

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

N305742646

FACILITY: STRUCTURAL CONCEPTS CORP		SRN / ID: N3057
LOCATION: 888 EAST PORTER RD, MUSKEGON		DISTRICT: Grand Rapids
CITY: MUSKEGON		COUNTY: MUSKEGON
CONTACT: Don Kent , Safety Coordinator		ACTIVITY DATE: 12/12/2017
STAFF: Chris Robinson	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: FY18 unannounced inspection to determine the facility's compliance status with PTI No. 296-83B and other applicable air quality rules and regulations.		
RESOLVED COMPLAINTS:		

AQD staff Chris Robinson (CR) conducted an unannounced schedule site inspection of Structural Concepts Corporation (Structural Concepts) located at 888 East Porter Road, Muskegon, MI on Monday December 11, 2017 to fulfill a FY'2018 requirement and to follow-up on spray booth filter concerns identified in the previous inspection. AQD staff CR arrived at approximately 10:30 am and met with Mr. Don Kent, Safety Director. CR presented Mr. Kent with AQD identification and a business card informing him of CR's intent to conduct an inspection to determine compliance status with respect to Permit-To-Install (PTI) No. 296-83B and any other applicable air rules and regulations. At no time during the inspection were odors or visible emissions detected.

Discussions with Mr. Kent indicated that there have not been any significant changes since the last inspection conducted on March 31, 2017. However, Structural Concepts may be relocating one of the three permitted spray booths to the 5566 Grand Haven Road, Norton Shores, MI building (Plant 2). Plant 2 is located approximately 0.5 miles south of the East Porter Road building (Plant 1), therefore considered to be adjacent and one source.

FACILITY DESCRIPTION

Structural Concepts Corporation manufactures, assembles and tests merchandising display cases for food, beverage, floral and specialty products. With the exception of the heating and cooling components which are only assembled on-site, almost all of the components are manufactured and assembled on-site. Powder coating operations are conducted by a separate off-site company.

COMPLIANCE EVALUATION

The facility manufactures refrigerated display cases, some of which contain wooden components. The facility utilizes four (4) automated Computer Numeric Controlled (CNC) machines and ancillary equipment to cut the wooden components. This equipment is vented to an external baghouse for particulate control. The baghouse area is cleaned as necessary and serviced biannually (Spring & Fall). The forth CNC machine was purchased and installed since the last inspection and the facility is working on replacing the current baghouse. The current baghouse bin covers are in working condition but in need of repair, which was discussed with Mr. Kent. A separate report will be prepared once repairs are completed. Otherwise, the equipment and baghouse appear to be well maintained and exempt under Rule 285(2)(l)(vi)(C).

Plant 1 also has four (4) metal cutting lasers with individual internally vented dust collectors which appear to be exempt under Rule 285(2)(l)(vi)(B). Several welding stations exist that are vented through adjustable hoods to an internal baghouse. Based on discussions with Mr. Kent, venting for this area has been reconfigured and improved since the last inspection. The welding equipment appears to be exempt under Rule 285(2)(i).

Plant 2 operations consist of lite cabinet assembly, foam filling, brazing for assembling refrigeration units and warehousing. Components are either outsourced or manufactured and shipped to this location from Plant 1. The assembly area consists of two (2) 300-foot long assembly lines used to construct small display cabinets. Components are framed and then filled with a two (2) part spray polyurethane foam, SDS is attached in **Attachment D**. The foam SDS has been updated by the manufacturer since the last inspection. Discussing with Mr. Kent, the foam filling operations appears to be considered a Reaction Injection Molding (RIM) process, which appears to be exempt under **Rule 286(2)(e)**. In general, most of the VOC emissions from RIM processes come from mold release compounds and based on the SDS the foam contains 4,4'-Methylenediphenyl diisocyanate, which is a Hazardous Air Pollutant (HAP). Structural Concepts uses the foam as in insulation that remains inside cabinet walls for the cases. Therefore, mold release compound is not used and there are minimal HAP emissions released from this process. The brazing equipment used to assemble the refrigeration components is vented to the in-plant environment and appears to be exempt under Rule 285(2)(i).

Plant 2 solvents are stored, used and tracked in the same manner as they are in plant 1 and are included in the plant 1 calculations (**Attachment B**).

PTI No. 296-83B

This permit is a VOC Opt-out permit that includes two individual emission unit conditions for the adhesive and solvent used throughout the facility and facility-wide conditions for HAPs and VOCs. Mr. Kent provided the following monthly records as required by PTI No. 296-83B special condition EUADHESIVE VI(1)(a-d), & EUSOLVENT VI(1)(a-c), which are included as **Attachments A & B** respectively.

- Hours of operation
- The amount of adhesive used and VOC content in lbs./gallon as applied.
- The facility does not reclaim purge and/or cleanup solvent. Therefore, no reclaim records were provided.
- VOC emission calculations

- EUADHESIVE

Portions of the display cases are coated with adhesive for the application of laminate. This adhesive is applied by three adhesive spray booths covered under emission unit EUADHESIVE of their permit. Per discussions with Mr. Kent the booths are only operated when filters are in place, which they were at the time of this inspection. The condition and maintenance of the filters has improved since the last inspection, however the facility has not implemented a routine inspection process to determine when to replace. The current process is subjective to the operator at the time of use. As confirmed there are many different operators responsible for this process. As discussed with Mr. Kent, such subjectivity can lead to future issues, therefore CR again recommended the implementation of a routine inspection process to determine if and when filter replacement is necessary. At the time of this inspection all of the filters appeared to be effective, no visible emissions were noted. Due to inclement weather a rooftop inspection of the booth stacks was not conducted. CR will visually inspect the stacks later in the fiscal year. Repairs to help maintain the filters were discussed with Mr. Kent and should be implemented within the month. A separate report detailing the repairs will be prepared at that time. Spent filters are disposed of in a way to minimize the introduction of air contaminants to the outer air as specified in PTI No. 296-83B special condition IX(1).

