DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY DIVISION

FCE Summary Report

Facility :	WACKER CHEMICAL CORP	**SRN :**	A2849
Location :	3301 SUTTON RD	**District :**	Jackson
		County :	LENAWEE
City :	ADRIAN **State:** MI **Zip Code :** 49221	**Compliance Status :**	Compliance
Source Class :	SM OPT OUT	**Staff :**	Erik Gurshaw
FCE Begin Date :	5/22/2013	**FCE Completion Date :**	5/22/2014
Comments :	2014 FCE Report		

List of Partial Compliance Evaluations :

Activity Date	Activity Type	Compliance Status	Comments
05/14/2014	Scheduled Inspection	Compliance	2014 FCE Inspection.

Name: Erik Gurshaw **Date:** 5/22/14 **Supervisor:**

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

A284925196

FACILITY: WACKER CHEMICAL CORP		**SRN / ID:** A2849
LOCATION: 3301 SUTTON RD, ADRIAN		**DISTRICT:** Jackson
CITY: ADRIAN		**COUNTY:** LENAWEE
CONTACT: Bryan Alexander , Corporate Environmental Manager		**ACTIVITY DATE:** 05/14/2014
STAFF: Erik Gurshaw	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** SM OPT OUT
SUBJECT: 2014 FCE Inspection.		
RESOLVED COMPLAINTS:		

SRN: A2849
COMPANY: Wacker Chemical Corporation
COMPANY ADDRESS: 3301 Sutton Road; Adrian, MI 49221
PURPOSE OF INSPECTION: Targeted
CONTACT PERSON: Mr. Bryan Alexander, P.E., Corporate Environmental Manager (Ph: 517-264-8880; Fax: 517-264-2890; E-mail: bryan.alexander@wacker.com)
COMPANY PHONE NUMBER: 734-264-8880

INTRODUCTION

On May 14, 2014, AQD staff, Erik Gurshaw, conducted an unannounced, targeted inspection at Wacker Chemical Corporation located at 3301 Sutton Road in Adrian, Michigan. The purpose of the inspection was to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control of Natural Resources and Environmental Protection Act, 1994 Public Act 451; Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) Rules; Permit To Install (PTI) Number 155-05A for various silicone manufacturing processes (EU-HIBAY, EU-POLYMERS, EUCMP, EUHCR, and EURTV); and PTI Number 285-07 for a soil and groundwater vapor extraction system.

COMPANY OVERVIEW

Upon arriving at the facility, AQD staff introduced themselves and stated the purpose of the visit to Mr. Bryan Alexander, Corporate Environmental Manager. Mr. Alexander indicated that Wacker Chemical Corporation operates 24 hours a day, 7 days a week and that approximately 550 people are employed by the company. The Adrian facility is located on 280 acres of land adjacent to the Raisin River and consists of a technical center, shipping and receiving building, warehouse, wastewater treatment plant, and several silicone production buildings. Wacker Chemical Corporation is a Tier II silicone manufacturer for the aerospace, automotive, construction, consumer product, and textile industries among others. In addition to the silicone manufacturing processes, the company also has 7 diesel-fired emergency and non-emergency generators, 5 natural gas-fired boilers, a thermal oxidizer that is being used to control ammonia in wastewater, 5 parts washers, and 2 welding machines. The emergency generators are subject to MACT Subpart ZZZZ for Reciprocating Internal Combustion Engines (RICE), but the AQD has not accepted delegation for RICE engines at area sources of HAP emissions. The boilers are used to generate steam to heat the company's silicone mixing tanks and the buildings. The maximum rated heat input capacity of these boilers is 14.645 MMBTU/hour making them exempt from PTI requirements pursuant Rule 282(b)(i). The thermal oxidizer is being operated under the Rule 290(a)(i) exemption. Mr. Alexander showed AQD staff calculations during the inspection showing that less than 500 pounds of ammonia is being emitted from the thermal oxidizer per month. Since monthly emissions of ammonia are below the 500 pounds, the thermal oxidizer is exempt from PTI requirements pursuant Rule 290(a)(i). The parts washers use a cleaning solvent consisting of mineral spirits and are exempt from PTI requirements pursuant Rule 281(h). The welding machines are exempt from PTI requirements pursuant Rule 285(i). The company also has a soil and groundwater vapor extraction system permitted under PTI #285-07. The vapor extraction system was required by the MDEQ Waste and Hazardous Materials Divisions because the company used to wash down trucks with a chlorinated solvent solution. The chlorinated solvent solution contaminated the

