

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

N054470390

FACILITY: WARM RAIN CORPORATION		SRN / ID: N0544
LOCATION: 51675 N INDUSTRIAL DRIVE, CALUMET		DISTRICT: Marquette
CITY: CALUMET		COUNTY: HOUGHTON
CONTACT: Zach Miller , Operation Specialist		ACTIVITY DATE: 11/30/2023
STAFF: Joe Scanlan	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Unannounced inspection to determine compliance with MI-ROP-N0544-2019.		
RESOLVED COMPLAINTS:		

REGULATORY AUTHORITY

Under the Authority of Section 5526 of Part 55 of NREPA, the Department of Environment, Great Lakes, and Energy may upon the presentation of their card, and stating the authority and purpose of the investigation, enter and inspect any property at reasonable times for the purpose of investigating either an actual or suspected source of air pollution or ascertaining compliance or noncompliance with NREPA, Rules promulgated thereunder, and the federal Clean Air Act.

FACILITY DESCRIPTION

Warm Rain Corporation is a plastic composite company that produces fiberglass tub/shower units using an open molding process. The company's factory is located in an industrial park adjacent to the Houghton County Airport, near the village of Calumet.

PROCESS DESCRIPTION

Warm Rain uses an open molding process to produce fiberglass tub/shower units. The fiberglass fabrications are built using gelcoat/resin and chopped fiberglass sprayed in four dry filter spray booths which are adjacent to one another; each booth exhausting through filters out of the side wall. The bathroom units are made using a 4-layer design:

Bottom layer - High strength fiberglass

Inside layer - Resin-impregnated end-cut balsa sub-floor

Inside layer - High strength fiberglass

Top layer - Solid color cast sheet acrylic or gel-coat finish

During production the units are manufactured in reverse order, with the top layer being laid first. Molds are received at the facility and enter a dry filter spray booth for gelcoat application. Gelcoat consists of resin and catalyst mixed to provide a smooth clear or pigmented outer surface. A spray gun is utilized to mix the materials produces a non-atomized resin/catalyst stream.

Next, the units move to one of the other three dry filter spray booths for the fiberglass application process. The fiberglass spray lay-up uses a chop gun that combines a thermoset polyester resin, glass fibers, and catalyst to produce a reinforced plastic composite or fiberglass layer. Thermoset polyester resins are polymers formed by a cross-linking reaction of a liquid unsaturated polyester with a monomer.

After the fiberglass lay-up process, the units dry and are released from their molds. The units are then sanded, quality checked, and packaged for shipping.

Other processes at the facility include cleanup operations with acetone and/or other solvents. Tools and parts are placed in buckets containing acetone until cleaned; waste acetone is recycled using a distillation system.

EMISSIONS

Emissions from the facility consist of fugitive vapors from volatile organic compounds (VOCs), primarily styrene, that are emitted from the gelcoat and fiberglass fabrication processes. The cross-linking agent (monomer) contained in the resin and gelcoat evaporates during fiberglass lay-up and curing. Styrene, methyl methacrylate, and vinyl toluene are the most common monomers used as cross-linking agents in liquid resins.

The facility utilizes forced crossflow ventilation inside the facility and ventilates emissions from the spray booths through dry exhaust filters to the outside atmosphere. Fugitive VOC emissions also result from the evaporation of cleanup solvents.

Acetone is primarily used as the cleanup solvent for gelcoat and fiberglass application parts and tools. Note, acetone is not considered a VOC. Other cleanup solvents are minor sources of VOCs.

EMISSIONS REPORTING

The facility is required to report its annual emissions to Michigan Air Emissions Reporting System (MAERS). The following table lists the source total emissions for the reporting year 2022:

Pollutant	Emissions (TPY)
CO	0.0
PM10	0.0
PM2.5	0.0
NMOC	0.0
VOC	28.9
HAP (Styrene)	28.9

REGULATORY ANALYSIS

The facility was originally constructed in 1976 and operated under PTI No. 212-76. Warm Rain now operates under MI-ROP-N0544-2019 and is currently in the ROP renewal process. The company is in Houghton County, which is currently designated by the EPA as attainment/unclassified for all criteria pollutants.

Warm Rain is subject to Title V (40 CFR, Part 70) because the PTE of any single HAP regulated by the CAA is more than 10 tpy and/or the PTE of all HAPs combined is more than 25 tpy.

FGMACTWWWW includes FGBOOTHs and EUCLEANUP. FGBOOTHs and EUCLEANUP are subject to the MACT Standards for Reinforced Plastics Composites Production (40 CFR, Part 63, Subpart WWWW), which covers processes including open molding, mixing, cleaning, and material storage.

VOC emissions from FGBOOTHs are exempt from CAM because VOCs are addressed by 40 CFR, Part 63, Subpart WWWW. Therefore, FGBOOTHs is exempt from CAM requirements for VOCs.