The facility's permit does not contain any conditions specifying how VOC content is determined other than stating that the department may require a test. AQD is not requiring testing at this time. For VOC content, the facility currently subtracts out the percentage of non-volatile material, specified in the attached SDS (**Attachment D**). A manufacturer specific spray gun usage rate of 1 gallon of adhesive per 27 minutes is used to calculate operating hours for the spray booths. The facility tracks material usage rates (**Attachment A**) to determine emissions. At the time of this inspection the equipment appeared to be operating properly. Based on records, the emission calculations for January-November 2017 indicate an emission rate of 12.04lb/hr, which is based on the application rate of the spray gun, and a maximum 12-month rolling total of 12.37tpy observed in November. The facility is well below the limits specified in the PTI.

Pollutant	Limit	2017 Emissions	Time Period
VOC	26 lbs/hr	12.04 lb/hr	Test Protocol
VOC	22.8 tpy	MAX 12.37 tpy (Nov.)	12-month rolling

CR did not specifically measure the height or diameter of the stacks for each spray booth. However, visual inspections appear to reflect the measurements specified in their permit.

- EUSOLVENTWIPE

The facility uses de-natured alcohol and lacquer thinner to clean various components and for smoothing caulk used for sealing case components. The facility stores 55-gallon drums of solvent in a separate locked room. A transaction ticket is used to transfer solvent from the drum storage room to fireproof storage cabinets located in each area of both plants. The transaction tickets are used to track solvent emissions. On an as needed basis labeled spray bottles and small containers located throughout both plants are filled using solvent from the fireproof storage cabinets.

Based on records, the emission calculations for January-November 2017 indicate a maximum emission rate of 2.1lb/hr in February and a maximum 12-month rolling total of 4.0tpy in August. The facility is well below the limits specified in the PTI. No stack test is required at this time.

Pollutant	Limit	MAX 2017 Emissions	Time Period
VOC	11.2 lbs/hr	2.1 lb/hr (Feb.)	Test Protocol
VOC	9.0 tpy	4.0 tpy (Aug.)	12-month rolling

- FGFACILITY

Structural Concepts has facility wide (FGFACILITY) emission and material limits. To demonstrate compliance with these limits and as required by PTI No. 296-83B SC VI(1), Mr. Kent provided the following records and calculations (**Attachment C**).

- Gallons or pounds of each HAP containing material used.
- HAP content, in pounds per gallon or pounds per pound, of each HAP containing material used.
- Individual and aggregate HAP emission calculations determining the monthly emission rate of each in tons per calendar month.
- Individual and aggregate HAP emission calculations determining the annual emission rate of each in tons per 12-month rolling time-period as determined at the end of each calendar month.

The polyurethane foam, used in Plant 2, contains 4,4'-Methylenediphenyl diisocyanate (MDI) which is considered a HAP. The facility has not calculated emissions from this process because it was originally thought that there were no emissions. Per communications with AQD Permits staff John Vial and Jeff Khaled, MDI emission are present but are assumed to be very low due to its low vapor pressure, supported by an October 17, 2000 MDEQ guidance letter. An additional MDEQ guidance letter from 1988 established an emission factor also supporting very low MDI emissions. The facility maintains and provided foam usage records, which are included in **Attachment E**. In 2017 the facility used approximately 116,790.08lbs of foam which is approximately 50% MDI. Based on the 1988 guidance letter, MDI emissions appear to be significantly less than one (1) pound/year. MDI emissions have not been included in the tables below.

FGFACILITY Emission Limits and Calculated Emissions for January - November 2017:

Pollutant	Limit	MAX Emissions	Time Period
Individual HAP	< 9.0	Hexane @ 6.2 tons (Nov)	12-month rolling
Aggregate HAPs	< 22.5	10.6 tons (Oct.)	
VOCs	31.8	16.2 (Sept.)	

FGFACILITY Material Limits and Usages for January - November 2017:

Pollutant	Limit	Usage	Time Period
Adhesive	8,000 gallons/year	4,400 gallons	Test Protocol
Solvents	2,600 gallons/year	357 gallons	12-month rolling

Per discussions with Mr. Kent and a records review, the facility uses manufacturer's data for calculating HAP content.

COMPLIANCE DETERMINATION

Based on observations and discussions made during the December 12, 2017 inspection, and a subsequent records review, Structural Concepts appears to be in compliance with PTI No. 296-83B and any other applicable air quality rules and regulations.

List of Attachments

- Attachment A - EUADHESIVE Records
- Attachment B - EUSOLVENTWIPE Records
- Attachment C - FGFACILITY Records
- Attachment D - Updated Foam SDS
- Attachment E - Foam Usage Logs

NAME 

DATE 1-3-2018

SUPERVISOR 