groundwater and soil located in the southeastern portion of Wacker Chemical's property. The company has installed a barrier/reactive wall between the contaminant plume and the Raisin River to prevent migration of chlorinated solvents into the river.

PROCESS DESCRIPTION

5 distinct processes are used by the company to manufacture silicone products at the location. The following is a description of the processes used in EU-HIBAY, EU-POLYMERS, EU-CMP, EU-HCR, and EU-RTV:

EU-HIBAY

The company manufactures emulsions of water and silicone fluids and amino fluids in EU-HIBAY. Emulsions are produced by mixing silicone oil with water and a surfactant to customer specifications in one of twenty enclosed mixing tanks. Most of the emulsions are chilled while being mixed, but some can be mixed at a temperature up to 70 degrees Celsius. After being mixed, the emulsions are packaged and sent to the customer. Amino fluids are produced by mixing a base silicone oil with a catalyst to drive a reaction to produce a desired polymer chain. Mixing occurs in one of five reactor tanks. The typical temperature within the reactor tanks ranges from 80 to 100 degrees Celsius. Once the desired amino fluid is produced, it is packaged and sent to the customer. The mixing and reactor tanks are enclosed and fumes within the tanks are vented to a condenser. The resulting condensed liquids are hauled off site as a waste product.

EU-POLYMERS

Silicone fluid polymers of a specific viscosity are generated in EU-POLYMERS by mixing a base silicone oil with a catalyst in one of twenty enclosed reactor tanks. The temperature and vacuum within the tanks is set to ensure that the final product meets a certain viscosity. The temperature within the reactor tanks typically ranges from 80 to 100 degrees Celsius. After mixing has occurred, the final product is cooled and shipped to the customer. EU-POLYMERS is also equipped with 2 continuous feed reactor systems. The company calls these systems "Busses" and raw material is continuously fed into these systems to produce viscosity-specific polymers rather than being produced from a single batch. Each reactor tank within EU-POLYMERS is equipped with a condenser to control emissions. The condensed product is either recycled and reused or sold to a third party. Any fumes remaining after the condenser stage are vented to a scrubber.

EU-CMP

Chemical mechanical polishing fluids are produced in EU-CMP by mixing a colloidal or fumed silica product with water, malonic acid, citric acid, benzotrizial acid, and other acids in one of four enclosed mixing tanks at ambient temperatures. The mixed product is filtered, packaged, and shipped to the customer. The chemical mechanical polishing fluids generated in EU-CMP are used by computer chip manufacturers. Legacy products are produced by using fumed silica in the mixing process. Newer produced are produced by using colloidal silica in the mixing process.

EU-HCR

Heat curable rubber products are produced in EU-HCR by mixing fumed silica with silicone fluids generated in EU-POLYMERS in one of twelve enclosed mixing tanks at less than 160 degrees Celsius. The resulting product is removed from the mixers and sent to one of six extruder machines where a preformed product is generated. Some product is sent directly to EU-RTV after being mixed, however. The final product is packaged and shipped to the customer. Dust collectors are attached to each mixing tank to control particulate matter generated during the mixing process. Exhaust gases from the mixing tanks are sent to a condenser. Any fumes remaining after the condenser stage are vented to a scrubber.

