

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

N625137092

FACILITY: CABOT CORPORATION		SRN / ID: N6251
LOCATION: 3603 S SAGINAW ROAD, MIDLAND		DISTRICT: Saginaw Bay
CITY: MIDLAND		COUNTY: MIDLAND
CONTACT: Kevin Musser , Safety, Health, & Env Specialist		ACTIVITY DATE: 10/11/2016
STAFF: Sydney Bruestle	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Onsite Inspection to determine compliance with MI-ROP-N6251-2013 and all other applicable state and federal air quality regulations.		
RESOLVED COMPLAINTS:		

On October 11, 2016 I (Sydney Bruestle) conducted an onsite inspection at Cabot Corporation located at 3603 South Saginaw Road, in Midland MI. While onsite I met with Kevin Musser (Safety Health Environmental Manager) and Sara Bailey (Operations Manager). They presented a power point overview of the company and facility, then proceeded with a complete site tour, and ended with an onsite review of records. The purpose of this inspection was to determine compliance with MI-ROP-N6251-2013 and all other applicable state and federal air quality regulations.

Cabot Corporation is a global company, the head quarters is located in Boston, Massachusetts. The Midland Michigan site employs around 25 people and works closely with the neighboring company, Dow Corning. Cabot Corporation is an international company, they are a major producer of carbon black and other fumed oxides. This facility only manufactures fumed silica, primarily for Dow Corning, but has several other customers around the US. Cabot Corporation-Midland, MI receives feed stock (chlorosilane) used to make fumed silica from (neighbor) Dow Corning, through piping. The chlorosilane is combined with heat, hydrogen, and air and reacts to produce fumed silica. The fumed silica is cooled and sent through a denser before being sent back to Dow Corning through piping. Other customers receive shipments of fumed silica. Through Chlorine abatement, absorption, and desorption chlorine is recovered from the process and returned to Dow Corning for reuse in both a hydrous and anhydrous form.

Cabot Corporation operates under a sectioned renewable operating permit (ROP) with the state of Michigan. There are two sections, section 1 covers operations at Cabot Corporation and section 2 covers Air Products and Chemicals Inc. Cabot Corporation is a Major source for Carbon Monoxide (CO), current emission are around 200 tpy. The facility is a minor source for volatile organic compounds (VOCs), particulate matter (PM), and hazardous air pollutants (HAPs). Cabot Corporation requested a limit on both individual HAPs and Aggregate HAPs to clarify the Facility's status as a minor source for HAPs. Individual and aggregate HAP emissions are attached to this report. HCL and Chloromethanes constitute the highest Individual HAP emissions at 4.98 tpy and 2.51 tpy, respectively. These emission values are well below the source wide limit for individual HAPs of 8.9 tpy. The Facility's records show aggregate HAP emissions to be around 7.68 tpy, which is well below the facility wide aggregate HAP emission limit of 22.4 tpy.

The following emission units were inspected and the required records were reviewed on site (some records are attached):

EU- FG-SILICA-MTFING-PROCESS-A

Description: Amorphous fumed silica manufacturing.

Pollution Control Devices: Particulate filter vent, a bag filter used to control particulate emissions during separation of residual fumed silica product from conveying air.

Caustic Scrubber Control (CD-SCRUB): Sodium Hydroxide is used to scrub out trace amounts of Chlorine and HCL prior to discharge to atmosphere.

The facility monitors Carbon Monoxide (CO) emissions continuously from the stack exiting the caustic scrubber. There are two Continuous Emissions Monitoring System (CEMS) analyzers onsite (one is

There are Malfunction Abatement Plans (MAPs) in place for both the caustic scrubber and the filter vent. The required parameters (pH, differential pressure, temperature, and flow rates) are continuously monitored for both control devices and appear to be in compliance with the parameters outline in the MAP. The facility keeps maintenance records for the caustic scrubber and vent filter on a computerized system. I was able to review these records onsite. The last maintenance for the scrubber was performed on September 25, 2016. The scrubber was inspected for leaks and residues on the exterior and new support was fabricated. Maintenance was performed on the vent filter last on September 13, 2016. The filter vent was inspected internally (filter bags) and externally.

