

**DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: On-site Inspection**

P102868009

<b>FACILITY:</b> Corteva Agriscience LLC		<b>SRN / ID:</b> P1028
<b>LOCATION:</b> 701 Washington Street, MIDLAND		<b>DISTRICT:</b> Bay City
<b>CITY:</b> MIDLAND		<b>COUNTY:</b> MIDLAND
<b>CONTACT:</b> Patty Worden , Senior Environmental Specialist		<b>ACTIVITY DATE:</b> 07/06/2023
<b>STAFF:</b> Kathy Brewer	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> MEGASITE
<b>SUBJECT:</b> EU09 on site inspection		
<b>RESOLVED COMPLAINTS:</b>		

EU09 is a multi-product herbicide formulation and packaging process, including raw material storage and handling, active ingredient finishing, formulations, and packaging associated with 489 Building. The process receives raw materials by rail cars, tank trucks, pipelines, supersacks, and drums.

EU09 was most recently permitted by PTI #98-05A that has been incorporated into the ROP EU09 conditions. In addition to individual pollutants, the permit includes emission limit categories based on Part 5 Rule 225 toxic air contaminant (TAC) health screening emission rates ("flexible for TACs" emission conditions).

The emission unit is subject to the requirements of 40 CFR Part 63, Subparts A, MMM, EEEE, and FFFF. In addition, processes subject to MMM and FFFF are also subject to the equipment leak provisions of 40 CFR Part 63, Subpart H (National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks) as specified in Section 63.1363(b), as applicable.

The facility reported the following throughput and emissions in MAERS for EU09:

- 2021 489 bldg 89435 ton throughput . MAERS emissions; VOC 2994 LBS, PM 131 lbs
- 2022 489 bldg 44022 ton throughput MAERS emissions VOC 1933.6 lbs, PM 131 lbs

During the July 6, 2023 on site visit emission control devices (Flaker Production and Packaging Scrubber, Flaker Production and Packaging Filter, Amine Process Scrubber) and the associated metering devices, vents, and real time process screens were viewed. Process overviews, emission locations, and emission calculations including example monthly production for monthly and 12 month rolling materials and emission limit compliance records were reviewed. On site records were provided for toxic screening level based emissions. Process and control device status and operating parameters records were also provided .

At the time of the inspection the facility appeared to be in compliance with the requirements of the EU09 ROP conditions.

#### On Site Records Review

Flaker particulate filter (SVEG9V48) Differential Pressure Drop  
 Flaker packing scrubber (SVEG9V47) Liquid Flow rate  
 Amine water scrubber liquid flow rate(SVEG9V51)  
 Dust collector FL-1201 Monthly VE observations  
 Instrumentation calibration dates, operating ranges, and operating alarms  
 TAC emissions by operation and month

#### AQD File Review

ROP Semi annual Deviation report March 2022, Sept 2022, March 2023  
 MACT Reports Subpart MON Sept 2022, March 2023.  
 MACT Reports Subpart PAI Sept 2022.

#### Description

Finishing operations include transforming active ingredients into salts or esters, as well as solidification and flaking. Formulation operations include mixing and blending active ingredients with other materials to meet final product specifications. Packaging operations involve portable containers, drums, and bulk packaging.

489 building has independent single mode operating scenario process units: Formulation and Flaker process mixes/blends

materials followed by evaporation followed by flaker operation then product storage and packaging. The 2,4-D Flaker process evaporator drum and packaging vents to the T-1103 scrubber (AI\_733). Product storage and packaging operations exhaust to FL-1201 dust collector (AI\_780) or vent to air. The 2,4-D DMA process mix tanks H24 and H25 and R-301 reaction vessel vents to Amine scrubber ( AI\_405). The 2,4-D ester process uses recovery and only vents uncontrolled when over pressured. The 2,4-D TIPA reaction vessels and storage vent to air. The 2,4-D choline FAO/DMA process vents to V-1103 Flaker scrubber but the process is not frequently operated. EU03 now makes 2,4-D choline. Formulations process has approximately 30 tanks that vent to the atmosphere, of which 2 vent to the Amine scrubber.

There are 70 vents from EU09 processes and activities. EU09 also shares storage tanks with EU03 that vent to FG963THROX or EU12b carbon bed.

**Emissions**

Emission calculations were developed using worse case (highest emissions) when the 2005 PTI application was submitted. If a new product is started emission calculations are updated. The facility also reviews the EGLE TAC screening levels annually.

Emission calculations are based on production by product area – Packaging, Formulation, 2,4-D Flaker, TIPA 2,4-D, Amine, Ester, 2,4-D Low odor, and LOPC. All emissions from production each month are tracked by chemical. Some emissions have lb/hr limits associated with a 1, 8, or 24 hr period. The peak hourly emissions in a given month are used for emission calculations over the appropriate screening level period ( 1, 8, 24 hr) and by EU09 Pollutant Category. The total emissions and the emissions by EU09 Pollutant Category are recorded. Records review included emissions for EU09 Category 1 thru 6 pollutants.

