

DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
**ACTIVITY REPORT: On-site Inspection**

N046552777

<b>FACILITY:</b> Bix Furniture Service East		<b>SRN / ID:</b> N0465
<b>LOCATION:</b> 27950 Harper, ST CLAIR SHRS		<b>DISTRICT:</b> Warren
<b>CITY:</b> ST CLAIR SHRS		<b>COUNTY:</b> MACOMB
<b>CONTACT:</b> Nancy McInnes ,		<b>ACTIVITY DATE:</b> 03/10/2020
<b>STAFF:</b> Iranna Konanahalli	<b>COMPLIANCE STATUS:</b> Non Compliance	<b>SOURCE CLASS:</b> MINOR
<b>SUBJECT:</b> FY2020 scheduled (VN follow-up) inspection of Bix Furniture Services, Inc. ("Bix")		
<b>RESOLVED COMPLAINTS:</b>		

**Bix Furniture Services, Inc. (N0465)  
27950 Harper Ave.  
Saint Clair Shores, MI 48081-1543**

**VNs: AQD issued Violation Notices (VNs) dated March 26, 2002, for failure to keep lacquer usage records and July 20, 2018, for Rule 336.1201 (Methylene Chloride [MeCl] Stripper) & 336.1910 (the lacquer booth filters not installed properly, gaps and holes were present).**

**PTI void: PTI No. 437-82 for lacquer spray booth (approved: 04/13/1983 & voided: 04/18/2002). Current (FY 2018) lacquer usage is  $\approx 20 \ll 200$  gallons per month.**

**Subject to: Area Source NESHAP / MACT 6H, 40 CFR, Part 63, Subpart HHHHHH, National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources; Final Rule (Page 1738 Federal Register / Vol. 73, No. 6 / Wednesday, January 9, 2008 / Rules and Regulations / Final Rule). The NESHAP is for area sources engaged in paint stripping, and miscellaneous surface coating operations. AQD has no delegation of these standards and therefore no attempt has been made evaluate Bix's compliance with NESHAP / MACT 6H. Bix performs methylene chloride paint /varnish stripping from principally wood surface. For the purposes of this NESHAP / MACT 6H rule, paint stripping operations are those that perform paint stripping using MeCl for the removal of dried paint (including, but not limited to, paint, enamel, varnish, shellac, and lacquer) from wood, metal, plastic, and other substrates at area sources.**

**Not Subject to: NESHAP/ MACT T, National Emission Standards for Hazardous Air Pollutants: Halogenated Solvent Cleaning (40 CFR, Part 63, Subpart T; NESHAP/ MACT T); Correction; 29484 Federal Register / Vol. 60, No. 107 / Monday, June 5, 1995 / Rules and Regulations; amended National Air Emission Standards for Hazardous Air Pollutants: Halogenated Solvent Cleaning (40 CFR, Part 63, Subpart T); Final Rule; Page 25138 Federal Register / Vol. 72, No. 85 / Thursday, May 3, 2007 / Rules and Regulations. According to US EPA, the solvent / methylene chloride stripper is not cold-cleaner because wood finish is not soil.**

On March 10, 2020, I conducted a level-2 **FY2020 scheduled inspection** of Bix Furniture Services, Inc. ("Bix"), located at 27950 Harper Ave., Saint Clair Shores, MI 48081-1543.

The inspection was conducted to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451; and Michigan Department of Environment, Great Lakes & Energy, Air Quality Division (EGLE-AQD) administrative rules.

During the FY 2020 inspection, Mr. Terry Iwig (Phone: 586-775-0430; Fax: 586-775-7468; Cell: 586-419-2317; E-mail: BixFurnitureService@Yahoo.com) assisted me. Ms. Nancy McInnes (Phone: 586-775-0430; Fax: 586-775-7468; Cell: NA; E-mail: BFSMI@Yahoo.com ), Owner, was out of town. Mr. Steve Matouk, Manager, separated about February 2020. Ms. McInnes and Mr. Matouk are siblings.