Emission Unit	Emission Limits	Method to Verify Compliance	Process/Operational Restrictitons	Monitoring/Record Keeping	Records Reviewed/Received, In Compliance
	CO 4000 ppmv Actual 3199 ppmv 432 TPY Actual = 194.9 TPY (June 2016)	CEMS	Shall not operate unless scrubber is installed and operated properly	shall monitor and record the carbon monoxide (ppm) emissions from FG-SILICA_MFTING_PROCESS and CD-SCRUB, specifically from vent SV-7A, on a continuous basis	Yes
FG SILICA-MFTING-PROCESS A	Total Chloromethanes 8.9 TPY Actual: 1.14 tpy (June 2016)	Testing on or before 6 months of the ROP expiration date Testing was last completed in 2012 A relationship between process operating parameters and the CO CEMS is used to demonstrate compliance with the chloromethane emission rate limit (tons per year).	Caustic scrubber pH 7.8 - 9.5 (Actual: 8.45) Flow: 50,000 kg/hr to 140,000 kg/hr: Actual: 83,683 kg/hr	shall equip and maintain FG-SILICA-MFTING-PROCESS-A with a continuous temperature indicator and strip chart recorder or disk storage for the staged methane/hydrogen injection process post reaction peak temperatures	Yes
	PM 0.1 lbs/1000 lbs exhaust 3.4 TPY Actual: 0.08 tpy (June 2016)		post reaction peak temperature range of 1300°F - 1600°F (704 C-871 C), as measured in the staged methane/hydrogen injection process, is maintained There were 8 locations for temperature	Maintenance records for EU-FILTERVENT, specifically of filter bag inspections and replacements	Yes

		<p>reading and the temperatures ranged from 709C-760 C</p>		
			<p>maintain and operate in a satisfactory manner a device to monitor and record the liquid flow rate, liquid level, and pH for CD-SCRUB on a continuous basis</p>	<p>Yes</p>
			<p>shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the pressure drop for EU-FILTERVENT on a continuous basis</p>	<p>Yes</p>
			<p>permittee shall calculate the CO, total chloromethanes and PM emission rates from FG-SILICA-MFTING-PROCESS- A monthly, for the preceding 12-month rolling time period</p>	<p>Yes</p>

FG-COLDCLEANERS

Description: The facility currently operates one ZEP cold cleaner for cleaning metal parts, it is located in the maintenance building.

I have attached the Safety Data Sheet (SDS) for the single solvent used in the cold cleaner. The solvent is DYNA 143, it is composed of 60-100% Light Aliphatic Naptha, a petroleum based solvent. This solvent is in compliance with special condition II.1. in under FG-COLDCLEANER which limits the halogenated compound content of the solvent to less that 5%.

The cold cleaner is in compliance with all of the conditions outlined in the table below:

