



Nuisance Minimization Plan Composite Utility Pole Manufacturing

Cecil Composites
Mt. Clemens, Michigan

Project No. 210058
January 2022

Nuisance Minimization Plan

Composite Utility Pole Manufacturing

Cecil Composites Mt. Clemens, Michigan

**Prepared For:
DWM Holdings
Warren, Michigan**

**January 7, 2022
Project No. 210058**

1.0 Introduction 1

2.0 Background 1

 2.1 Process Description 1

 2.2 Facility Location 5

 2.3 Air Pollution Control 5

3.0 Regulatory and Permit Analysis 5

 3.1 Michigan Air Pollution Control Regulations 5

 3.2 Air Quality Policy and Procedure 21 6

 3.3 Michigan PTI No. 94-21 6

 3.4 Amendment of the NMP 6

 3.5 Submittal of the NMP 6

4.0 Odor Control Measures 6

 4.1 Ventilation System (SVFIBERGLASS) 7

 4.2 Maintenance 7

 4.3 Container Management 7

 4.4 Housekeeping 8

5.0 Addressing Complaints 8

6.0 Malfunction Reporting 9

List of Figures

Figure 1 – Typical filament winding machine set-up 2

Figure 2 – Main components of a dual-spindle winder 2

Figure 3 – Resin trays 3

Figure 4 – Cross-section of the resin tray 3

Figure 5 – Overview of Gelling Station 4

Figure 6 – IR Heaters Mounted on Trolleys at a Gelling Station 4

Figure 7 – Site Map Aerial

Figure 8 – Site Plan Detail

Figure 9 – Equipment Locations

List of Appendices

Appendix 1 Complaint Form

List of Abbreviations/Acronyms

4W	40 CFR Part 63, Subpart WWWW – NESHAP for Reinforced Plastic Composites Production
AQD	Air Quality Division
BACT	Best Available Control Technology
CAA	Clean Air Act
CFR	Code of Federal Regulations
EGLE	Michigan Department of Environment, Great Lakes, and Energy
HAP	hazardous air pollutant
hr/day	hours per day

IR	infrared
IRSL	Initial Risk Screening Level
ITSL	Initial Threshold Screening Level
lb	pound(s)
lb/hr	pounds per hour
lb/month	pounds per month
MACT	Maximum Achievable Control Technology
MMBtu/hr	million Btus per hour
$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NSR	New Source Review
PM	particulate matter
PM ₁₀	fine particulate matter less than 10 microns
PM _{2.5}	fine particulate matter less than 2.5 microns
PSD	Prevention of Significant Deterioration
PTE	potential to emit
PTI	Permit to Install
ROP	Renewable Operating Permit
SDS	Safety Data Sheet(s)
SER	significant emission rate
SO ₂	sulfur dioxide
TAC	toxic air contaminant
T-BACT	Best Available Control Technology for Toxics
tpy	tons per year
UEF	Unified Emission Factors
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

1.0 Introduction

Cecil Composites, LLC (Cecil) was issued air Permit to install (PTI) No. 94-21 on November 23, 2021, in preparation for the manufacture of composite poles at their new facility in Mount Clemens, Michigan. Cecil Composites, owned by parent company DWM Holdings, proposed to use approximately 1.6 million pounds of resin per year in manufacturing composite utility poles. Styrene content of the resins will be restricted to keep emissions low. The proposed facility will also be subject to the NESHAP WWW (4W). Acetone will be used as a clean-up solvent to reduce VOC emissions and will be recycled whenever possible. This PTI was not subject to review under the PSD Regulations, as potential emissions do not exceed the PSD thresholds. The facility will be required to apply for a Renewable Operating Permit (ROP) within 12 months of beginning operation.

