Date: May 19, 2015

John Legg 5/19/15

Subj: PD15-040 - Permit Determination/Notification of Plan to Produce **New Product**
Cytec Industries Inc.; Willow Island Plant
Surfactant's Manufacturing Unit
Permit No.: **R13-2130I**, Issued April 7, 2015
Company ID No.: 073-00003

Summary

The above notification/information packet/permit determination was received at the DAQ on May 8, 2015 and assigned to the writer to review on May 12, 2015.

After fully reviewing the submission, the writer agrees with Cytec's finding/conclusion:

The manufacture of the new variant product OT-GPG-N will not cause Cytec to exceed any of the emissions limitations specified in air permit R13-2120I, specifically section 4.1.1 (see below).

Cytec further agreed to begin to include the emissions attributable to the production of the new variant product in their future quarterly emissions reports. This is in agreement with the recordkeeping requirement given in section 4.4.4 of permit R13-2120I (see below).

Redacted Information

Two versions of the notification was submitted: One with confidential information included, and another with confidential information redacted.

The following information was redacted from the non-confidential submission:

1) Time/batch;
2) Number of batches/yr;
3) Emission factors per batch for VOC, HAP, SO2, and PM;
4) Process step numbers and step activities with comments; and
5) Recipe summary emissions report which listed total emissions by chemical for entire recipe.

Notification Requirement (R13-2120I)

Section 4.5.1. of R13-2120I requires Cytec to provide notification of its intent to produce a new product not addressed in its current permit or current permit amendments.

4.5. Reporting Requirements

4.5.1. The permittee shall provide to the Director of the Division of Air Quality prior to the production of a new product, which involves any chemical or process change not addressed in application no. R13-2120, or any amendments thereto, sufficient documentation to demonstrate that the emissions limits as set forth in this permit will not be exceeded. **[45CSR§13-5.11.]**

New/Variant Product

The new product is AEROSOL® OT-GPG-N Surfactant. It is abbreviated as: OT-GPG-N. It is a variant of existing product AEROSOL OT-GPG Surfactant (OT-GPG).

OT-GPE-N uses methanol at 8% - 12% concentration as a carrier solvent in the final product due to customer requirements.

MSDS

Cytec enclosed a 15 page Material Safety Data Sheet (MSDS) for new/variant product OT-GPG-N.

Emission Modeling Requirement (R13-2120I)

Section 4.4.4 of R13-2120I requires Cytec to maintain calculations/emission models records for the new process that demonstrates compliance with the emission limits specified in **Section 4.1.1.**

4.4 Recordkeeping Requirements

4.4.4. The permittee shall maintain records indicating the emission calculations/emission models used to demonstrate compliance with all point source emission limits for each emission point specified in 1.0. Compliance with the specified emission limits set forth in 4.1.1. shall be demonstrated by calculating emissions for every product in the Surfactants Manufacturing Unit using Emission Master emission modeling software, or other appropriate emission estimation models or calculation methodologies (e.g., ChemCAD,

PlantWare, USEPA's TANKS 4.0, etc.). When these emissions are calculated, each emission point listed in Section 1.0 which has emissions of PM, SO_2, or VOC shall be included in the calculation and accounted for in the emissions report. The models shall be maintained current for all processes, process modifications and new product variants. The Division of Air Quality may specify or may approve other valid methods for compliance determination when deemed appropriate and necessary. These records shall be maintained on site for a period of no less than five (5) years. **[45CSR§13-5.11.]**

4.1. Limitations and Standards

4.1.1. Emissions generated from the Surfactants Manufacturing Unit[1] shall be limited as follow:

Pollutant	Hourly Emissions[2] (lb/hr)	Annual Emissions (TPY)
Particulate Matter	15.7	0.9
Sulfur Dioxide	0.7	0.24
Volatile Organic Compounds	92.09	26.9

[1] Emissions from Surfactants Manufacturing Unit shall be limited to the equipment and associated emission points listed in Section 1.0.

[2] Includes short duration peak emissions for "worst-case" batch activities and does not represent a continuous emission rate. Therefore, annual emissions are not based on the hourly rate taken 8,760 hours per year.

[45CSR§13-5.11.]

Emission Estimates from Cytec's Model

In accordance with Section 4.4.4 of R13-2120I, Cytec estimated emissions from the new process using the Mitchell Scientific - Emission Master modeling software. Listed below are their findings:

- Controlled VOC maximum theoretical emissions are estimated at 0.20 lb/hr and 0.122 ton/yr. These emissions are well below the permitted VOC emission limits of 92.09 lb/hr and 26.9 ton/yr.

- HAP (methanol) emissions are a component of the VOC emissions. Controlled HAP maximum theoretical emissions from the model are estimated at 0.20 lb/hr and 0.122 ton/yr.

- Controlled SO2 maximum theoretical emissions from the model are estimated at 0.15 lb/hr and 0.026 ton/yr of total SO2 emissions. These emissions are well below the permitted SO2 emission limits of 0.7 lb/hr and 0.24 ton/yr.

- Controlled PM maximum theoretical emissions from the model are estimated at 0.072 lb/hr and 0.025 ton/yr of total PM emissions. These emissions are well below the permitted PM emission limits of 15.7 pounds per hour and 0.9 ton/yr.