COMPLIANCE

The facility was last inspected in January of 2022 and has not had any compliance issues since then. However, odor complaints on three separate dates in 2022 and 2023 which resulted in district staff conducting odor evaluations. The odor evaluations did not result in any Rule 901b violations, and the complaints are considered resolved.

INSPECTION

Zachary Merrill, Operation Specialist, met AQD district staff Drew Yesmut and I when we arrived at the facility. After an introductory meeting and brief discussion, Zachary proceeded to guide us through the production, finishing and packaging areas of the facility. Production was in process at the time of inspection.

EUCLEANUP

SC VI.1-2: The facility maintains acceptable daily/weekly/monthly records of solvent usage in gallons. AQD staff were allowed access to view the records (see photos attached).

FGBOOTHs

SC III.1-2, VI.1: The dry filters for each booth are installed, maintained, and operated in a satisfactory manner. Filters are visually inspected daily and replaced as necessary. Replacement filters are in stock (see photos attached).

SC VI.2: Requires the facility to maintain acceptable daily records for the exhaust filters in each spray booth. AQD staff was provided with weekly records for the daily inspections and/or replacement of filters for the spray booths (see photos attached).

SC VI.3, VII.1-3: Requires the facility to maintain acceptable records of the types and amounts of resin, gel coat, and catalyst used per calendar month. The facility has not changed the types of resin, gel coat or catalyst since the last inspection and SDS records for each are on file in the district office. AQD staff was allowed access to the monthly records for the amount of each

product used. These data are analyzed to provide HAP emissions which are included in the annual and semi-annual compliance reports.

FGMACTWWWW

SC I.1, VI.1-4: The facility records and monitors resin/gel coat usage and HAP emissions with a spreadsheet that calculates a monthly weighted average organic HAP emissions factor on a lbs/ton of combined resin and gel coat basis and a monthly weighted average MACT limit for all open molding resin and gelcoat usage. This is in compliance with 40 CFR 63.5810(c) and 40 CFR 63.5900. The spreadsheet shows the weighted average HAP emission rate and limit for each month and a 12-month rolling average percent of the weighted average MACT limit. The 12-month rolling average summary is also included in their semiannual MACT WWWW compliance reports. Records through December 2023 show the 12-month rolling average facility-wide HAP emissions are 87.9% of the MACT limit. Records also show the 12-month rolling average through June 2023 was 94.9% of the MACT limit. The facility provided AQD staff access to the shop records used to maintain the spreadsheets for FGMACTWWWW compliance.

SC III.2-3: All containers for HAP-containing materials are stored closed and covered and mixing containers are adequately covered as well.

SC VI.1: Requires the facility to maintain a current listing of the chemical composition of each material. SDS documents are on file at the facility and in the district files.

SC VII: The facility submits timely semiannual monitoring and deviation reports and annual certifications of compliance, as well as semiannual compliance reports pursuant to 40 CFR Part 63, Subpart WWWW. No deviations have been reported and HAP emission calculations show compliance with emission limits.

SUMMARY

The facility has adequate recordkeeping and reporting and appears to be in compliance with MI-ROP-N0544-2019. However, the facility has come close to exceeding the HAP limit pursuant to 40 CFR Part 63, Subpart WWWW, and needs to be diligent in monitoring resin and gel coat usage in order to not exceed the MACT limit.

YEAR 2023
MONTH NOVEMBER
WEEK NUMBER 2

REQUIRED WEEKLY INPLACEMENT OF FILTER CHECKLIST

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
BOOTH NUMBER	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
ALL FILTERS IN PLACE	X X X X	X X X X	X X X X	X X X X	X X X X	
SPARE FILTERS	X X X X	X X X X	X X X X	X X X X	X X X X	
FILTERS CHANGED			X X	X X	X X	
PARAMETER OPERATIONAL AND WITHIN PARAMETERS	X X X X	X X X X	X X X X	X X X X	X X X X	
CORRECTIVE MEASURES	NONE	NONE	NONE	NONE	NONE	
TIME	3:30 P.M.					
DATE	11/12/23	11/13/23	11/14/23	11/15/23	11/16/23	
INITIALS	RF	RF	RF	ML	ML	

YEAR 2023
MONTH NOVEMBER
WEEK NUMBER 3

Warm Rain

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
BOOTH NUMBER	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
ALL FILTERS IN PLACE	X X X X	X X X X	X X X X			
SPARE FILTERS	X X X X	X X X X	X X X X			
FILTERS CHANGED			X X			
PARAMETER OPERATIONAL AND WITHIN PARAMETERS	X X X X	X X X X	X X X X			
CORRECTIVE MEASURES	NONE	NONE	NONE			
TIME	3:30 P.M.	3:30 P.M.	3:30 P.M.			
DATE	11/20/23	11/21/23	11/22/23			
INITIALS	RF	RF	RF			