Cecil expects that it will take approximately one year to achieve full production volumes. The initial installation and engineering will require multiple runs of small volumes of resin in order to perfect the setup of the machines before full production volumes can be achieved. During a portion of this ramp-up time, the ventilation system will not be operational. Production is limited to the equivalent of 100,000 pounds of resin during this ramp-up period to lower the potential for odors. In addition, the plant production will only require one shift per day (8 hrs/day), with hopes of expanding operation to two shifts per day (16 hrs/day) in the next three years.

2.0 Background

Odors have been identified with the use of styrene. The purpose of this Nuisance Management Plan (NMP) is to describe site-specific provisions that will be established by Cecil to manage and minimize potential odors for their pole production facility. A process description is included in this NMP, identifying potential sources of odor as well as the specific work practices and air pollution control that will be used to minimize odors.

2.1 Process Description

Cecil Composites will manufacture fiber-reinforced composite materials into poles for a variety of uses. These poles are used for sports lighting, parking lots, and utility poles. DWM Holdings currently manufactures metal light poles at an existing facility also located in Warren, Michigan. When customers have requested light poles manufactured from composite materials, DWM Holdings had purchased these poles from a manufacturer out of state for its customers. This new facility, called Cecil Composites, will manufacture its own light poles and use an existing infrastructure to ship these poles to customers. The site location map is included as Figure 7 and a site plan is included as Figure 8.

Filament winding is used to manufacture composite poles. Filament winding is the process of laying a band of resin impregnated fibers onto a rotating mandrel surface in a precise geometric pattern and curing them to form the product. This is an efficient method of producing cylindrical parts with optimum strength characteristics suited to the specific design and application. Glass fiber is most often used for the filament, but aramid, graphite, and sometimes boron and various metal wires may be used. The filament can be wetted during fabrication, or previously impregnated filament ("prepreg") can be used. The illustration below shows the filament winding process and indicates the three most common winding patterns. The process illustration depicts circumferential winding, while the two smaller pictures show helical and polar winding. The various winding patterns can be used alone or in combination to achieve the desired strength and shape characteristics.

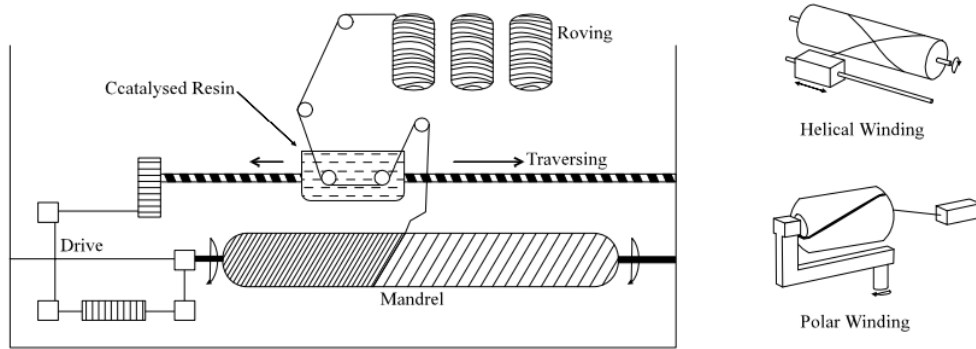


Figure 1. Typical Filament Winding Machine Set-Up

The filament winder that will be in use at Cecil Composites is a dual-spindle (two poles wound simultaneously) 4-axis system with the resin delivery system mounted on the carriage. The dual spindle winder is fully automatic; however, the system as a whole is semi-automatic, as the mandrels will be moved between stations manually and the other equipment in the system (e.g., slitter, extractor) are operated manually. The system is primed for fully automatic operation in the future with the addition of a manipulator system for mandrel transfer and automation upgrades to the other equipment.