The records reviewed indicate the facility is compliance with permitted EU09 emission limits. Example emissions are below.

Month	Monthly Emissions ALL tracked emissions (SC I.1., VI.9)	EU09 Pollutant Category 5 12 month rolling emissions (limit =1200 lbs/yr)
October 2021	242.59 lbs	8.41 lbs
August 2022	236.88 lbs	8.6 lbs
April 2023	151.64	9.94 lbs

April 2023 emissions were reviewed in detail.

EU09 Pollutant Category Screening Period	Category 2	Category 3	Category 4	Cat 5	Cat 6
24 hour	0.0 lbs		0.05 lbs	0.0 lbs	3.65 lbs

8 hour		0.0 lbs	1.33 lbs	0.022 lbs	24.1 lbs
1 hour		0.0 lbs	0.86 lbs		0.42 lbs

EU09 Emission	limit	Peak lb/hr	Emissions lb/month
Ethylene Oxide (lb/hr)	0.0006 lb/hr	0.0003	0.000
VOC + Perc (lb/month)	1000 lb/month		159.5

EPA made changes to the MON regarding ethylene oxide that became effective on 8/12/22. EU09 uses numerous additives that have the potential to contain low levels (<0.1%) of ethylene oxide based on section 15 of the SDS. From December of 2020 through June of 2022 Corteva conducted vent sampling of EU09 for the products that use ethylene oxide containing additives. One product (Product H) showed ethylene oxide emissions in the vent stream of 2.3 ppmv and 0.0003 lb/hr.

Corteva submitted a PTI application to include ethylene oxide emissions. An ethylene oxide emission limit of 0.0006 lb/hr and a testing upon request requirement were added . PTI #98-05A was issued on October 4, 2022.

**Design and Equipment Parameters**

SC IV.1., 2., and 3., require the permittee to only operate the portions of EU09 that vent to the Flaker Production and Packing Particulate Filter (SVEG9V48), Flaker Production and Packing Scrubber (SVEG9V47), or Amine Process Scrubber (SVEG9V51), when each control device is installed, maintained, and operated in a satisfactory manner. The site has established control device operating ranges used to indicate satisfactory operation and comply with the permit required conditions in SC IV.1., 2., and 3.

SC IV.4., 5., and 6., require each control device to have a monitor instrument capable of indicating a range that corresponds to satisfactory operation.

The following operating ranges are established for the particulate filter and two scrubbers. Calibrations on the monitoring devices were performed within the last year.

Control device	Monitor ID	Last Calibration	Limit/operating range	Alarm
Flaker Production and Packing Scrubber flow (SC.IV.2, 5)	AI(733)	11/08/2022	>10 gpm	Alarm at 14 gpm Shutdown at 10 gpm
Scrubber medium - Flaker Production and Packing Particulate Filter Differential pressure (SC.IV.1, 4)	AI(780)	9/23/2022	0.08 – 35 “ H2O	Shutdown at 0.08

Amine Process Scrubber flow (SC.IV.3, 6)	AI(405)	11/08/2022	>2 gpm	Alarm at 2.5 gpm Shutdown at 2.0 gpm
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**Material limits**

The ROP does not list any specified material limits.

**Process/Operational limits**

The ROP does not list any specified material limits.

**Monitoring/Recordkeeping**

SC VI.1., and 3., require continuous monitoring of Production and Packing Particulate Filter (SVEG9V48) pressure drop, Flaker Production and Packing Scrubber (SVEG9V47) medium flow rate, and Amine Process Scrubber (SVEG9V51) medium flow rate.

The records reviewed indicate the facility is compliance with SC VI.1., and 3., the permit operating limits in conditions in SC IV.1., 2., and 3., and the associated record keeping requirements in SC VI.6., and 8. Example operations screen shots are attached.

Control device	Operating parameter	Limit/operating range	October 18, 2021 11 AM – 1 PM	August 7, 2022 2 - 4 PM	April 21, 2023 7 – 9 AM
<ul style="list-style-type: none"> <li>Flaker Production and Packing Scrubber (SVEG9V47) packed tower, scrubbing with caustic soda solution</li> </ul> <p>(SC.IV.2, 5, SC VI.3, VI.8)</p>	Scrubber Medium Flow Rate (AI 733)	>10 gpm	20 gpm	20 gpm	20 gpm
<ul style="list-style-type: none"> <li>Scrubber medium Flaker Production and Packing Particulate Filter (SVEG9V48) reverse pulse jet fabric filter collector</li> </ul> <p>(SC.IV.1, 4, SC VI.1, VI.6)</p>	Pressure drop (AI 780)	0.08 – 35 “ H2O	0.62 “ H2O	0.64 “ H2O	0.66 “ H2O
<ul style="list-style-type: none"> <li>Amine Process Scrubber (SVEG9V51) packed tower,</li> </ul>	Scrubber Medium Flow Rate	>2 gpm	4 gpm	4 gpm	4 gpm

scrubbing with water (SC.IV.3, 6, SC VI.8)					
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SC VI.2 requires monthly visible emission checks of the particulate filter during routine operating conditions. No VE's were noted during those inspections.

