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

N197524349

FACILITY: MARBELITE CORPORATION	**SRN / ID:** N1975
LOCATION: 22500 HESLIP, NOVI	**DISTRICT:** Southeast Michigan
CITY: NOVI	**COUNTY:** OAKLAND
CONTACT:	**ACTIVITY DATE:** 02/19/2014
STAFF: Iranna Konanahalli **COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** SM OPT OUT
SUBJECT: FY 2014 scheduled annual inspection of Marbelite Corporation	
RESOLVED COMPLAINTS:	

Marbelite Corporation (N1975)
22500 Heslip Drive
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Novi, Michigan 48375-4139

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Permit-to-Install No.: 240-95D (ROP & MACT opt-out) dated November 2, 2005

PTI Voids: 639-88 (05/13/96), 240-95 (4/25/2003), 240-95A (4/12/2001), 240-95B dated April 25, 2003 (07/15/2004), 240-95C dated July 13, 2004 (11/02/2005)

NESHAP / MACT WWWW: Not subject to 40 CFR, Part 63, Subpart WWWW, National Emission Standards for Hazardous Air Pollutants: Reinforced Plastic Composites Production. Synthetic Minor Source via PTI No. 240-95D.

FY 2014 FCE

On February 05 and 19, 2014, I conducted a level-2 scheduled annual inspection of Marbelite Corporation located at 22500 Heslip Drive, Novi, Michigan 48375-4139. The inspection was conducted to determine compliance with the Federal Clean Air Act (CAA); Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 (PA 451); Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) administrative rules; federal NESHAP / MACT WWWW; and Permit-to-Install No.: 240-95D (ROP & MACT opt-out).

During the inspection, Mr. William Diatikar (Phone: 248- 348-1900; Fax: 248-348-1934; E-mail: billd@marbelitecorp.com), Vice President, manufacturing, and owner partner, assisted me.

Mr. Rod Lertola, Vice President, technical & marketing, and owner, separated in CY 2009. Messrs. Larry Morrianti, President, Bill Lubahn, VP Sales, Bill Diatikar, VP Operations, bought Lertola's shares of the business. Mr. Randy Tysar, an environmental consultant, was not present. Mr. Tysar wrote the spreadsheet and its formulas to calculate VOC / HAP emissions.

Mr. William Diatikar stated that bathroom vanity business is down 50 percent due to housing, banking and credit crisis (2008-2012). However, the business has picked up recently.

Marbelite manufactures imitation marble bathroom products (vanity tops). The process consists of gelcoat spray application to the desired molds (countertops, sinks, vanities, showers, etc) in the gelcoat booth, spreading on the molds the matrix and baking the gelcoat. While gelcoat is cured first in a natural gas fired oven, after spreading the matrix on a mold, the matrix is cured on a mold at ambient temperatures utilizing heat of reaction. Maximum styrene contents of gelcoat are 30 percent in Alpine, 39 percent in Biscuit, 42 percent in Clearcoat and 37 percent in Bone.

Gelcoating (EU-Gelcoat) – baked at 80 °F

A mold release agent (No.2 Seal Kote) is applied to the desired mold, when the mold is used for the first time. Seal Kote is a wipe-on application; not spray application. A repaired and sanded mold needs sealing as well. The Seal Kote seals the porous surfaces and crevices of a mold and thus prevents adhesion of gelcoat. Seal Kote release agent is applied as a semi-permanent mold release agent every 50-100 (approximately) times mold is used to seal the mold; as cost saving measure seal application rate is reduced to every 50-100 castings (about once in 2 years) from 30-50. The sealed mold is placed on a roller track to move in the process line. Gelcoat is sprayed on the mold in the gelcoat booth equipped with HVLP gun and a double-layer (primary pre-filter and secondary Andrea filter) dry filter system to control gelcoat over-spray particulate matter. The Mold is baked to cure the gelcoat at 80 degrees Fahrenheit for about 40-45 minutes. The gelcoat curing oven is natural gas fired (0.2 million BTU per hour). Thus gelcoated and cured mold is transferred to the casting machine roller track.

I asked Mr. Diatikar to install and inspect the filters such that they fit, at all times, snugly without gaps and holes. I also asked him train painters properly so that overspray can be minimized resulting in cost savings due to purchasing less gelcoat.

While Andrea filters (secondary) are changed once per six months, dry filters (primary) are changed once per week.

