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

A398855974

FACILITY: LLOYD FLANDERS INDUSTRIES INC		**SRN / ID:** A3988
LOCATION: 3010 TENTH ST, MENOMINEE		**DISTRICT:** Marquette
CITY: MENOMINEE		**COUNTY:** MENOMINEE
CONTACT: Zachary Hinch , Operations Manager		**ACTIVITY DATE:** 10/15/2020
STAFF: Michael Conklin	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** SM OPT OUT
SUBJECT: Self-initiated inspection to determine compliance with PTI No. 128-82C and all other air pollution control rules and federal regulations.		
RESOLVED COMPLAINTS:		

Facility: Lloyd Flanders (SRN: A3988)
Location: 3010 Tenth St, Menominee, MI 49858
Contact(s): Zach Hinch, Operations Manager, 906-863-1936

Facility Description

Lloyd Flanders is a furniture manufacturing company specializing in outdoor wicker furniture. The company began in 1906 and patented the "Lloyd Loom" process in 1916. The company has been producing furniture out of the same facility in Menominee, Michigan since the beginning of operations.

Process Description

On-site processes include wicker weaving, coating operations, drying, and furniture assembly.

Emissions

Volatile organic compounds (VOCs) are emitted during coating operations with solvent-based and water-based coatings. A coating can consist of resins, pigments, solvents, diluents, reducers, and thinners. Resins and pigments usually make up the solid (non-evaporative or non-volatile) portion of the coating. The volatile portion of the coating can consist of water, solvents, diluents, reducers, and thinners. These compounds evaporate during the application and curing of the coating. All unrecovered solvent can be considered potential emissions of VOCs.

Emissions Reporting

Lloyd Flanders is required to report its annual emissions to the Michigan Air Emissions Reporting System (MAERS). The following table lists the source total emissions for the reporting year 2019.

Pollutant	Emissions (TPY)
CO	0
PM10	0
PM2.5	0
NOx	0
SO2	0
VOC	6.5

Regulatory Analysis

Lloyd Flanders is subject to Permit to Install (PTI) No. 128-82C, issued on 11/22/1996, a source-wide opt-out permit for hazardous air pollutants (HAPS) and VOCs. The facility has taken limits to restrict its potential-to-emit to below major source thresholds of 9 tpy for each individual HAP and 22.5 tpy for total HAPs. The facility is not subject to 40 CFR Part 63 Subpart JJ, Wood Furniture Manufacturing Operations NESHAP, because the facility is not considered a major source of HAPs.

At the time of permit issuance, production at the facility was much higher than current operations. The facility has not been using nearly as much coating throughput as it did back in the 1990's with production much lower. Based on current operations and production, the facility could be considered a true minor source for HAPs and all criteria pollutants.

Compliance History

A letter of violation was issued on 08/08/2017 for not maintaining records of VOC and HAP emissions as required in PTI No. 128-82C. The violation was considered resolved on 08/30/2017 with the submittal of an emissions spreadsheet. The company also stated that they would begin tracking coating and solvent usage on a monthly basis and would maintain the proper VOC and HAP emission records for each month and on a 12-month rolling time period basis.

Records Review

On 07/09/2020, a records request was sent to Lloyd Flanders to determine compliance with PTI No. 128 -82C. The request was sent to Suzanne Hoffman, the environmental representative for the company. A response to the request was received on 07/10/2020, stating Ms. Hoffman no longer works at the company and that Zach Hinch, Operations Manager, would be handling the records request. On 07/16/2020, Mr. Hinch provided purchase orders of coatings and a spreadsheet that tracks VOC and HAP emissions from coatings applied at the facility. Purchase orders were provided for the period June 2019 through June 2020. The purchase orders state the supplier, item number, and quantity (SC 22.A.4). The "Topcoat Operations" coatings are received from Northern Coatings and Chemical Co. in Menominee, MI, while the "Touch-up Operations" coatings are from Custom-Pak Products in Germantown, WI.

In the spreadsheet provided, the coating product numbers match the numbers in the purchase orders. The spreadsheet lists all the "Topcoat Operations" coatings, VOC content, HAP contents, the amount in gallons used for a day, monthly total, and yearly total. The spreadsheet also provides monthly and yearly VOC and HAP emissions. It was unknown, however, if the "Touch-up Operations" coatings and "Miscellaneous Volatile Organic Compound Usage" were included in the spreadsheet provided. Also, the spreadsheet only covers a 12-month period and it was unknown which year the spreadsheet was for. An email was sent to Mr. Hinch, on 07/28/2020, regarding these questions. Mr. Hinch responded to the email on 07/29/2020 stating that the emission spreadsheet was for the period of June 2019 – June 2020 and did not include "Touch-up Operations".

