

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

M355460062

FACILITY: General Formulations, Inc.		SRN / ID: M3554
LOCATION: 320 S. Union St., SPARTA		DISTRICT: Grand Rapids
CITY: SPARTA		COUNTY: KENT
CONTACT: Rob Bachholzky , Chemist		ACTIVITY DATE: 08/19/2021
STAFF: Michael Cox	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: Scheduled Unannounced Inspection		
RESOLVED COMPLAINTS:		

Air Quality Division (AQD) staff Michael Cox (MTC) arrived at the facility at approximately 1:00 pm on August 19, 2021, to conduct an unannounced, scheduled inspection. The purpose of this inspection was to determine compliance with applicable air quality rules and regulations.

Prior to entering the facility, odor and visible emission observations were completed. No visible emissions or odors were noted. AQD staff met with Mr. Rob Bachholzky, Chemist. The purpose of this inspection was briefly discussed with Mr. Bachholzky, and included a facility walk through, with a final discussion at the end of the facility inspection. General Formulations is a coating and laminating operations facility that creates products for various advertising and marketing industries. The facility is under an Opt-Out Permit No. 192-03G. The layout of the plant consisted of the west side, which was office and finishing areas, and the east side, which is the coating operations and storage.

Compliance Evaluation

EU-CoaterUV:

This coater is a 61-inch wide, ultraviolet (UV) coating and curing station on a plastic cling laminator. The coating at this machine is applied via method of reverse gravure with an enclosed doctor blade. All material and waste containers surrounding the coating machine appeared to be properly stored and disposed of at the time of the inspection. One stack was observed venting externally, which was verified during the inspection. The stack was not measured but appeared consistent with the dimensions outlined in Opt-Out Permit No. 192-03G. The 12-month rolling emission limit for volatile organic compounds (VOCs) is 4.6 tons per year (tpy). Records of VOC emissions from EU-CoaterUV were requested for the time period of January 2020 through August 19, 2021. The highest 12-consecutive month VOC emission from this unit occurred during the 12-month periods ending in January through May 2020 when 0.1 tons of VOC was emitted. VOCs are also limited to an instantaneous limit of 0.16 lb/gal (minus water) as applied. A letter from General Formulations, dated January 27, 2014, was received by AQD requesting the use of formulation data sheets to determine VOC content. General Formulations only uses one coating material in EU-CoaterUV. The facility keeps records of the VOC content and usage of this coater. After a review of the records, the one coating material utilized by EU-CoaterUV has 0.16 lbs/gal of VOCs. General Formulations appears to be keeping track of its usage rates for all coating materials used, VOC contents and VOC emissions. No reclaim of coating materials was identified for this emission unit.

EU-CoaterE:

This coater is a 60-inch wide, roll to roll laminator with gravure and wire rod coating stations and a single zone natural gas-fired oven. This coater only utilizes water-based coatings. All material and waste containers surrounding the coating machine appeared to be properly stored and disposed of at the time of the inspection. One stack was observed venting externally, which was verified during the inspection. The stack dimensions appeared consistent with Opt-Out Permit No. 192-03G. The associated one zone oven was in operation at the time of the inspection. The oven temperature was observed at 218°F. Mr. Bachholzky stated that the maximum operating temperature for the oven is 220°F. The 12-month rolling emission limit for VOCs is 22.9 tpy and the VOC coating content is limited to 0.8 lbs/gal (minus water) as applied. Records of VOC emissions for the time period of January 2020 through August 19, 2021, were requested and reviewed. The highest 12-consecutive month VOC emission occurred during the 12-month period ending in June 2020 when 0.93 ton of VOC was emitted. A letter from General Formulations, dated January 28, 2011, was received by AQD requesting the use of formulation data sheets to determine VOC content. Formulation data sheets and/or Test Method 24 results were requested for the time period of January 2020 through August 19, 2021. Documents were provided and reviewed stating the VOC contents of the coating materials used by EU-CoaterE. The highest VOC containing material was noted to be a water based top coating material called RD 030102-1 that has a VOC content of 0.571 lbs/gal minus water. General Formulations appears to be keeping track of usage rates, VOC contents and VOC emissions.