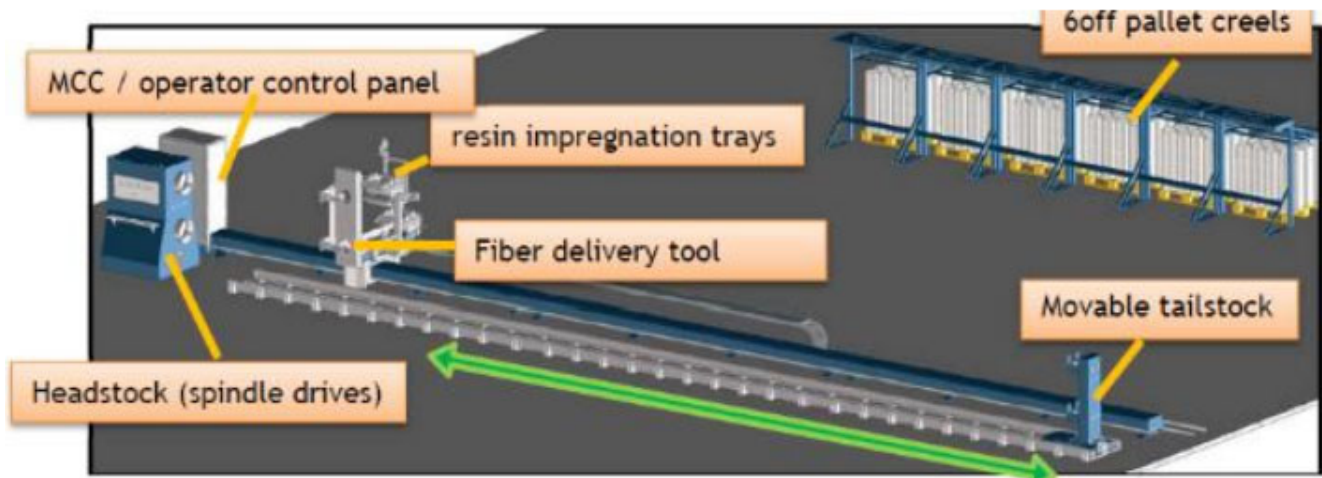


Figure 2. Main Components of a Dual-Spindle Winder

Emissions are generated when the resin and catalyst are exposed to the environment. By automating the resin and catalyst delivery process and using smaller resin trays, emissions are minimized by improving transfer efficiency. Two wet out trays will supply each spindle and are mounted on an arm as illustrated below:

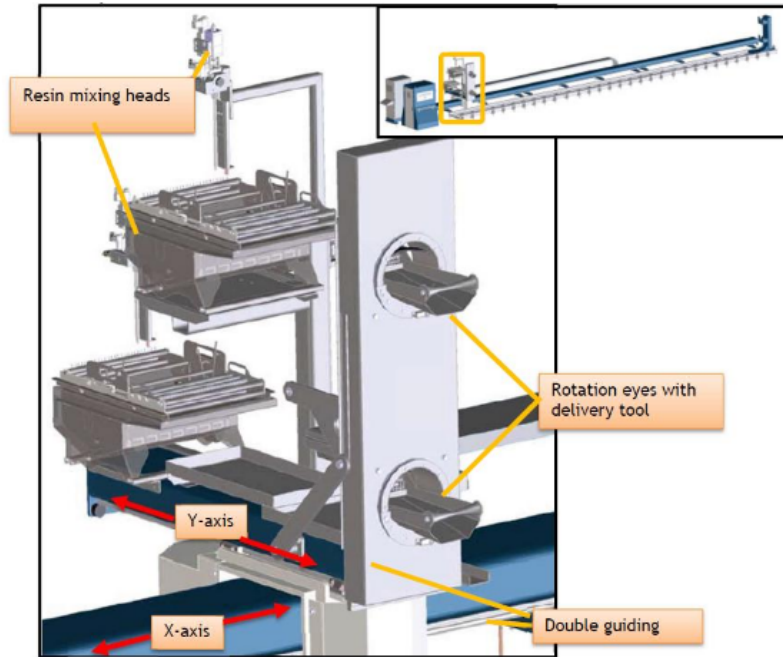


Figure 3. Resin Trays

The two trays are mounted on the y-axis of the machine and the trays traverse with the machine in the x-axis of the winder. The glass fiber rovings are pulled, impregnated with resin as they are pulled through the resin tray, prior to being applied to the mandrel. Resin supply from the trays is provided by the mixing head, which constantly replenishes the bath with catalyzed resin. A pivoting frame allows the mixing head to be moved away from the resin tray, after winding is done, for cleaning. A level sensor is mounted on the mixing head to regulate resin in the tray. By using these small trays, emissions are reduced.