On 8/31/2020, Mr. Hinch provided updated spreadsheets for the years 2018, 2019, and 2020. Additional information for the "Touch-up Operations" coatings environmental data sheets (EDS) were provided, along with the SDS for the "Miscellaneous Volatile Organic Compound Usage" materials. The updated spreadsheets included the "Touch-up Operations" coatings with the VOC (with water) content and HAP contents. After reviewing the EDS for the "Touch-up Operations" coatings, it was determined the individual HAP components were not provided correctly in the spreadsheet. In the spreadsheet, they were calculated by taking the % weight of the HAP and multiplying it by the VOC content. This is not correct, and the % weight of the HAP should be multiplied by the weight per gallon (density) of the coating. The spreadsheet also did not account for emissions of Toluene that is contained in the Reclaimable Lacquer Thinner. The Reclaimable Lacquer Thinner contains 37.5% by weight Toluene, according to the SDS provided, and needs to be included in the total HAP emissions. In the 2019 spreadsheet, in the "Monthly Totals" tab, the December data was not pulling over correctly and needs to be fixed. For all the spreadsheets, in the "Monthly Totals" tab, some of the individual HAPs (Xylene, DB, etc...) are not pulling over correctly from the monthly data. For example, on some of the months, Xylene totals are pulling from the total HAPs cell of a given month. Also, the individual HAP names for the columns in the "Monthly Totals" tab are not aligning. DB is listed three times and Formaldehyde data is not aligning with its respected column. These issues also need to be addressed in an updated version. It was also requested that the previous year's monthly total VOCs and total HAPs data be copied and pasted above the current year, in the "12-month rolling-period" tab, so that a 12-month rolling calculation will occur for total VOC and HAP emissions.

On 10/06/2020, final updated versions of the spreadsheet were emailed. The spreadsheets included Toluene emissions from the Reclaimable Lacquer Thinner, VOC and HAP totals were summing correctly, and the total emissions for VOCs, each HAP, and total HAPS were being pulled correctly over to the "Monthly Totals" tab. The updated spreadsheets provided the identification of each coating and material, the amount in gallons of each coating and material used, the VOC content in pounds per gallon as applied for each coating and material used, the HAP content of each coating and material used, and monthly and 12-month rolling sum VOC and HAP emission calculations. For 2019, the spreadsheet provided indicates 13.4 tons of VOCs were emitted, and 3.92 tons of HAPs emitted (SC 14, 15, and 16).

On 10/15/2020, a site inspection was performed at Lloyd Flanders to determine full compliance with PTI No. 128-82C. My contact at the facility was Mr. Hinch, who accompanied me on the inspection. Mr.

Hinch provided a tour of the facility from incoming raw materials to finished product after coating. The main source of emissions from the facility are from the 5 coating booths, 4 of which are for "Topcoat Operations" and 1 for "Touch-up" operations.

Painting consist of a prime spray, topcoat spray, and touchup spray. Loom woven furniture moves through the paint area on an overhead conveyor. The prime and topcoat booths use electrostatic spray guns, and the booths feature primary and secondary filters for PM control. The facility changes the filters daily when a booth is being used. At the time of the inspection, two of the four spray booths for topcoat were operating. The filters appeared to be installed and operating in a satisfactory manner (SC 19). No visible emissions were observed outside of the facility (SC 18). After the primer and topcoat paint is sprayed, the furniture passes through a natural gas-fired drying oven. The oven consists of a rectangular carousel with a burner at each end. The oven is direct heated and contains emission vents at the entrance and exit, along with an induced draft (ID) fan and vent at the opposite end of the oven from the entrance and exit. The facility also has a second, smaller oven that features one natural gas burner. This oven, however, has not been in use for some time. The permit includes the drying ovens and spray booths as part of the VOC content limit in SC 13.

The touchup booth also features primary and secondary filters but does not use electrostatic spray guns. Aerosol cans of coating are used for the touchup operations. These coatings contain more VOCs and HAPs then the topcoat coatings but are not used as frequently. The touchup operations restore the finish on customers' furniture on a custom basis.

Other sources of emissions that vent externally include natural gas-fired space heaters, a metal surface preparation booth, and natural gas-fired loom dryers. There are three natural gas-fired loom dryers that are used to dry the glue on the loom. The woven loom is dipped in a glue material and then fed into the dryer. The dryers are direct heated and contain a hood that collects emissions through a duct that is then vented externally. All three dryers utilize the same duct to vent emissions. Each of these dryers were installed in the 1990's, according to the company, with the replacement of electric dryers.