EU-CoaterF:

This coater is a 64-inch wide, roll to roll laminator with gravure and wire rod coating stations, and a natural gas-fired oven. This coater only utilizes water-based coatings and the emissions from this unit are uncontrolled. All material and waste containers surrounding the coating machine appeared to be properly stored and disposed of at the time of the inspection. One stack was observed venting externally, which was verified during the inspection. The stack dimensions appeared consistent with Opt-Out Permit No. 192-03G. The associated one zone oven was in operation at the time of the inspection. The oven temperature was observed at 230°F. Mr. Bachholzky stated that the maximum operating temperature for the oven is 231°F. From a previous inspection it was noted that the wire rods were never installed, and instead utilize only gravure rolls. The 12-month rolling emission limit for VOCs is 40.0 tpy. The VOC content of the coating is limited to 0.8 lb/gal (minus water) as applied. Records of VOC emissions for the time period of January 2020 through August 19, 2021, were requested and reviewed. The highest 12-consecutive month VOC emission occurred during the 12-month period ending in February 2020 when 0.663 ton of VOC was emitted. A letter from General Formulations, dated January 28, 2011, was received by AQD requesting the use of formulation data sheets to determine VOC content. Formulation data sheets and/or Test Method 24 results were requested for the time period of January 2020 through August 19, 2021. Documents were provided and reviewed stating the VOC contents of the coating materials used by EU-CoaterF. The highest VOC containing material was noted to be a water based top coating material called RD 030102-1 that has a VOC content of 0.571 lbs/gal minus water.

The Hydrotreated Distillates (CAS No. 64742-46-7) are subject to a 20 lbs/8-hour limit per calendar day. The Hydrotreated Distillate (CAS No. 64742-46-7) records from

January 2020 through August 19, 2021, were reviewed. After a review of the records, it appears that no materials were used by EU-CoaterF that contained Hydrotreated Distillates. General Formulations appears to be keeping track of its usage rates, VOC contents, and VOC/Hydrotreated Distillates (CAS No. 64742-46-7) emissions as required.

FG-C&NewMixroom:

This flexible group consists of EU-CoaterC and EU-NewMixroom. EU-CoaterC is a roll laminators coater with a natural gas fired oven. EU-CoaterC only utilizes solvent-based coatings. EU-NewMixroom is a batch process where coatings and adhesives are produced for internal use and external sales. Both EU-CoaterC and EU-NewMixroom are controlled by a permanent total enclosure (PTE) and an existing regenerative thermal oxidizer (RTO). Each emission unit utilizes a filtration system to control particulate matter.

EU-CoaterC

This coater is a 64-inch-wide comma bar coating station with the capability to run in a knife-over-roll configuration, and a natural gas fired oven. This emission unit is controlled by a PTE and an existing RTO. Coatings used by EU-CoaterC are solvent based. All material and waste containers surrounding the coating machine appeared to be properly stored and disposed of at the time of the inspection. EU-CoaterC was not in operation at the time of the inspection. EU-CoaterC is currently only operating clear formulas due to the primer head not running, as stated by Mr. Bachholzky.

EU-NewMixroom

This mixroom is a batch process where coatings and adhesives are produced for internal use and external sales. Emissions from the mixroom are captured by a PTE and controlled by the existing RTO. As of this inspection the mixroom as not yet completed construction.

The 12-month rolling emission limit for VOC emission from FG-C&NewMixroom is limited to 89.0 tpy. Based on the observations made, neither EU-CoaterC or EU-NewMixroom are fully operational at this time. AQD staff advised Mr. Bachholzky on the recordkeeping requirements of this new flexible group. Since neither emission unit is fully operational a malfunction abatement plan (MAP) has not yet been received by the AQD. Mr. Bachholzky was made aware of this requirement to submit a MAP within 180 days of trial operation. The facility is also required to test the VOC destruction efficiency of the existing RTO as well as demonstrate that associated enclosures meet the definition of a PTE withing 180 days of trial operation of EU-CoaterC and/or EU-NewMixroom. The facility is required to maintain a minimum pressure differential of 0.007 inches of water between the PTE and the adjacent area on a continuous basis or a facial velocity of 200 feet per minute through each natural draft opening of the PTE on a continual basis. Observations made during the inspection noted that monitoring devices were installed to measure the pressure differential, however the emission unit was not in operation. Since the emission units are not fully operational or constructed, no records were available for review.

The existing RTO serving these emission units also serves other emission units addressed below. The RTO was operational at the time of the inspection and the combustion zone temperature was noted to be 1,637°F, which is above the required

limit of 1,400°F as specified in Special Condition IV. 2. 3-hour rolling average combustion zone temperature records were requested for the time period of January 2020 through August 19, 2021. The events identified in records were determined to be acceptable reasoning's such as a power outage. A visual inspection of the RTO in operation on the rooftop was completed. No concerns were identified. It appears that the RTO is operating in a satisfactory manner.

Based on observations made during the inspection it appears that General Formulations is operating these emission units as required by PTI No. 192-03G.