EU-RTV

Room temperature vulcanized products are produced in EU-RTV by mixing products generated in EU-HCR with silicone fluids, catalysts, and pigments in one of two portable enclosed mixing tanks at 50 to 60 degrees Celsius. Mixing typically occurs from a low of 2 hours to a high of 24 hours depending upon the amount of processing needed to generate the final product. The portable mixers are under a slight vacuum and fumes are vented to the same scrubber serviced by EU-HCR. The portable mixers are not equipped with condensers, however. Once the final product has been produced, it is packaged and sent to the customer in 55-gallon containers.

PTI #155-05A EVALUATION

EU-HIBAY

Emissions from EU-HIBAY are calculated from material usage records, process efficiency, the control efficiency of the condensers, and AP-42 emission factors. The PTI sets hourly emission limits for VOCs, hexamethyldisiloxane, and octamethylcyclotetrasiloxane. 12-month rolling time period emission limits are established for VOCs and hexamethyldisiloxane. The raw material the company uses does not contain hexamethydisiloxane or octamethycyclotetrasiloxane. Therefore, the emission limits set for these compounds is not applicable to the company's operations. Emission records for 2013 indicate that 44.8 pounds of VOC consisting of methanol and formaldehyde were emitted from EU-HIBAY. This is well below the 4.7 ton of VOC per 12-month rolling emission limit established in the PTI. The company is only maintaining yearly emission calculations rather than 12-month rolling emission calculations. AQD staff asked Mr. Alexander to begin recording 12-month rolling emission calculations, but since the company's emissions are so far below permitted limits, it was determined that the company is in compliance with its emission limits. The company is not maintaining hourly emission records, but based on the low amount of emissions being generated by the facility, it can be assumed that hourly emissions are below permitted limits. To calculate hourly emissions, the company would have to keep track of the materials used in its batches and the daily hours of operation. AQD staff did not observe any visible emissions from the mixing tanks during the inspection. Therefore, the company is in compliance with the 0.10 pounds of PM per 1,000 pounds of exhaust gas limit established in the PTI. The mixing tank condensers were installed and appeared to be properly maintained and operated during the inspection. The condensers are equipped with cooling water alarms. AQD staff asked Mr. Alexander to provide the last two preventative maintenance (PM) records for the condensers. Methanol emissions from the EU-HIBAY were 44.57 pounds for 2013. This is well below the 600 pound per year methanol emission limit established in the PTI. The company is recording the number of batches it processes per month. Batches are called "number of inspection lots" on the company's records. These records indicate that fewer than 400 batches per month were processed by EU-HIBAY from January 2013 through April 2014. Exhaust gases from EU-HIBAY appeared to be vented from a stack meeting the dimensions set in the PTI. No visible emissions were observed from this stack during the inspection.

EU-POLYMERS

Emissions from EU-POLYMERS are calculated from material usage records, process efficiency, the control efficiencies of the condensers and the scrubbers, and AP-42 emission factors. The PTI sets an hourly emission limit of 7.8 pound per hour and 0.1 pound per hour for VOCs and hydrogen chloride, respectively. The PTI also sets a 13.5 ton and 0.1 ton 12-month rolling time period emission limit for VOCs and formaldehyde, respectively. Records provided by the company indicate that EU-POLYMERS operated for 8,322 hours and that 2,790.96 pounds of VOC were emitted from the process in 2013. This equates to a VOC emission rate of 0.32 pounds per hour and 1.4 tons per year. These are both below the emission limits established in the PTI. The records provided indicate that no formaldehyde or hydrogen chloride is emitted from EU-POLYMERS. The company is recording the number of batches it processes per month. Batches are called "number of inspection lots" in the company's records. These records indicate that fewer than 750 batches per month were processed by EU-POLYMERS from January 2013 through April 2014. The reactor tanks are being operated under

vacuum to control fumes produced during the mixing process. The reactor tanks are also being operated in conjunction with a Venturi gas scrubber and hypochlorite scrubber tank as required by Special Condition IV.2 of the PTI. The Venturi gas scrubber and hypochlorite scrubber tank are required for emission and odor control. The stacks associated with EU-POLYMERS appeared to meet the dimensions set in the PTI. No visible emissions were observed from these stacks during the inspection.