SC VI.7 requires the facility to keep monthly records of the VE inspection results. Copies of VE inspections conducted in October 2021, August 2022, and April 2023 are attached.

**Stack/Vent Restrictions**

The EU09 process has 70 vents associated with operations. A list and description of SVEG9A1 through SVEG9A70 vents is attached. We viewed the Ester process vent (SVEG9A38), T-1103 Flaker scrubber vent (SVEG9A47), Flaker dust collection system vent (SVEG9A48), and the AS-4 Storage vent (SVEG9A52).

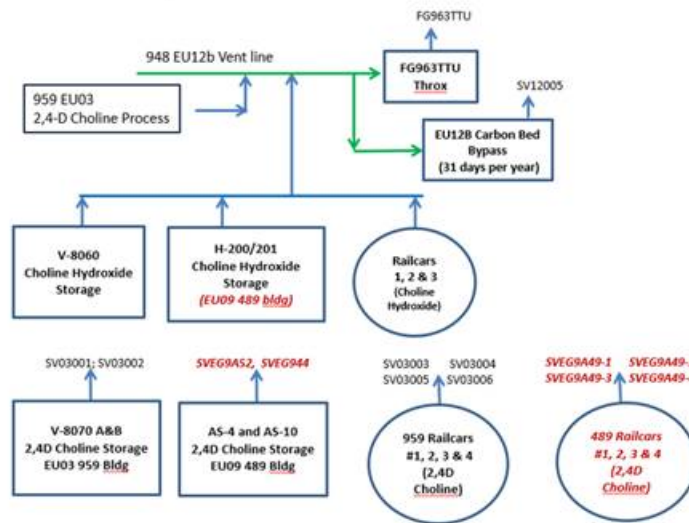
The H-200/H-201 choline hydroxide storage tanks shared with EU03 exhaust vent is sent to FG963THROX or the EU12b carbon bed.

### EU09 / EU03 Relationship

Both 489 EU09 and 959 EU03 can make 2,4D choline.

489 and 959 share equipment (see red txt):

- H-200/H-201 raw material tanks (vapor balance with RC. Tanks have N2 pad with conservation vent that ties into 948 vent header)
- AS-4 and AS-10 product tanks
- 489 Railcar loading spots



The stack apportionment reported in MAERS is below:

MAERS Control		Stack apportionment
CDP0003 (SVEG9V51)	EU09 Amine Scrubber	30

CDP0004 (SVEG9V47)	EU09 24Dc/DMA (or EU09 Flake Process) to T1103 Scrubber	50
CDP0006 (SVEG9V48)	EU09 PKG and STO FL1201 Dust Coll	10
Fugitive		10

Deviation and MACT reports review

The following summarizes recent EU09 information contained in Semi-annual reports.

March 2022 ROP Deviation report EU09 & FGRULE 290 LDAR MACT instrumentation documentation for sampling systems on >5 OHAP not adequate in NOCS. No sampling missed.

Sept 2022 ROP Deviation report Assess potential for ethylene oxide emissions from 489 bldg. EU09 liquid formation vessels. EU09 Ethylene oxide in vent discovered during MACT testing. Facility submitted a PTI to add ETO to EU09 emissions. EU09 is a TAC flex base permit with many vents. The current ETO screening level is not one of the categories in the TAC Categorical emission limits table. Operations not planning to process product generating ETO until after permit issuance.

March 2023 ROP Deviation report EU09 additives discovered to have low levels of Ethylene oxide but no expected emissions. MON MACT testing showed ETO emissions of 0.0003 lb/hr during Surmont. PTI app submitted to included ETO emissions limit. Issued PTI No. 98-05A October 4, 2022.

MON MACT Sept 2022 No deviations reported for EU09 (489) No leaks reported. No S/S/M changes, No malfunctions,

MON MACT March 2023 No deviations reported for EU09 (489) or FG290 (1233). No leaks reported. NOCs updates for EU09 & EU1200

PAI MACT March 2022: EU09 operating hours 2,4D Esterification 3912 hours; 2,4D-Amines (DMA/TIPA) 3984 hours; 2,4D choline salt 0 operating hours. No leaks reported.

NAME  DATE 9/12/2023 SUPERVISOR 