FG-SolventBased:

This flexible group consists of EUCoaterB, EUCoaterD, EUCoaterG and EU-Mixroom. VOC emissions from EU-CoaterB, EU-CoaterD when using solvent-based coatings, EU-CoaterG when using solvent-based coatings, and EU-CoaterH when using solvent-based coatings, and EU-Mixroom are each controlled by a PTE and a new RTO. Each emission unit is equipped with a filtration system to control particulate matter.

EU-CoaterB

This coater is a 30-inch wide, roll to roll laminator with knife-over-roll or wire rod coating stations and a two-zone natural gas-fired oven. This coater utilizes only solvent based coatings. All material and waste containers surrounding the coating machine appeared to be properly stored and disposed of at the time of the inspection. This particular coater uses a two-stage oven. The observed temperature at the time of the inspection for stage 1 was 200°F, with a maximum temperature of 220°F. The observed temperatures at the time of the inspection for stage 2 were 161°F, with a maximum temperature of 196°F.

EU-CoaterD

This coater is a 62-inch wide, 140-feet per minute roll to roll laminator with a knife-over-roll and two gravure coating stations and a three-zone natural gas-fired oven. This coating utilizes water and solvent based coatings. All material and waste containers surrounding the coating machine appeared to be properly stored and disposed of at the time of the inspection. This particular coater uses a three-stage oven. The observed temperatures at the time of the inspection were 155°F, 183°F, and 197°F. Spent filters were observed being properly containerized and are sent to Waste Management for disposal.

EU-CoaterG

A 64-inch wide, roll to roll laminator with comma coating stations, a reverse gravure of wire rod coating stations, a natural gas-fired oven, and a reverse gravure topcoat station with a natural gas-fired oven. This emission unit was only capable of utilizing water-based coatings at the time of the inspection. All material and waste containers surrounding the coating machine appeared to be properly stored and disposed of at the time of the inspection. This particular coater uses a three-stage oven. The observed temperatures at the time of the inspection were 210°F, 221°F, and 230°F, with the respective settings at 210°F, 220°F, and 230°F. Spent filters were observed being properly stored prior to disposal.

EU-CoaterH

A 64-inch-wide comma bar coating station with natural gas fired oven. This coater is capable of using both water-based and solvent-based coatings. When solvent-based coatings are in use EU-CoaterH is controlled by a PTE and a new RTO. When water-based coatings are in use, emissions from EU-CoaterH bypass the new RTO and are emitted uncontrolled to the ambient air. During the facility tour it was discovered that EU-CoaterH does not have an RTO bypass stack. All emissions from EU-CoaterH are captured by the PTE and controlled by the RTO.

EU-Mixroom

This unit consists of four mixers and two dispersing mills equipped with an enclosed recirculated solvent spray tub wash operation. Though the mixroom appeared to be properly sealed, there is no monitoring to verify this. General Formulation intends to test and verify that a negative pressure is being maintained when they test EU-CoaterG upon the switch to solvent based coating materials. At the time of the operation three mixers were in operation and the lids were covered. The fourth mixer was inactive with no container in place. A three-roll mill machine was observed in the mixing room. Mr. Bachholzky stated this unit takes pigments and blends them into adhesive coatings. The pigments are initially in powder form prior to mixing. A solvent recycler was observed adjacent to the three-roll mill machine. Mr. Bachholzky stated that the recycler has a batch capacity of 55-gallons. Dirty cleaning solvents are reclaimed at this unit, with the waste remaining sent off site as hazardous waste. This unit appears to be exempt per Rule 285(2)(u). Containers observed in the mixroom were properly stored and sealed. Two parts washers were observed in the mixroom, and both were closed at the time of the inspection. Based on the size of the parts washers they both appear to be exempt per Rule 281(2)(h).

FG-SolventBased is subject to a limit of 89.0 tpy of VOC per a 12-month rolling time period. Additionally, the sum of EU-CoaterD and EU-CoaterG are subject to a VOC emission limit of 62.3 tpy per a 12-month rolling time period during periods of RTO bypass. Also, EU-CoaterH during periods of bypass of the New RTO is limited to 42.0 tpy per 12-month rolling time period, although bypass cannot occur as mentioned above. VOC content of waterborne coating is limited to 0.54 lb/gal minus water applied for EU-Coater D, EU-CoaterG and EU-CoaterH. Records of VOC emissions for the time period of January 2020 through August 19, 2021, were requested and reviewed. The highest 12-consecutive month VOC emission occurred during the 12-month period ending in May 2020 when 0.73 ton of VOC was emitted by FG-SolventBased, which includes all emission units in this flexible group. A letter from General Formulations, dated January 28, 2011, was received by AQD requesting the use of formulation data sheets to determine the VOC content for each coating material. Formulation data sheets and/or Test Method 24 results were requested for the time period of January 2020 through August 19, 2021. Documents were provided and reviewed stating the VOC contents of the coating materials used by FG-SolventBased. The highest VOC containing material was noted to be an adhesive called 72-8625 that has a VOC content of 0.102 lbs/gal minus water. The records provided identified VOC contents below the 0.54 lb/gal (minus water) instantaneous limit. General Formulations appears to be keeping track of usage rates, VOC contents and VOC emissions.