The metal surface preparation booth is used to clean the surface of the metal furniture frames. The metal frames are hung on a carousel and pass through the booth. The booth contains nozzles that spray degreaser, water, and etch solution on the metal frames to prepare them for coating. The booth contains holes in the roof that allow emissions from the spray nozzles to vent internally. There are two stacks with induction fans to vent the booth externally. One is located at the entrance, and the other is at the exit end of the booth.

PTI No. 128-82C was issued as a source-wide opt-out permit and it is unclear whether the space heaters, loom dryers, and metal surface preparation booth were accounted for in the permit. It is unknown when these emission units were installed as they have been in the facility for many years. These emission units produce insignificant amount of emissions and could be considered grandfathered or exempt from permitting.

Compliance

Based on the site inspection and records review, Lloyd Flanders appears to be in compliance with PTI No. 128-82C and all other applicable air pollution control rules and federal regulations.

Image 1(Loom Dryer) : Woven loom with glue material is dried.

Image 2(Loom Dryer) : Natural gas-fired burner with air intake duct.

Image 3(Metal Preperation) : Metal surface preparation booth, containing spray nozzles, for frames of furniture.

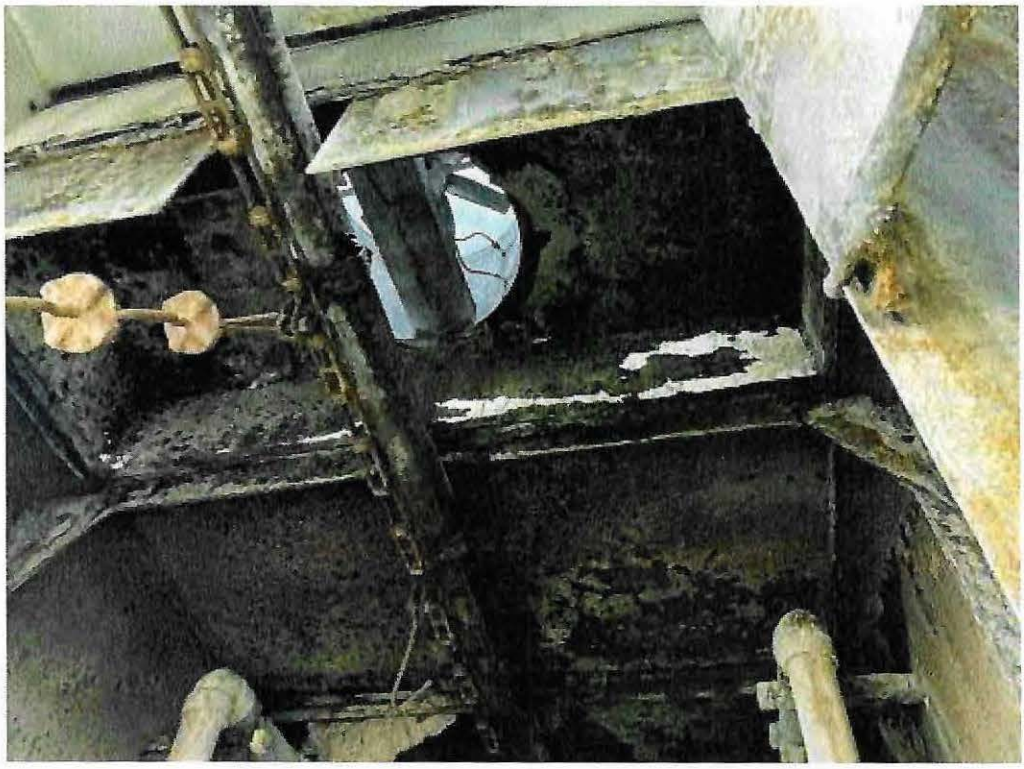

Image 4(Metal Preperation) : Outlet vents with fan for metal surface preperation booth.