	<i>Process/Operational Restrictions</i>	<i>Design/Equipment Parameters</i>	<i>Monitoring and Record Keeping</i>	<i>Records Received/ Received/ In Compliance</i>
FG COLD CLEANERS	Cleaned parts shall be drained for no less than 15 seconds or until dripping ceases.	The air/vapor interface of the cold cleaner is no more than ten square feet.	For each new cold cleaner in which the solvent is heated, the solvent temperature shall be monitored and recorded at least once each calendar week during routine operating conditions	Yes
	The permittee shall perform routine maintenance on each cold cleaner as recommended by the manufacturer	The cold cleaner is used for cleaning metal parts and the emissions are released to the general in-plant environment	The permittee shall maintain the following information on file for each cold cleaner: (R 336.1213(3))	Yes
		The cold cleaner shall be equipped with a device for draining cleaned parts	a. A serial number, model number, or other unique identifier for each cold cleaner.	Yes
		All new and existing cold cleaners shall be equipped with a cover and the cover shall be closed whenever parts are not being handled in the cold cleaner	b. The date the unit was installed, manufactured or that it commenced operation.	Yes
		The cover of a new cold cleaner shall be mechanically assisted if the Reid vapor pressure of the solvent is more than 0.3 psia or if the solvent is agitated or heated	c. The air/vapor interface area for any unit claimed to be exempt under Rule 281 (h).	Yes
		If the Reid vapor pressure of any solvent used in a new cold cleaner is greater than 0.6 psia; or, if any solvent used in a new cold cleaner is heated above 120 degrees fahrenheit, then the cold cleaner must comply with at least one of the following provisions:	d. The applicable Rule 201 exemption.	Yes
		a. The cold cleaner must be designed such that the ratio of the freeboard height to the width of the cleaner is equal to or greater than 0.7	e. The Reid vapor pressure of each solvent used.	Yes
		b. The solvent bath must be covered with water if the solvent is insoluble and has a specific gravity of more than 1.0	f. If applicable, the option chosen to comply with Rule 707 (2).	Yes
			The permittee shall maintain written	

		<p>c. The cold cleaner must be controlled by a carbon adsorption system, condensation system, or other method of equivalent control approved by the AQD. (R 336.1707 (2)(c))</p>	<p>operating procedures for each cold cleaner. These written procedures shall be posted in an accessible, conspicuous location near each cold cleaner</p>	<p>Yes</p>
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EU-RICEMACT

Description: Cabot Corporation has a reciprocating combustion engine (RICE) that is subject to the RICE NESHAP found in 40 CFR 63 Subpart ZZZZ.

Cabot Corporation has one generator onsite that is used only for emergencies (power outages), it was installed in 1999. The engine make is a Cummins 700 series rated at 125 KW, 480 HP. The facility

maintains records of hours of operation for the emergency RICE. The hours log shows the facility uses the engine around 9 hours a year which is below the RICE MACT limit of 50 hours annually for Emergency Generators. Since 1999 the engine has operated only 163 hours total. The generator is tested monthly for 45 minutes and annually for 1 hour. The facility has the engine inspected annually. The last inspection was performed on June 1, 2016 and is attached to this report.

SECTION 2- Air Products and Chemicals Inc.

Description: I spoke with George Beris of Air Products and Chemicals, he explained the steam-methane reformation (SMR) process onsite. There is a flow diagram attached to this report.

There are 4 primary steps:

1. Hydrodesulfurization: the removal of sulfur species from natural gas feedstock
2. Steam-Methane Reformation (aka: Steam-Hydrocarbon reforming)- The reaction of natural gas with steam, at high temperature within a bed of catalyst, to produce a stream of H₂, CO, and CO₂
3. High Temperature Shift (HTS) Conversion- The catalytic conversion of the byproduct CO to CO₂, and also produce additional H₂
4. Hydrogen Purification- the removal of impurities from the hydrogen via pressure-swing-adsorption (PSA), using molecular-sieve adsorbents

There is a copy of the 1999 Gaseous Emission Engineering Report which describes the SMR process in detail and the resulting air emissions. These processes use the rule 290 exemption.

FG-RULE-290

Any emission unit that emits air contaminants and is exempt from the requirements of rule 201 pursuant to rules 278 and 290.

George Beris of Air Products and Chemicals sent me the required Rule 290 emission records via email on October 13, 2016. The records are attached to this report. Monthly emissions are less than 0.001 lb per month for each HAP. It appears Air Products and Chemicals is in compliance with Rule 290.

Cabot Corporation has submitted all semi annual and annual compliance certification reports on time. Moving forward they will submit CAM Excursion/Exceedance reports on a semi annual basis and proper language will be added to the ROP upon renewal in 2018.

At the time of my inspection it appeared Cabot Corporation and Air Products and Chemicals are in compliance with MI-ROP-N625-2013 and all other applicable state and federal air quality regulations.

NAME



DATE

10/17/16

SUPERVISOR