About August 2018, Mr. Daren Kimbal, Wood Surface Finisher, separated. Mr. Dan Aiuto, Wood Surface Stripper, was not present.

The purpose of inspection was to follow up on the most recent violation notice. Also, Bix is scheduled for FY 2020 inspection.

Founded in 1974, Bix Furniture Services, Inc. ("Bix") is in the business of repairing and restoring antique / old furniture. Services include stripping, repairing, refinishing, upholstery, etc. The furniture restoration involves old paint and varnish (wood finish) stripping using methylene chloride (MeCl) and spray application of lacquer for finishing restored product.

In the past (since 1980s), Bix had been alleged source of odors. The neighbors lodged numerous odor complaints.

### **Touch-up booth**

One touch-up booth with back-draft system is present. Only hand-held spray cans are used for touch-up. The booth is exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1287(2)(b).

### **8 ft \* 8 ft Spray Booth / Room.**

One paint spray both / room (8 ft. Width x 8 ft. Depth x 10 ft. Height) equipped with a back-draft dry filter system is present. The filter system, for lacquer overspray particulate control, consists of 24 filter panels. During the May 2018 and August 2019, inspection, I observed that the dry filters were not installed properly. There were lots of holes and gaps in the filter system. In addition, on August 30, 2019, two (2) of twenty-four (24) filter panels were removed.

I asked Mr. Iwig to install the filters such that they fit, at all times, snugly without gaps and holes. Duct / painter's tape may be used to cover the gaps. I also asked him to keep records of paint / varnish and solvent usage. The paint, varnish, stain and solvent usage records are not available. However, the usage is about 20 gallons per month (<< 200 gallons per month) based upon estimates from the purchase records. HVLP (High Volume Low Pressure) guns are not used. But, LVHP (Low Volume High Pressure) guns are used.

The booth is exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1287(2)(c) provided filter system is operated properly and lacquer usage records are kept. AQD issued Rule 910 violation notice (July 20, 2018) for failure to install the filters properly. During FY 2020 inspection the filters were installed properly.

### **Mohawk Finishing Products (Phone: 800-522-8266) of Hickory, NC 28602 Lacquer M545-4087**

40-55% aromatic hydrocarbons (CAS # 64742-95-6); 10-25% 1,2,4- trimethyl benzene (CAS # 95-63-6); 2-10% aromatic hydrocarbons (CAS # 64742-94-5); and other minor components.

100% VOC solvent. Flash Point (FP) = 108 °F TCC (Tag Closed Cup). Auto Ignition = NA °F. Boiling Point (BP) = 100 °F @ 760 mm Hg. Vapor Pressure (VP) = NA mm Hg at 68 °F. Specific Gravity (SG, Water = 1.0) = 0.952. Density ( $\rho$ ) @ 68 °F = 7.9 pounds / gallon (0.952 kg /L). Flammability range = NA %v (LEL) – NA%v (UEL).

### **5 ft \* 10 ft Paint / Varnish Stripper**

Methylene chloride paint stripper consists of 5 ft. Wide \* 10 ft. Length \* < 1 ft. Height open top tank. From the stripping tank, spent solvent is collected at one (right-front) corner by gravity flow in a 5-gallon pale. The collected solvent is reused / recycled. As Bix installed, about April 2017, at one corner of the stripper tank, ventilation system with fan ( $\approx$ \$20,000.00), evaporation of methylene chloride is mechanically assisted. The capture system is attached to the stripper tank because MeCl stays close to the floor. Bix should have installed refrigerated condenser to recover solvent as well such that recovered solvent could be reused. Because MeCl is expensive, payback period for solvent recovery condenser could be short. In addition, the stripper room is equipped with one floor ventilation system as methylene chloride is nearly three times heavier than air (MeCl vapor density = 2.93, air = 1).