FG-SolventBased is subject to having in place a Malfunction Abatement Plan (MAP), after 180 days from commencement of trial operation of EU-CoaterH. A MAP was

submitted by General Formulations on October 30, 2020, within the required timeframe. The MAP appears to be satisfactory at this time.

The facility is required to maintain a minimum pressure differential of 0.007 inches of water between the PTE and the adjacent area on a continuous basis or a facial velocity of 200 feet per minute through each natural draft opening of the PTE on a continual basis. Observations made during the inspection noted that monitoring devices were installed on all emission units except for EUMixroom. All devices were below the 0.007 inches of water pressure differential threshold. Mr. Bachholzky stated that if the pressure differential approached the 0.007 inches of water limit, an alarm would go off alerting the operators of the issue.

General Formulation is required after 180 days of trial operation of EU-CoaterH to test the VOC destruction efficiency of the RTO serving this flexible group, which changed from the existing RTO to the "New RTO." A stack test on the new RTO was conducted on August 11, 2020. Results from the stack test determined that the new RTO had a VOC destruction efficiency of 98.9%. Also, after 180 days of trial operation, General Formulations is required to demonstrate that the enclosures around each emission unit within FG-SolventBased meets the definition of a PTE. This demonstration was conducted on August 11, 2020, during the stack test and all enclosures were found to be within the 0.007 inches of water pressure differential, thus meeting PTE requirements.

The FG-SolventBased emission units are connected to and controlled by a regenerative thermal oxidizer (New RTO). A control panel for the New RTO was observed adjacent to the EU-CoaterB which had monitors for each emission unit's status. An observation/office area is also used to monitor the New RTO. The minimum operating temperature for the New RTO is 1400°F. The setpoint stated by General Formulations staff is 1450°F and the observed operating temperature at the time of the inspection was 1628°F. While discussing the New RTO it was stated to AQD staff that if the New RTO temperature falls below the set point it will not automatically shut down. An audio alarm will sound off and staff must manually shut down the New RTO if it is necessary. Each event the New RTO goes below 1450°F is recorded and was available. Records were reviewed for the time period of January 2020 through August 19, 2021. The events identified in records were determined to be acceptable reasoning's such as a power outage. A visual inspection of the New RTO in operation on the rooftop was completed. No concerns were identified.

At the time of the inspection EU-CoaterG was in operation utilizing only water-based coating materials and was stated by MR. Bachholzky that EU-CoaterG was never switched to run solvent-based materials.

New RTO bypass times are to be completed for EU-CoaterD, EU-CoaterG, and EU-CoaterH; however, EU-CoaterG currently uses only water-based coating materials and is not connected to the RTO, and EU-CoaterH does not have a bypass stack and is constantly routed to the New RTO. Records of bypass times and emissions during bypass for EU-CoaterD were reviewed for the time period of January 2020 through August 19, 2021. General Formulations appear to be adequately keeping track of the bypass times and emissions during bypass for EU-CoaterD as required. No issues were noted.

General Formulations appears to be keeping track of coating usage rates, VOC contents, daily, monthly and 12-month rolling VOC emissions for FG-SolventBased and specifically the sums of EU-CoaterD and EU-CoaterG. Only dirty cleaning solvents are reclaimed in EU-Mixroom, and it appears that no coating materials are reclaimed. Also, it appears that General Formulations is keeping track of Hydrotreated Distillate CAS # (64742-46-7) usage rates, content, and emission rates.

Three stacks were observed venting externally, which was verified during the inspection of the rooftop. These stacks included SV-NewRTO, SV-CTRD, and SV-CTRG. The stack dimensions and formations appeared consistent with Opt-Out Permit No. 192-03G.