Molding bathroom fixtures using casting machine (EU-CastingResin) – Ambient curing

The matrix is mixed in Respecta Model No. DB-22 self-contained automated casting machine. The matrix consists of calcium carbonate or lime stone (~60%, powder), an inorganic filler (~10%, powder), a resin (~30%, liquid), a catalyst (small amount, 1-2 percent, liquid) and a pigment (trace to impart color, liquid). The catalyst is used to catalyze the polymerization (a chemical reaction) of the resin. The matrix is dispensed on previously gelcoated mold and spread by a skilled technician. The catalyst initiates and promotes the exothermic polymerization reaction that releases sufficient heat to maintain mold warm (135 deg Fahrenheit). The mold is vibrated to remove air bubbles. The curing continues for one and one half hour under ambient conditions. Although ambient curing is sufficient, natural gas fired curing oven speeds up the curing thus increasing the fixture production rate. However, Marbelite cures cast product at ambient temperatures. On some molds (modular) a top is closed tightly on the mold so that uniform and consistent shape is achieved. It may be noted that cured gelcoat is retained on a product and not on a mold, which is reused to produce another clone (product).

While gelcoat molds are cured in natural gas oven at 80 degrees Fahrenheit for about 40 minutes, cast product (i.e. matrix is on gelcoated mold) is cured at ambient temperature utilizing heat of reaction of polymerization reaction (exothermic).

Upon ambient temperature curing, the matrix material is now set on the mold. The bathroom fixture is removed from the mold and sent to a finishing booth where it is ground and is sanded to give finishing touches. Gelcoat is affixed on the fixture and not on the mold. The fixture with shiny gelcoat is packaged and shipped.

Grinding / finishing booth (Rule 285(l)

The grinding / finishing booth is equipped with a dry filter with indoor exhaust. Pursuant to Rule 336.1285 (l) (vi), the booth is exempt from Rule 336.1201 (Permit-to-Install). In this booth the molds are sanded to give finishing touches. Dust laden air goes through a down-draft exhaust system. Dusty air is filtered in a cartridge filter system and cleaned air is recirculated back into the plant. Filtered air is never exhausted out, even in A/C cooling season (spring / summer). Photohelic pressure meter monitors pressure drop across the filters. 3.2 inches of water is a set point at which a pulse air cleans cartridges. Pulse-jet air cleaning is performed at least once per day to ensure proper functioning and longevity of the filters. The system is Dust Hog Dust Collection System with Supra-Clean Pulse Controller (United Air Specialists, Inc.).

3 sets of Dust Hog Filter systems are present. Downdraft air flow is present for particulate matter protecting the worker's breathing zone. The filters are replaced once in about five years based upon pressured drop (ΔP).

In all, three Dust Hog Filter systems are present. Each Dust Hog consists of 12 cartridge filters; 36 cartridge filters in all.

Clean-up (EU-Clean-up)

Acetone is used to clean and flush the gelcoat lines and HVLP spray guns. It is also used to clean certain components (e.g. tools) in casting Dept. Most of acetone is recovered or reclaimed, stored in closed container and disposed of at an off-site location. Recovered acetone records are maintained via RCRA Manifests.

Methylene chloride (HAP) is used only if a failure (e.g. power outage) occurs, which is rare. Methylene chloride is also used to clean Respecta machine when plugged. Most of the methylene chloride is recovered or reclaimed, stored in closed container and disposed of at an off site location. Recovered Methylene chloride records are maintained via RCRA Manifests. One emergency incident occurred in CY 2007 that required use of Methylene Chloride; next emergency that required use of methylene chloride occurred in June 2011. In Cy 2013 no MeCl was used.

S280 Superflush cleaner is used for routine cleaning of the mixing machine. Most of the Superflush is recovered or reclaimed, stored in closed container and disposed of at an off site location. Recovered Superflush records are maintained via RCRA Manifests.

One Rule 285 Wood-cutting machine

One wood cutting / grinding machine is present. The machine is equipped with a bag filter to collect dust. No exhaust to outside ambient air. 55-gallon drum and a bag together are used

collect saw dust. The bag and the 55-gallon drum are emptied when full; about once per week.

The machine is exempt from Rule 336.1201 (Permit-to-Install) pursuant to Rule 336.1285(l).

EU-CASTINGRESIN

Based upon Silmar (part of BP Chemicals) Certificate of Analysis (Phone: 317-781-4400), general purpose marble resin solution (styrene monomer) contains 29 percent styrene (PTI No. 240-95D, SC 1.3 limit: 30 percent). Only one cast resin is used. The resin solution is also known as unsaturated polyester resin (SIL90BA-768DHS general purpose marble resin). Marbelite keeps production information on computer file (PTI No. 240-95D, SC 1.6.a). Styrene emissions due to casting are calculated (PTI No. 240-95D, SC 1.6.f); the daily emissions are prorated from monthly data. Inventory and purchase records are kept (PTI No. 240-95D, SC 1.6.e). Styrene, VOC, cleanup VOC emissions due to casting, gelcoating, cleanup are calculated based upon 12-month rolling time period (PTI No. 240-95D, SC 1.6.g).