EU-HCR

Emissions from EU-HCR are calculated from material usage records, process efficiency, the control efficiencies of the condensers and the scrubbers, and AP-42 emission factors. The PTI sets hourly emission limits of 0.16 pounds, 1.6 pounds, and 0.9 pounds for VOC, ammonia, and PM, respectively. The PTI also sets a 0.7 ton and 49 ton 12-month rolling time period emission limit for VOCs and siloxanes, respectively. Records obtained from the company indicate that EU-HCR operated for 7,446 hours and that 846.1 pounds of VOC were emitted in 2013. This equates to a VOC emission rate 0.42 tons per year. This is below the 12-month rolling emission limit set in the PTI. The company reported 3,451.92 pounds of ammonia emissions in 2013. This equates to a 0.46 pound per hour ammonia emission rate. This is below the 1.6 pound per hour ammonia emission limit set in the PTI. 22,412.46 pounds (11.2 tons) of siloxane emissions were reported in 2013. This is below the 49 ton per 12-month rolling limit established in the PTI. 38.46 pounds of PM emissions were reported in 2013. The company is not maintaining hourly emission records, but based on the low amount of emissions being generated by the facility, it can be assumed that hourly emissions are below permitted limits. To calculate hourly emissions, the company would have to keep track of the materials used in its batches and the daily hours of operation. The baghouses, condensers, and scrubbers used in EU-HCR are being maintained and operated in a satisfactory manner. The company is recording the number of batches it processes per month. Batches are called "number of inspection lots" in the company's records. These records indicate that fewer than 2500 batches per month were processed by EU-HCR from January 2013 through April 2014. SC073101 and SC073102 (the scrubbers servicing mixers MX0710, MX0711, MX0712, MX0713, MX0719, and MX0744) were being operated with a scrubbing flow rate of 30.7 gallons per minute and 34.4 gallons per minute at 1:30 PM, respectively. The pH of scrubbing solution in SC073101 and SC073102 was 4.0 and 5.88, respectively, at 1:30 PM. The scrubbers are equipped with an alarm to alert the company of a failure in the system. The stacks associated with EU-HCR appeared to meet the dimensions established in the PTI. No visible emissions were observed from these stacks during the inspection.

EU-RTV

Emissions from EU-RTV are calculated from material usage records, process efficiency, the control efficiencies of the condensers and the scrubbers, and AP-42 emission factors. The PTI sets hourly emission limits of 1.1 pounds, 0.4 pounds, 0.4 pounds, 8.9 pounds 2.1 pounds, and 0.45 pounds for VOC, naptha, mineral spirits, polydimethysiloxandiol, polydimethylsiloxane, and PM, respectively. Records provided by the company indicate that its raw products do not contain naptha, polydimethylsiloxandiol, or polydimethylsiloxane. Therefore, the emission limits pertaining to these compounds are not applicable to its current operations. The company reported emissions of VOCs, mineral spirits, and PM of 128.2 pounds, 90.30 pounds, and 1.25 pounds, respectively, from EU-RTV for 2013. The company is not maintaining hourly emission records, but based on the low amount of emissions being generated by the facility, it can be assumed that hourly emissions are below permitted limits. To calculate hourly emissions, the company would have to keep track of the materials used in its batches and the daily hours of operation. Yearly emissions of VOCs and mineral spirits are well below the 12-month rolling limits of 4.4 tons and 1.6 tons, respectively. The PTI also sets a 12-month rolling emission limit of 48 tons per year for siloxanes, but no siloxane emissions for EU-RTV are being reported by the company. The company is disposing of spent baghouse filters in the general waste stream and batch records obtained from the company indicate that less than 1,700 batches are being processed in EU-RTV per month. Fumes from mixing tanks MX0208, MX0224, MX-228, MX-219, and MX0257 are being vented to the SC073101 and SC073102 scrubbers and a minimum scrubbing flow rate of 20 gallons per minute is being maintained. The stack associated with

EU-RTV appeared to meet the dimensions set in the PTI and no visible emissions were observed from the stack during the inspection.