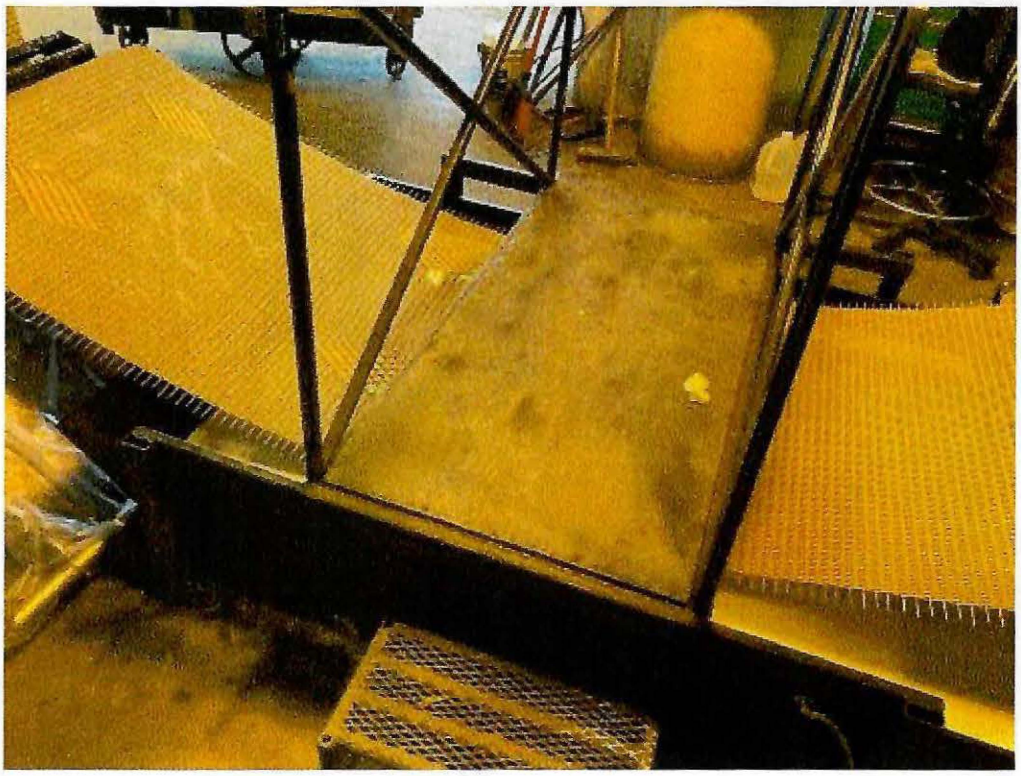

Image 5(Glue) : Woven loom is fed through glue material.

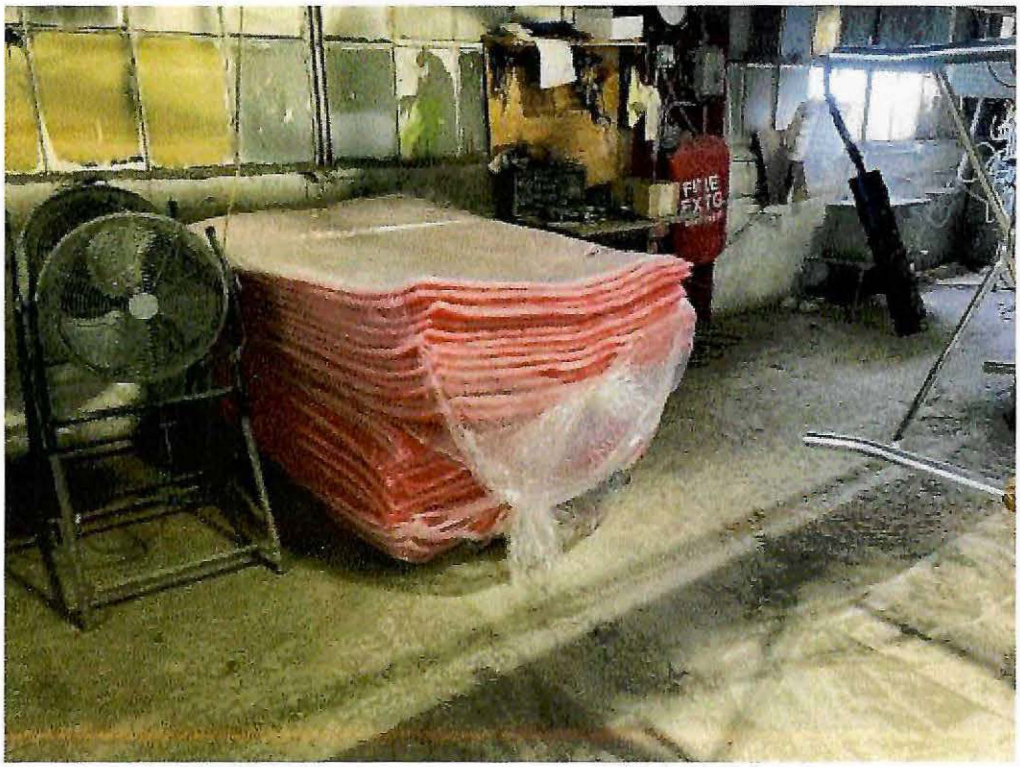

Image 6(Filters) : Extra spray booth filters kept on-site.

NAME Mitchell Schlin DATE 11/9/2020 SUPERVISOR ELL