FG-TACs:

This flexible group covers emission units EU-CoaterC, EU-NewMixroom, EU-CoaterB, EU-CoaterD, EU-CoaterG, EU-CoaterH, and EU-Mixroom. This flexible group is limited to 1,115.5 lbs/yr of 1,4-Dioxane emissions, 5,574.3 lbs/yr acrylic acid emissions, 1,034.7 lbs/yr cumene emissions, and 446.2 lbs/yr formaldehyde emissions per 12-month rolling time periods. This flexible group is also limited to 38.0 lbs/8-hr of butyl acrylate and 19.3 pounds per hour (pph) of ammonium hydroxide. Records of the above referenced toxic air contaminants (TACs) emissions were requested and reviewed from the time period of January 2020 through August 19, 2021. 1,4-Dioxane emissions for the 2020 calendar year was noted to be 22 lbs and 1,4-Dioxane emissions so far for the 2021 calendar year was noted to be 20 lbs. Acrylic acid emissions for the 2020 and 2021 calendar year were recorded as 0 lbs. Cumene emissions for the 2020 calendar year were recorded as 0 lbs and the cumene emissions so far for the 2021 calendar year were recorded as 4 lbs. The highest 12-consecutive month Formaldehyde emission occurred during the 12-month period ending in December 2020, when 8 lbs of Formaldehyde was emitted. The highest 8-hour butyl acrylate emissions were noted to have occurred on June 16, 2020, when 6.217 lbs/8-hr of butyl acrylate was emitted. The highest pounds per hour emission of ammonium hydroxide occurred on September 17, 2020, when 16.698 pph of ammonium hydroxide was emitted. Based on the review of the records General Formulations is keeping track of the TACs as required.

FG-Facility:

This flexible group covers all emissions units on site and applies source-wide to all process equipment including equipment covered by other permits, grand-fathered equipment and exempt equipment. FG-Facility has an emission limit of less than 9.0 tpy and less than 22.5 tpy per a 12-month rolling time period for individual and total aggregate HAPs respectively. HAP emission records were requested for the time period of January 2020 through August 19, 2021. The highest 12-consecutive month individual HAP emission occurred during the 12-month period ending in December 2020, when 0.156 ton of vinyl acetate was emitted. The highest 12-consecutive month aggregate HAP emission occurred during the 12-month period ending in June 2020 when 0.305 ton of aggregate HAPs were emitted. Documents were provided and reviewed stating the HAP contents of the coating materials used by FG-Facility.

Additionally, FG-Facility has an emission limit for VOCs of 493 lbs/day and less than 90 tpy per a 12-month rolling time period. A letter from General Formulations, dated January 28, 2011, was received by AQD requesting the use of formulation data

sheets to determine the VOC content for each coating material. Formulation data sheets were requested for the VOC containing coating materials and reviewed. General Formulations does appear to be keeping track of usage rates for each VOC containing material used. The highest daily VOC emission was noted to have occurred on July 29, 2020, when 447.94 lbs/day of VOC was emitted. The highest 12-consecutive month VOC emission occurred during the 12-month period ending in June 2020 when 5.39 tons of VOC was emitted.

FG-Facility has an emission limit of 0.5 tpy per 12-month rolling time period of Benzophenone (CAS No. 119-61-9) per a 12-month rolling time period. Emissions are based off a 2% weight percent of Benzophenone (CAS No. 119-61-9) due to reactivity. EU-CoaterUV is the only process that utilizes Benzophenone (CAS No. 119-61-9) containing coating materials. The highest 12-consecutive month Benzophenone (CAS No. 119-61-9) emissions occurred during the 12-month period ending in November 2020 when 0.007 ton of Benzophenone (CAS No. 119-61-9) was emitted. General Formulations appears to be keeping adequate track of their Benzophenone (CAS No. 119-61-9) containing material usage rates, content, monthly and 12-month rolling total emissions. No reclaim was identified for this emission unit.

Additional observations

- Approximately eight 6,000-gallon tanks were observed on site. From information provided during the inspection and emails following, the eight tanks are empty or contain Aroset 3250, Dow Rebond 8915M and/or Aroset 3312. The tanks were installed approximately 4-5 years ago. Vapor pressures for the tanks in use were provided by General Formulations staff. The true vapor pressures were less than 1.5 psia. Based on these findings it appears the tanks are exempt per Rule 284(2)(i).
- Several drill presses, grinders, and/or saw machines were identified throughout the inspection for minor maintenance. These units appear to be exempt per Rule 285(2)(l)(vi)(B).
- One 1.05 MMBtus sized boiler was observed in the maintenance area. The boiler was listed as constructed in 2000 and is natural gas only. The boiler appears to be exempt per Rule 282(2)(b)(i).
- Solvent based and water based chemical storage areas were observed on the east side of the facility.

Conclusion:

A final discussion was completed with AQD staff, Mr. Bachholzky. Based on the review of the records provided and the facility walk through, General Formulations appears to be in compliance with Opt Out PTI No. 192-03G.

NAME Michael T. Cox

DATE 9/23/21

SUPERVISOR HH