Based upon the purchase records of the most recent 3.5 years, an average MeCl usage is 125 gallons (1,386 pounds) per month or 1,493 gallons (16,557 pounds or 8.3 tons) per year (Density ( $\rho$ ) @ 68 °F = 11.09 pounds per gallon (1.33 kg /L)). All usage is emitted to ambient air predominantly via stack.

Hence, Bix may be a Major MACT source based upon Potential-to-Emit (PTE) until it obtains an opt-out permit. AQD issued Rule 201 violation notice (July 20, 2018). Based upon the above usage data (1,493 gallons per year) and cost of MeCl (\$400 per 55-gallon drum = \$7.27 per gallon), Bix spends \$10,858 per year for the stripping solvent (MeCl). If solvent can be recovered and recycled, Bix can save up to ten thousand dollars in solvent costs; of course, there is a capital and operating costs for the refrigerated condenser.

Based upon purchase records, CY 2019 usage of the stripper is 1,750 gallons per year (average of 146 gallons per month) as purchased; each purchase order consists of four (4) 55-gallon drums of the stripper solvent or MeCl.

The stripper was not operating during the FY 2020 inspection.

According to US EPA, the solvent / methylene chloride stripper is not a cold-cleaner because wood finish is not soil.

### **Chemisphere Corporation of St. Louis, MO 63139, MeCl Stripper**

50-100% Methylene chloride (CAS # 75-09-2)

10-40% Methanol (CAS # 67-56-1)

100% VOC solvent (principally halogenated, MeCl). Flash Point (FP) = NA °F TCC (Tag Closed Cup). Auto Ignition = 556 °C = 1,033 °F. Boiling Point (BP) = 40 °C = 104 °F @ 760 mm Hg. Vapor Pressure (VP) = 353 mm Hg at 20 °C = 68 °F. Specific Gravity (SG, Water = 1.0) = 1.32. Density ( $\rho$ ) @ 68 °F = 11 pounds per gallon (1.32 kg /L). Flammability range = 12 %v (LEL) – NA%v (UEL). Vapor density (Air =1) = 2.93, i.e. nearly 3 times heavier than air.

### **Methylene chloride (MeCl, CAS # 75-09-2, CH<sub>2</sub>Cl<sub>2</sub>) aka DCM or dichloromethane, methylene dichloride**

Flash Point (FP) = NA (does not burn easily due to Cl) °F TCC (Tag Closed Cup). Auto Ignition = 556 °C = 1,033 °F. Boiling Point (BP) = 39.6 °C = 103.3 °F @ 760 mm Hg. Vapor Pressure (VP) = 57.3 kilopascal (kPa) at 25 °C = 77 °F. Specific Gravity (SG, Water = 1.0) = 1.33. Density ( $\rho$ ) @ 68 °F = 11.09 pounds per gallon (1.33 kg /L). Flammability range = 13 %v (LEL) – 23%v (UEL). Viscosity = 0.413 cP at 25 °C = 77 °F. Vapor density (Air =1) = 2.9, i.e. nearly 3 times heavier than air. PEL (Permissible) = 25 ppm 8-hour average and 125 ppm 15-minute average. IDLH (immediate danger) = 2,300 ppm CA. 1 ppm = 3.47 milligrams per cubic meter.

EGLE-MMD, EGLE-RRD, MIOSHA may conduct further investigation.

Ms. Jennifer Dixon (Phone: 517-284-6892 or 800-662-9278; E-mail: DIXONJ2@michigan.gov), Air Quality Liaison, Environmental Support Division, ESD-EGLE is helping Bix with a permit application for the stripping process with a refrigerated condenser so that MeCl can be recycled / reused in wood finish stripping. Bix is supplying her needed information and data.

### **Conclusion**

AQD issued July 20, 2018, Violation Notice for Rules 201 and 910. Bix continues to be in violation. AQD returned to Bix its permit application for incompleteness. Ms. Dixon of ESD-EGLE is helping Bix with its application.

NAME J. S. Marshall

DATE December 30, 2020

SUPERVISOR Joyce