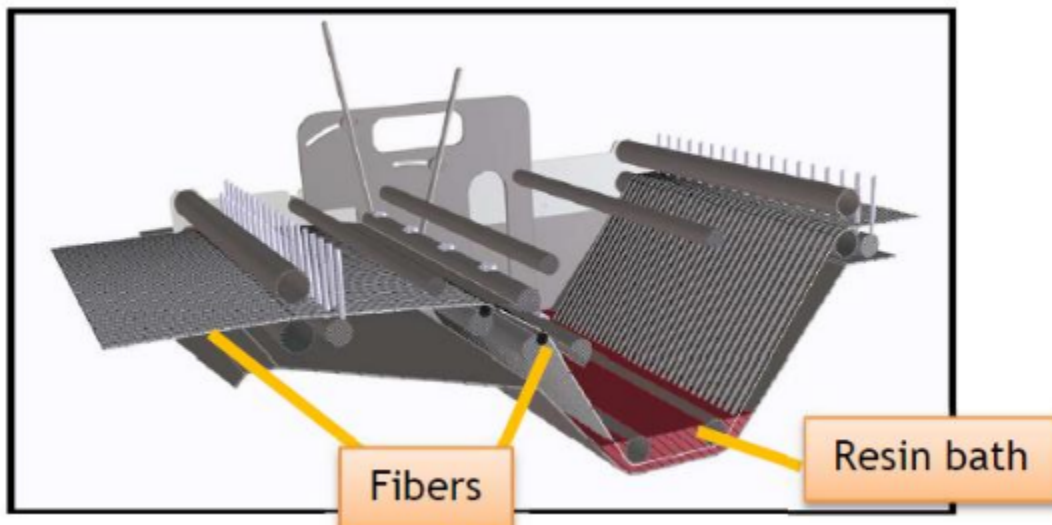


Figure 4. Cross-Section of the Resin Tray

The ANSI Standard 136.2 “Roadways and Area Lighting Equipment” includes specifications for light poles, and Cecil Composites has selected raw materials that will ensure its poles meet these ANSI specifications.

After winding, the composite pole products are transferred to the gelling station to be cured or hardened. During this gelling step, a rotation chain will continuously rotate the poles to prevent dripping or sagging of the wet material. The gelling station has a capacity for eight poles

As this station is flexible, the tailstock can be moved forward/backwards to suit the mandrel length. As the winder is a dual spindle, two gelling spots share a common adjustable tailstock.

