

MI-ROP-B4942
Renewable Operating Permit (ROP)
EUProcess
Ammonia Compliance Test Report

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Dow AgroSciences, LLC
Harbor Beach, Michigan

Sampling Date(s): August 21 & 22, 2013

Executive Summary

This report presents the results of the Dow AgroSciences, LLC (DAS) supporting performance testing conducted in order to demonstrate compliance with MI-ROP-B4942, EUPROCESS V.1 at their manufacturing facility in Harbor Beach, Michigan. The ROP includes a condition that requires ammonia testing no later than five years from the date of the previous performance test (citation: EU Process V.1). Ammonia compliance testing was last conducted October 20 – 24, 2008. The testing was conducted on August 21st and 22nd, 2013.

Specific equipment tested was two of the four catalytic thermal oxidizers. Since all the units are identical and have a common vent header distributed to each of the four thermal treatment units, DAS requested and was granted permission to perform compliance testing on half of the units to demonstrate compliance for all four units.

The Dow Chemical Company Stack Testing Team conducted the compliance sampling. Samples were submitted to Enthalpy Analytical (contract laboratory) for analysis. Each thermal treatment unit met the required permit limits.

850 Thermal Treatment Unit			
Pollutant	Limit	Actual Measured Emissions	Compliance Evaluation
Ammonia	< 31 lb/hr	0.006 lb/hr	Compliant
Ammonia	< 2 ton/yr *	0.03 ton/yr	Compliant
860 Thermal Treatment Unit			
Pollutant	Limit	Actual Measured Emissions	Compliance Evaluation
Ammonia	< 31 lb/hr	0.001 lb/hr	Compliant
Ammonia	< 2 ton/yr *	0.006 ton/yr	Compliant

* 12-month rolling time period as determined at the end of each calendar month

The following are the plant and sampling contacts for questions about the information in this sample report:

Primary Dow Contact
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Introduction

Description of Industrial and Unit Process -

Using fermentation, the DAS site in Harbor Beach produces intermediate and active ingredients used in a variety of products ranging from insect control to veterinary products.

Type and Quantity of Raw and Finished Materials used in Process

Ammonia is used as a reactant and process aid. Additional information can be provided under confidential cover if needed.

Description of cyclical or batch operations that impact emission profiles:

The peak emission profile occurs during ammonia addition. This is a batch step operation.

Operating Parameter Requirement

Not applicable – ammonia emissions are well below the permit limit. There is no operating parameter that impacts ammonia emissions

Rated Capacity of the Process

Process capacity can be demonstrated by calculating an average and maximum production rate using facility records. Based on these figures the facility shall include a production rate to be maintained during emission testing:

Not applicable – ammonia emissions are independent of the process production rate. Samples will be collected during the peak ammonia emission profile which occurs during ammonia addition. This is a batch activity.

Description of Air Pollution Control Equipment

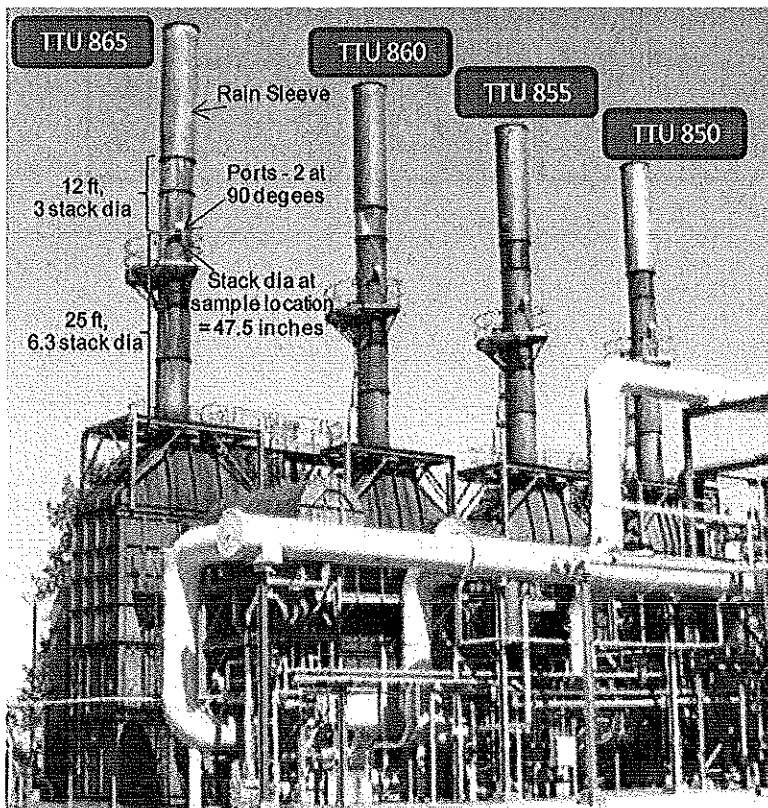
Prior to venting to the atmosphere, vent emission pass through catalytic thermal oxidizers. The minimum operating temperature of the units is 650 degrees Fahrenheit. The auto-ignition temperature for ammonia is nominally 1200 degrees Fahrenheit. These TTUs will have a minimal impact on ammonia emissions.

As noted in the previous "Introduction Section", operating parameters and rated capacity/efficiency are "Not Applicable".

Ammonia is used as a processing aid and for pH control. An ammonia addition occurs on a batch basis. The production rate is not related to ammonia addition. The same amount of ammonia is added regardless of yield. Sampling occurred when the facility was operating at capacity.

Planned maintenance occurred on TTU 855 the week of June 14, 2013. This unit was not tested.

The picture below illustrates the four thermal treatment units. TTU 850 is the southernmost unit. Each unit has a stack with a 47.5 inch diameter at the sampling location. Each sampling location has two ports that are orthogonal to each other.



All sampling ports are located 25 feet (6.3 stack diameters) downstream and 12 feet (3 stack diameters) from flow disturbances.

Test Results

The purpose of this test was to demonstrate the thermal treatment units comply with the requirements of MI-ROP-B4942, EUProcess V.1 Emission Limit(s). The specific objectives were:

- Perform Condition Test Method (CTM)-027 sampling and analysis to confirm ammonia emissions.

850 TTU Sampling Data

Parameter	RUN 1	RUN 2	RUN 3	AVERAGE
Sample Date	8/21/2013	8/21/2013	8/21/2013	N/A
Sample Times	2005/2035 2038/2108	2145/2215 2218/2248	2255/2325 2328/2358	N/A
Stack Gas Dry Flow (dscf/hr)	1.42E+06	1.44E+06	1.45E+06	1.44E+06
Conc. NH3 (ppmv)	0.129	0.139	0.026	0.098
NH3 Emissions (Lb/Hr)	0.008	0.009	0.002	0.006
NH3 Emissions (Ton/Yr)	0.036	0.038	0.007	0.03

860 TTU Sampling Data

Parameter	RUN 1	RUN 2	RUN 3	AVERAGE
Sample Date	8/22/2013	8/22/2013	8/22/2013	N/A
Sample Times	1940/2010 2015/2045	2055/2125 2130/2200	2207/2237 2239/2309	N/A
Stack Gas Dry Flow (dscf/hr)	1.13E+06	1.13E+06	1.14E+06	1.13E+06
Conc. NH3 (ppmv)	0.024	0.037	0.022	0.028
NH3 Emissions (Lb/Hr)	0.001	0.002	0.001	0.001
NH3 Emissions (Ton/Yr)	0.005	0.008	0.005	0.006