YEAR
MONTH
WEEK NUMBER

REQUIRED WEEKLY INPLACEMENT

Image 1(WR1) : Filter inspection checklist Nov 2023

YEAR 2023
MONTH NOVEMBER
WEEK NUMBER 5

REQUIRED WEEKLY INPLACEMENT OF FILTER CHECKLIST

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
BOOTH NUMBER	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
ALL FILTERS IN PLACE	X X X X	X X X X	X X X X	X X X X	X X X X	
SPARE FILTERS	X X X X	X X X X	X X X X	X X X X	X X X X	
FILTERS CHANGED			X	X	X	
PARAMETER OPERATIONAL AND WITHIN PARAMETERS	X X X X	X X X X	X X X X	X X X X	X X X X	
CORRECTIVE MEASURES	NONE	NONE	NONE	NONE	NONE	
TIME	3:30 P.M.					
DATE	11/20/23	11/21/23	11/22/23	11/23/23	11/24/23	
INITIALS	RF	RF	RF	ML	ML	

YEAR 2023
MONTH NOVEMBER
WEEK NUMBER 1

Warm Rain

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
BOOTH NUMBER	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
ALL FILTERS IN PLACE	X X X X	X X X X	X X X X	X X X X	X X X X	
SPARE FILTERS	X X X X	X X X X	X X X X	X X X X	X X X X	
FILTERS CHANGED			X	X	X	
PARAMETER OPERATIONAL AND WITHIN PARAMETERS	X X X X	X X X X	X X X X	X X X X	X X X X	
CORRECTIVE MEASURES	NONE	NONE	NONE	NONE	NONE	
TIME	3:30 P.M.					
DATE	11/06/23	11/07/23	11/08/23	11/09/23	11/20/23	
INITIALS	RF	RF	RF	ML	ML	

Image 2(WR2) : Filter inspection checklist Oct/Nov 2023

2022 Monthly Solvent Usage Report

Date	Inspector	No. of gallons used	No. of gallons reclaimed	Comments
Jan	BB	567	218 218	N/A
Feb	BB	448	185	N/A
March	BB	375	144	N/A
April	BB	493	203	N/A
May	BB	509	205	N/A
June	BB	495	185	N/A
July	BB	512	202	N/A
Aug	BB	502	197	N/A
Sept	BB	613	280	N/A
Oct	BB	552	201	N/A
Nov	ZM	560	206	N/A
Dec	ZM	489	209	N/A

Image 3(WR3) : 2022 Monthly Solvent Usage Report

2023 Monthly Solvent Usage Report

Date	Inspector	No. of gallons used	No. of gallons reclaimed	Comments
Jan	ZM	630	220	N/A
Feb	ZM	567	250	N/A
March	ZM	418	184	★ great
April	ZM	371	155	N/A
May	ZM	459	160	N/A
June	ZM	429	175	N/A
July	ZM	550	230	N/A
Aug	N/A	581	251	N/A
Sept	ZM	542	194	
Oct	ZM	600	212	
Nov				
Dec				

Image 4(WR4) : 2023 Monthly Solvent Usage Report (through October).



Image 5(WR5) : Replacement dry filter media in stock.



Image 6(WR6) : Replacement dry filter media in stock.

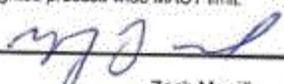
Composite MACT Compliance Calculator for Open Molding Operations
 © Engineering Environmental 2003, 2005 - copyrights assigned to ACMA
 for Exclusive Use by the Members of the American Composites Manufacturers Association
§63.5810(c) - Facility-Wide Organic HAP Emissions Averaging Option
 Version 2.0 >>>> SEE the ACMA website at www.acmanet.org for latest version

Company/Plant Name WARM RAIN CORPORATION

Compliance Period JULY THRU DECEMBER 2023

MONTH	Total Monthly Material Usage (lb/mo)	Monthly Weighted Average HAP Emission Rate (lb/ton)	Monthly Weighted Average MACT Limit (lb/ton)	Monthly Weighted Percent of MACT Limit (% of limit)	Rolling 12-Month Weighted Average Percent of MACT Limit (% of limit) <small>see note 5</small>
Jan-23	43,380	78	87	89.8%	91.3%
Feb-23	0	0	0	0.0%	91.4%
Mar-23	38,983	103	89	115.2%	93.5%
Apr-23	94,840	105	108	97.7%	94.9%
May-23	78,041	198	245	80.7%	91.9%
Jun-23	39,500	101	87	116.4%	92.9%
Jul-23	59,772	100	132	75.6%	92.5%
Aug-23	63,221	128	154	83.0%	92.1%
Sep-23	0	0	0	0.0%	90.5%
Oct-23	137,387	117	146	79.9%	88.3%
Nov-23	56,934	95	123	77.8%	87.7%
Dec-23	94,880	98	107	91.5%	87.9%

To pass the MACT check, the weighted process-wide emission rate must be less than 100 percent of the weighted process-wide MACT limit.

Signature of Responsible Official 

Name (print or type) Zach Merrill

Title (print or type) Operation Specialist

Date signed _____

Image 7(WR7) : MACT WWWW Semiannual Compliance HAP report

NAME 

DATE 1-29-2024

SUPERVISOR 