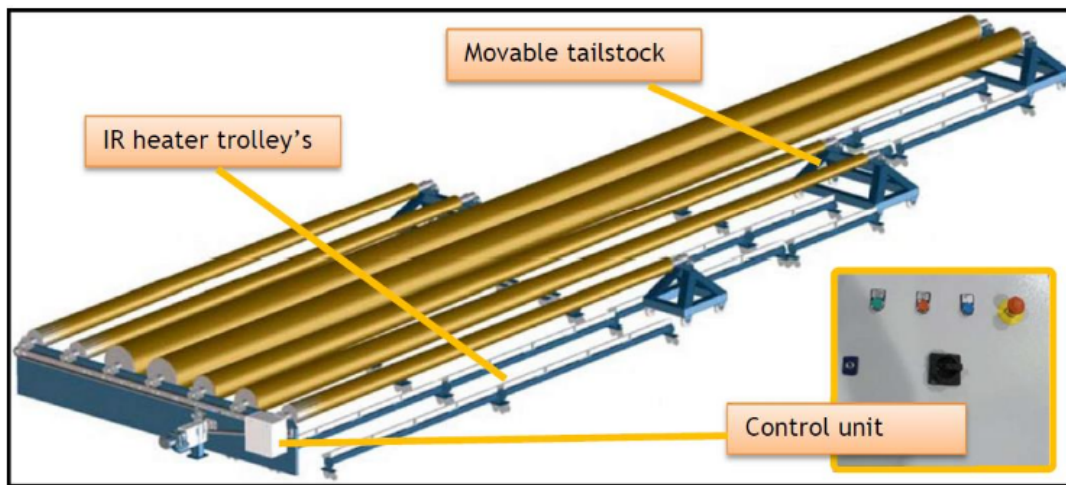


Figure 5. Overview of Gelling Station

The gelling station will also include IR heaters to boost the temperature and decrease the curing time.

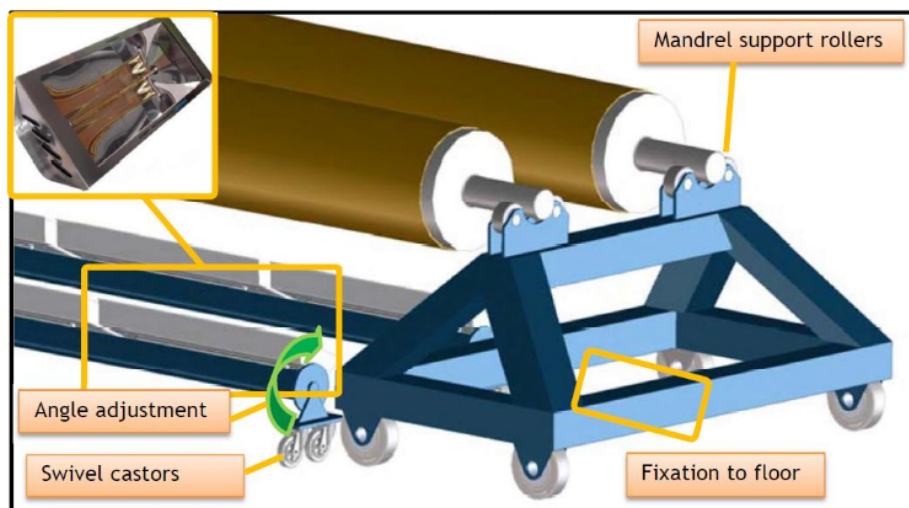


Figure 6. IR Heaters Mounted on Trolleys at a Gelling Station

No additional emissions are generated from use of the IR heaters. Acetone will be used as the clean-up solvent. A system will be established to allow reuse or recycling of acetone and ensure that emissions will be low. Styrene monomer may occasionally be used to adjust the viscosity of the resin back to its original viscosity when use rates are low. The use will be included in the tracking.

2.2 Facility Location

The Cecil facility is located at 151 Lafayette Street, Mt. Clemens, Michigan. The leased building is bounded by J.F. Frailey Drive to the west. To the southwest lies a residential neighborhood, and further west a public park complex. The residential neighborhood lies primarily along North Wilson Road, bounded by Lafayette Street on the north and Gallup Avenue to the south. To the north, east, and south are various light industrial and transportation carriers, including DHL, Axalta Coating Systems. A rail line lies further to the east, running roughly northeast-southwest. It should be noted that the prevailing wind direction is towards the northeast or, in this case, towards industrial land use. Figure 7 shows a basic overview map.

2.3 Air Pollution Control

VOCs like styrene are emitted from fresh resin surfaces during the fabrication process and from the use of solvents (usually acetone) for cleanup. Organic vapor emissions from polyester resin/fiberglass fabrication processes occur when the cross-linking agent (monomer) contained in the liquid resin evaporates into the air during resin application and curing. Since emissions result from evaporation of monomer from the uncured resin, they depend upon the amount of resin surface exposed to the air and the time of exposure. Thus, the potential for emissions varies with the manner in which the resin is mixed, applied, handled, and cured. These factors vary among the different fabrication processes and are fairly low for filament winding when compared to some other processes. Use of resins with a lower styrene content also lowers overall emissions. As the process becomes more automated, emissions should be lower still.