Predicted emissions (daily and monthly) are calculated based upon production data and the actual daily emissions are prorated from the predicted emissions using inventory data (PTI No. 240-95D, SC 1.6.h). While predicted emissions are kept on daily basis, actual emissions are kept on monthly basis.

Styrene emissions from the casting process (EU-CastingResin) are 3.3 pounds per day for Nov 06, 2013, 49.7 pounds per month (Nov 2013) prorated from monthly data (PTI No. 240-95D, SC1.1.a Limit: 51.6 pounds per day). Annual styrene emissions are 0.31 tons per year for Nov 2013 12-month period (PTI No. 240-95D, SC1.1.b Limit: 2.1 tons per year). Annual VOC emissions are 0.34 tons per year for Nov 2013 12-month period (PTI No. 240-95D, SC1.1.c Limit: 2.3 tons per year).

EU-GELCOAT

Likewise, styrene, MMA (methyl methacrylate CAS No. 80-62-6) and VOC emissions records for gelcoat booth are kept and the emissions calculations are performed (PTI No. 240-95D, SC 2.6, 2.7 & 2.8).

Styrene contents of gelcoat are 30 percent in Alpine (PTI No. 240-95D, SC 2.2a limit: 30 percent), 39 in Biscuit (PTI No. 240-95D, SC 2.2c limit: 39 percent), 42 percent in Clearcoat (PTI No. 240-95D, SC 2.2b limit: 42 percent) and 37 percent in Bone (PTI No. 240-95D, SC 2.2d limit: 37 percent); Bone is not processed for about a year.

Styrene emissions from the gelcoating process is 4.5 pounds per day for Nov 18, 2013 & 79.2 pounds per month for Nov 2013, prorated from monthly data (PTI No. 240-95D, SC 2.1.a Limit: 347 pounds per day). Annual styrene emissions is 1.24 tons per year for November 2013 12-month period (PTI No. 240-95D, SC 2.1.b Limit: 9.9 tons per year). MMA emissions from the gelcoating process is 2.6 pounds per day (PTI No. 240-95D, SC 2.1.c Limit: 86.5 pounds per day) and 0.29 tons per year for November 2013 12-month period (PTI No. 240-95D, SC 2.1.d Limit: 3.3 tons per year). Annual VOC emissions are 1.53 tons per year for November 2013 12-month period (PTI No. 240-95D, SC 2.1.e Limit: 18.4 tons per year).

Gelcoat booth is equipped with a double-layer (primary – flat and secondary - Andrea) dry filter system to control overspray particulate matter. During my FY2014 inspection, I found them to be operating properly.

EU-CLEANUP

While acetone is used as a cleanup solvent under normal conditions, methylene chloride is used in an emergency, such as power failure, to stop polymerization in casting machine. For November 2013 12-month period, cleanup acetone, VOC and methylene chloride usage is 0.26 tpy (PTI No. 240-95D, SC 3.1.a Limit: 10 tons per year), 0.26 tpy (PTI No. 240-95D, SC 3.1.b Limit: 4.1 tons per year) and 0.00 pounds per year (PTI No. 240-95D, SC 3.2 Limit: 400 pounds per year), respectively. One incident occurred in CY2007 that required use of Methylene Chloride; next in June 2011. No MeCl clean-up in CY 2013.

S-280 Superflush Cleanup solvent, an alternative to methylene chloride is recovered and disposed of as nonhazardous solid waste (liquid with 0.19 mm Hg vapor pressure at room conditions)

FG-FIXTURES

All wastes are handled properly. While Superflush is sent to Superior Oil, Industrial Waste is sent to Environmental Quality Company (PTI No. 240-95D, SC 4.1). The records are kept and calculations are performed (PTI No. 240-95D, SC 4.2 and 4.3).

FG-FACILITY (NESHAP / MACT OPT-OUT HAP LIMITS)

For November 2013 12-month period, Styrene (any single HAP) emissions are 0.31 (casting) plus 1.24 (gelcoat) = 1.55 (FG-FACILITY) tons per year (PTI No. 240-95D SC 5.1a limit: 9.9 tpy). Styrene is only HAP emitted (1.55 tpy).

Federal NESHAP / MACT and ROP

Pursuant to approval of Permit-to-Install No.: 240-95C (ROP & MACT opt-out) dated July 13, 2004, Marbelite's imitation marble manufacturing process is NOT subject to 40 CFR, Part 63, Subpart WWWW, National Emission Standards for Hazardous Air Pollutants: Reinforced Plastic Composites Production. The Proposed Rule was published in Federal Register / Vol. 66, No. 149 / Thursday, August 2, 2001 / Proposed Rules. The Final Rule was published in Federal Register / Vol. 68, No. 76 / Monday, April 21, 2003 / Rules and Regulations. Marbelite, an existing major MACT source as of June 2004, had to comply with the NESHAP by April 21, 2006. Because Marbelite was a major MACT source since April 25, 2003 and before July 13, 2004, it submited an administratively complete ROP application to AQD by April 25, 2004. Marbelite mailed on August 18, 2003 the Initial Notification, which stated that Marbelite was subject to the NESHAP / MACT WWWW as a major source.