PTI #285-07 EVALUATION

PTI #285-07 is for a soil and groundwater air sparging and vapor extraction system. Air sparging wells blow air into the groundwater to release vapors which are then vacuumed to an activated carbon system. The soil vapor extraction system consists of soil vapor extraction wells, a vacuum system, and an activated carbon pretreatment system consisting of two 5000 pound vessels in series followed by an activated carbon main treatment system consisting of two 3000 pound vessels in series. The groundwater air sparging system consists of air sparging wells, vacuum wells, and an activated carbon system consisting of two 3000 pound vessels in series. As previously discussed the soil and groundwater vapor extraction system was required by the DEQ since the facility used to wash vehicles with chlorinated compounds which contaminated the groundwater and soil in the wash area. Collectively, the soil and groundwater vapor extraction systems are referred to FG-REMED in the PTI. The PTI requires that FG-REMED be operated in conjunction with a properly operated and maintained activated carbon system. The pretreatment and main activated carbon systems were in operation and appeared to be properly operated and maintained at the time of the inspection. The company provided the last 2 work orders for maintenance performed on the pretreatment and main activated carbon systems. These work orders are attached to this report. The facility is conducting influent and effluent VOC monitoring with a hand held photoionization detector weekly to detect possible breakthroughs from the activated carbon systems. Breakthrough is considered to occur when the VOC content of the influent between the first and second vessels is 20 percent or more of the influent concentration at the first vessel. The PTI sets a 12-month rolling VOC emission limit of 1 ton from FG-REMED. The facility is only maintaining annual VOC emission records as opposed to 12-month rolling VOC emission records. Annual emission records from 2013 indicated that 5135 pounds of VOC was emitted from FG-REMED. AQD staff asked Mr. Alexander to begin recording 12-month rolling VOC emission records during the inspection, but since annual emissions of VOC are so far below the 1 ton per 12-month rolling limit, AQD staff was satisfied that emissions of VOC from FG-REMED are below permitted limits. The air flow rate to FG-REMED is being continuously recorded and maintained at 300 scfm. The facility is keeping satisfactory records of the change in carbon canisters for the pretreatment and main activated carbon systems. The stack of FG-REMED appears to meet the dimensions required by the PTI.

COMPLIANCE DETERMINATION

Based on this inspection, it was determined that Wacker Chemical Corporation is in compliance with its permits and all other applicable air rules and requirements. The company is not calculating 12-month rolling emissions, but 2013 emissions were so far below permitted limits that AQD staff determined that the company was in compliance with all the emission limits established in its PTIs. Mr. Alexander said that the company would immediately begin recording 12-month rolling emission records during the inspection. The following records are on the CD attached to this report: 2013 emission records for EU-HIBAY, EU-POLYMERs, EU-HCR, and EU-RTV; batch data from January 2013 through April 2014 for EU-HIBAY, EU-POLYMERs, EU-HCR, and EU-RTV; maintenance logs for work performed on the company's control equipment; scrubber shift logs from March 31, 2014, through May 4, 2014 indicating that flow to the scrubbers was greater than 20 gallons per minute; specifications and maintenance logs for the company's 7 diesel-fired generators; monthly emission records for FG-REMED from October 2009 through April 2014; monthly ammonia emissions records from the thermal oxidizer from January 2013 through April 2014; and operating logs for the thermal oxidizer from January 2013 through April 2014. AQD staff noticed that the company was incorrectly calculating 12-month rolling VOC emissions from FG-REMED during a review of the records. AQD staff notified Mr. Alexander of this on May 22, 2014. The company is sending more maintenance records for its control equipment to the Jackson District Office via the mail. These records will be placed in a separate file once they are received.

NAME Erik Dyshaw DATE 5/29/14 SUPERVISOR