Most plants, including Cecil, use forced ventilation techniques to reduce worker exposure to styrene vapors, but they vent the vapors directly to the atmosphere through a particulate filter. Emissions from cleanup solvents can be controlled through good housekeeping and use practices, reclamation of spent solvent, and substitution with water-based solvent substitutes. Acetone will be used at Cecil Composites for clean-up.

As part of its waste minimization program, Cecil will periodically review the list of raw materials and communicate with vendors about the possibility of using lower styrene or lower VOC materials, as well as the possibility of using resins with vapor suppression. The need to have a constant supply of raw materials may preclude the use of different raw materials that may not be routinely available.

3.0 Regulatory and Permit Analysis

Cecil uses a resin that contains styrene to produce its product. The use of a styrene resin can create an unpleasant odor that could be noted by neighbors and other tenants in the industrial park where the facility is located. Figure 7 includes a site location map indicating that the facility is located in an industrial park, while Figures 8 and 9 include additional details on the building and stack.

3.1 Michigan Air Pollution Control Regulations

In Michigan, odors are regulated as a nuisance under Michigan Air Pollution Control Rule (Rule) 901. Rule 901 states that:

Notwithstanding the provisions of any other department rule, a person shall not cause or permit the emission of an air contaminant or water vapor in quantities that cause, alone or in reaction with other air contaminants, either of the following:

- (a) Injurious effects to human health or safety, animal life, plant life of significant economic value, or property.*
- (b) Unreasonable interference with the comfortable enjoyment of life and property.*

3.2 Air Quality Policy and Procedure 21

Michigan Air Policy and Procedure 21, "Application of Rule 901(b) in the Permit to Install Review Process" (AQD-21) outlines requirements for reviewing the potential for a nuisance in a prospective project, as well as provides information on developing a NMP. Recommended elements include:

- A. Introduction, including process description, permit number, and background information
- B. Potential sources of odor and control equipment, if applicable
- C. Maintenance schedule
- D. Housekeeping measures
- E. Odor notification, investigation, and response

3.3 Michigan PTI No. 94-21

PTI 94-21 EUFIBERGLASS, Section III.5 requires Cecil to develop and implement this NMP. The PTI also specifies that it must contain, at a minimum:

- a) *Procedures for maintaining and operating EUFIBERGLASS in a manner that minimizes the release of odors to the outside air;*
- b) *Procedures that shall be taken to address outdoor complaints; and,*
- c) *A plan for corrective action to address any releases to outside air.*

3.4 Amendment of the NMP

If the NMP fails to address or inadequately addresses odor management, Cecil will amend this plan within 30 days. Cecil will also update the plan if new equipment installation may affect odor, or if requested to do so by the EGLE Air Quality Department (AQD) District Supervisor.

3.5 Submittal of the NMP

Cecil will submit a copy of this NMP to the AQD District Supervisor for review and approval within 45 days of permit issuance, which is by January 7, 2022. If the plan is subsequently amended, such amendments will also be submitted to the AQD District Supervisor. The NMP will be deemed approved if no notification to Cecil occurs within 60 days of submittal. In the interim, between plan submittal and approval, Cecil will implement appropriate corrective measures and operational controls to minimize odors.

4.0 Odor Control Measures

At a facility like this, the primary source of odors would be expected from handling of the styrene-containing resin. Good housekeeping and maintenance will ensure that styrene odors and emissions do not become a nuisance. Proper operation of the ventilation system will ensure that emissions are properly dispersed.

VOCs are emitted from fresh resin surfaces during the fabrication process (EUFIBERGLASS) and from the use of solvents (usually acetone) for cleanup. Organic vapor emissions from polyester resin/fiberglass fabrication processes occur when the cross-linking agent (monomer) contained in the liquid resin evaporates into the air during resin application and curing. Styrene, methyl methacrylate, and vinyl toluene are three of the principal monomers used as cross-linking agents. Styrene is by far the most common.