Subsequently Marbelite modified PTI No. 240-95C, which allowed Marbelite to become a non-major(aka area) NESHAP / MACT source, to PTI No. 240-95D dated November 2, 2005. The purpose of this modification was to correct typographical errors discovered during FY 2005 inspection and to increase styrene content to 30 percent from 28 percent for Alpine gelcoat and to 39 percent from 37 percent for Biscuit gelcoat.

As a matter of fact, Renewable Operating Permit (ROP) Application No. 200400085 dated April 19, 2004 (received by AQD on April 20, 2004) was submitted in compliance with April 25,

2004 deadline. Subsequently, AQD voided this application on January 4, 2005 pursuant to the void request letter dated December 17, 2005 and PTI No. 240-95C (a MACT and ROP synthetic minor permit).

National Emission Standards for Hazardous Air Pollutants (NESHAP) for Reinforced Plastic Composites Production were promulgated April 21, 2003, and amended on August 25, 2005. This NESHAP applies to reinforced plastic composites production operations located at major sources of emissions of hazardous air pollutants (HAP).

Marbelite is a source with federally enforceable limits (PTI No. 240-95D, SC FG-Facility, 5.1a limit: 9.9 tpy single HAP & PTI No. 240-95D, SC FG-Facility, 5.1b limit: 24.9 aggregate HAPs) below the major source thresholds (<10 tpy single HAP & <25 aggregate HAPs) is exempt from this rule. Marbelite obtained these limits via PTI No. 240-95D dated November 2, 2005, before the first significant compliance date for this NESHAP. This date is April 21, 2006 for existing sources.

Unified Emission Factors (UEF)

Unified Emission Factors (UEF), as stated in Table I of NESHAP / MACT WWWW, were used in the emissions calculations. UEF were incorporated into PTI No. 240-95D. According to Lasco Bathware (800-877-2005), UEF / Table I emission factors under-predict styrene emissions as much as 30 percent for non-atomized mechanical applicators. Per Lasco's Mr. Stuart Leigh, President, the NESHAP / MACT WWWW rules / regulations do not take into account the operating conditions of a typical tub / shower operations. On October 30, 2006, Mr. Leigh wrote a letter to Mr. Steven Chester, Director of Michigan Dept. of Environmental Quality, complaining about competitive disadvantage Lasco is in because it installed VOC / HAP control equipment at its facilities (8). On November 1, 2006, US EPA Region VII responded to Mr. Leigh's concerns and commended Lasco's proactive approach in controlling VOC / HAP emissions. In future, US EPA may revise the NESHAP / MACT WWWW standards taking into account Lasco's and American Composites Manufacturers Association's information.

Since Marbelite's styrene emissions are well below the limit of 9.9 tpy (actual: 2.84 tons of styrene per year for October 2008), it is not necessary to make an issued out of unreliability of the emission factors (UEF), which are incorporated into federal NESHAP regulations and the Permit-to-Install No. 240-95D. The MDEQ-AQD will revisit the emission factors issue when the NESHAP / MACT WWWW final rule is revised. Ms. Cindy Smith of Permit Section, MDEQ -AQD, concurs with this conclusion per my conversation with her on April 9, 2007.

Styrene emission factor

Per Tom Marza's memo dated September 13, 2000, a mass balance test was performed to develop styrene emission factor. The test did not involve stack emissions. AQD calculated 0.47% as average percent of styrene emissions a percentage of resin. The standard deviation of data set was 0.08%. AQD calculated 1.72% as average percent of styrene emissions as percentage of styrene content of the resin. The standard deviation of the data set was 0.30%

Conclusion

I did not find any compliance problem with Permit-to-Install No 240-95D (ROP & MACT opt-out) dated November 2, 2005. AQD voided RO application on January 4, 2005 pursuant to

the void request letter dated December 17, 2005 and PTI No. 240-95C (a MACT and ROP synthetic minor permit). I had asked the company to submit an application for administrative amendment of PTI No. 240-95C to correct typographical errors. PTI No. 240-95C was revised to PTI No. 240-95D on November 2, 2005. Under-prediction of styrene emissions due to Unified Emission Factors (UEF) is not an issue until the NESHAP / MACT WWWW is revised.

NAME DKrenmahdk DATE 2/20/2014 SUPERVISOR CJE