

**DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Self Initiated Inspection**

N175745239

FACILITY: Knoll Incorporated	SRN / ID: N1757
LOCATION: 2800 Estes St, NORTON SHORES	DISTRICT: Grand Rapids
CITY: NORTON SHORES	COUNTY: MUSKEGON
CONTACT: Steve Gurley , Environmental Health & Safety Manager	ACTIVITY DATE: 07/19/2018
STAFF: Chris Robinson	SOURCE CLASS: MINOR
SUBJECT: FY '18 on-site inspection to determine the facility's compliance status with PTI No. 215-16 and other applicable air quality rules and regulations.	
RESOLVED COMPLAINTS:	

On July 19, 2018, AQD staff, Chris Robinson (CR) conducted a scheduled unannounced on-site, inspection of the Knoll facility located at 2800 Estes Street in Muskegon County, Michigan to determine compliance with Permit to Install (PTI) no. 215-16 and applicable air rules and regulations. CR met with Ms. Deborah Bosma, Senior Environmental, Health and Safety Specialist, and Mr. Steve Gurley, Environmental Health and Safety Manager. AQD credentials were provided and CR announced intent to conduct an inspection of the facility. No odors or visible emissions were observed during this inspection.

Facility Description

Knoll is a metal office furniture manufacturer primarily for filling and storage units. Although this location is mostly used for finishing and packaging, some component manufacturing does occur here. Most of the components come from other locations such as the Knoll facility located on West Western Street in Muskegon. Knoll employs approximately 350 employees and operates 2-3 shifts 5 days per week, depending on demand.

Compliance Evaluation

Most of the operations at this facility are exempt from Rule 201 permitting requirements. However, Knoll does have one active PTI (No. 215-16) for four (4) metal rack burn-off ovens, received February 14, 2017, to replace several gas-fired sand fluidized bed systems covered under Rule 290. These units, as confirmed during the inspection, have all been removed.

- Rule 201 Exemptions

Operations at this facility consist of machining, some welding and surface coating. All emissions are released to the in-plant environment. Machining operations appear to be exempt from Rule 201 permitting requirements under Rule 285(2)(l)(vi) and welding operations appear to be exempt under Rule 285(2)(i).

Surface coating operations primarily consist of powder-coating, however aerosol spray cans, approximately 12-16 ounces in size are utilized for touch-up work. Ms. Bosma provided usage records, (**Attachment A**) which are attached. Based on these records Knoll's 2018 average usage is approximately 6.2 gallons per month. Well under the 200-gallon per month limit allowed in exemption Rule 287(2)(c)(ii). Knoll operates two (2) powder coating lines consisting of both one (1) robotic and two (2) manual application processes and curing ovens. Each line is equipped with one cyclone and two baghouses, which are internally vented. Per Mr. Gurley, the filters are replaced as needed. The fabric filters associated with the booths, appear to be properly installed and maintained. After the parts are coated, they continue on the line to the final curing ovens which operate at approximately 380 – 400°F and vent externally. The coarse material separated out of the cyclones is reclaimed and reused. The fine material is either disposed of via landfill or sold. The powder coating operations appear to be exempt under Rule 287(2)(d). Metal racks used in the powder-coating process are cleaned via burn-off oven. The burn-off ovens are covered under PTI 215-16, which is discussed below.

This facility has a Crystal Clean cold cleaner with an air/vapor interface of less than ten (10) square feet, therefore exempt under Rule 281(2)(h). The unit was closed upon inspection. A Safety Data Sheet for the cleaning solution was provided and is included in **Attachment B**.

Knoll operates three natural gas-fired only boilers. One (1) of the boilers was installed in the office building in 1969 for hot water and has a heat rating of less than 10,000,000 Btu's/hr. The remaining two (2) boilers are located in the main production/finishing building. One was installed in 1991 and has a name plate rating of 8,369 pounds per hour of steam which converts to a heat rating of approximately 9,992,586 Btus/hr based on the following equation:

$$\sim 1,194 \text{ Btus} = 1 \text{ pound of steam}$$

$$8,369 \text{ lbs/hr} \times 1,194 \text{ Btus/hr} = 9,992,586 \text{ Btus/hr}$$

The second boiler was installed in 1994 and has a name plate heat rating of 10,460,000 Btus per hour. All three (3) boilers appear to be exempt from Rule 201 permitting requirements per Rule 282(2)(b)(i) for fuel burning equipment used for indirect heating with a maximum heat rating of less than 50,000,000 Btus per hour.

Boilers installed after June 9, 1989 with a heat rating of greater than 10,000,000 Btus per hour are subject to NSPS Subpart Dc. Therefore, the 1969 boiler is not subject because it's too old and the 1994 boiler is subject because it meets installation date and size requirements. Although the 1991 boiler appears to be less than the required 10,000,000 Btu requirement based on the above calculation, this calculation is only an estimation and the actual heat rating could be greater than 10,000,000 Btus. The AQD received an Initial Subpart Dc Notification from the facility on August 27, 2015 indicating that all three boilers were subject and that the 1991 and 1994 boilers have a heat rating of 10,460,000 Btus/hour. For now, Subpart Dc applicability for this boiler is based on the heat rating provided on the facility's Initial Notification. Therefore, only the 1991 and 1994 boilers are subject to Subpart Dc requirements.

Therefore, Knoll is required to submit an initial notification, track fuel usage and report emissions to the Michigan Air Emissions Reporting System (MAERS). As discussed, the initial notification was received by the AQD on August 27, 2015. The facility tracks and reports fuel usage to MAERS. The 2017 MAERS report is included in **Attachment C**. As reported, the two Dc subject boilers used approximately 57.81 MMCF of natural gas in 2017.

- PTI no. 215-16

Emission Limits - No visible emissions allowed.

At no time during this inspection were any odors or visible emissions observed.

Material Limits - Burn natural gas and process only powder-coated metal racks.

Per discussions with Mr. Gurley and Ms. Bosma, Knoll only processes powder-coated metal racks and these units are natural gas-fired only.

Process/Operational Restrictions - DO NOT burn rubber, plastics, uncured paints, material containing non-chlorine halogens such as Teflon, transformer cores contaminated with PCB-containing dielectric fluid, wire or parts coated with lead or rubber, or any waste materials such as paint sludge or waste powder coatings.

The material limit specified in Special Condition II(2) of the PTI restricts Knoll to processing only powder-coated metal racks, which CR confirmed with both Mr. Gurley and Ms. Bosma that Knoll is complying with.

Design/Equipment Parameters - Install, maintain and operate an afterburner for emission controls and maintain a minimum operating temperature of 1,400°F. Install, maintain and operate an automatic temperature control system for the primary chamber and afterburner. Install, maintain and operate an interlock system on the afterburner in a manner that shuts down the primary chamber in the event of an afterburner malfunction.

All four burn-off ovens are equipped with afterburners and automatic temperature controllers for both the primary chamber and afterburner of each oven. Based on discussions with Mr. Gurley and Ms. Bosma, the ovens are also equipped with an interlock system that shuts down the primary burner in the event of an afterburner malfunction. Although all four ovens were operating at the time of this inspection, ovens one (1) and two (2) were in a cooldown period. The burn-off ovens were operating at the following temperatures during the inspection:

Burn-off oven #	Primary Oven Temperature (DegF)	Afterburner Temperature (DegF)
*1	321	452
*2	789	672
3	800	1,497
4	800	1,497

* In Cool Down Mode

Monitoring/Recordkeeping – Maintain records for five (5) years verifying the following:

- Install, Maintain and operate a device to monitor and record Afterburner Temperature continuously (every 15 minutes)
- Calibrate annually primary chamber and afterburner thermocouples annually
- Keep records of date duration and description of any malfunction of the afterburner, maintenance and testing.
- Maintain current list from the manufacturer of the chemical composition of each material processed.
- Maintain burn-off oven manufacturer specification indicating that that the ovens are equipped with an afterburner, automatic temperature control system for both the primary chamber and afterburner, and an interlock system as described in the Design/Equipment Parameters section above.

Records are being maintained as required. Temperature and calibration records were provided and are included in **Attachment D**.

Stack/Vent Restrictions - All four (4) stacks must have a minimum diameter of 18-inches, an above ground minimum height of 35-feet and be vented unobstructed vertically to the ambient air.

Each burn-off oven has its own individual stack that is vented unobstructed vertically through the roof of the building. Stack dimensions and heights were not explicitly measured. However, visual observations appear to meet the requirements specified in Special Condition VIII(1-4) of the PTI.

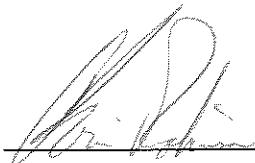
Compliance Determination

Based on observations made during this inspection and a records review, Knoll appears to be in compliance with PTI no. 215-16 and applicable air rules and regulations.

Attachments

- A - Surface Coating Usage Records
- B - Safety Data Sheets
- C - 2017 MAERS Report
- D - Burn-off oven temperature records (CD) & Calibration Records

NAME



DATE

8/13/2018

SUPERVISOR