Since emissions and, therefore, odors result from evaporation of monomer from the uncured resin, they depend upon the amount of resin surface exposed to the air and the time of exposure. Thus, the potential for emissions varies with the manner in which the resin is mixed, applied, handled, and cured. These factors vary among the different fabrication processes and are fairly low for filament winding when compared to some other processes, such as spray applications. Proper operation of the equipment will ensure that odors are minimal from the filament winding process.

4.1 Ventilation System (SVFIBERGLASS)

Styrene has a sweet odor that can be detected at levels as low as 0.04 ppm¹. General ventilation is a common engineering control measure and can be used to minimize odors from resin. An exhaust system (referred to in the permit as SVFIBERGLASS) will be installed servicing the filament winding operations. A filter fabric with at least 98% particulate removal efficiency will be utilized in the exhaust unit. The system will have a particulate matter filtering system to ensure that resin is not exhausted to the outside air. The filtering system will have a 20,000-cfm exhaust fan and will exhaust to the outdoors from a stack out of the side wall of the building, and at the height specified by the Permit. It will be turned on during production activities and turned off when the filament winding operations are not being performed.

4.2 Maintenance

The exhaust system for the EUFIBERGLASS process will be regularly maintained as recommended by the manufacturer. Regular maintenance includes daily monitoring of the equipment to ensure that adequate flow occurs. Filters will be replaced periodically to ensure pressure drop is not too large. On a quarterly basis, the following are inspected and performed:

- Inspect for obstructions and deterioration.
- Repair all leaks and cracks.
- Verify fan performance.
- Inspect and grease bearings.
- Check fan belts for tension and wear. Replace as necessary.
- Check sheaves for alignment. Adjust as necessary.
- Check fan shaft and wheel. Adjust as necessary.
- Balance fan wheel, if required.
- Check draw at hoods.
- Check steel base for corrosion.

Filter changes and monitoring of differential pressure will occur more frequently.

4.3 Container Management

Styrene is reactive with strong acids and metal salts. Styrene attacks rubber, copper, and copper alloys, so it should be stored in steel containers that are tightly closed and properly grounded to ensure static electricity will not accumulate. One of the best ways to mitigate odor is to ensure that chemical containers stay closed unless directly in use. As production increases, resin may be purchased and stored in larger bulk storage tanks which would reduce the potential from styrene odors in handling the resin.

¹ <https://nj.gov/health/eoh/rtkweb/documents/fs/1748.pdf>

Drums, totes, or tanks will be tightly closed containers and will be stored with secondary containment to catch leaks or drips, and away from spark, sunlight, or heat sources. Explosion-proof electrical equipment and non-sparking tools should be used in and near styrene and storage areas. Spill pallets will be used under drums to capture any potential leaks and spills.

4.4 Housekeeping

Cecil will employ a safety program similar to the 5S Program whose foundation is that organizing your workplace in a safe, clean, and efficient manner will enhance safety and environmental performance, as well as improve productivity. By introducing standard operational practices that include efficient, repeatable, safe ways to work, safety and environmental incidents can be eliminated. From the very beginning of production, Cecil has adopted a highly visual workplace where tools, raw materials, and equipment are properly placed and maintained. By keeping materials where they are used and always returning tools to their proper place, defects like spills can be easily identified and remedied. Inventory will be easy to maintain which will improve required recordkeeping. Accidents are less likely to happen.

In particular, to best control odors, several specific routine housekeeping procedures will be followed including:

- Storage of all raw materials and waste in their proper areas on spill pallets, as needed
- Disposal of resin-containing debris and rags in labeled closed containers
- Ensuring product chemical drums and buckets are closed when not in use
- Keeping waste in closed containers and recycling or disposing of it quickly
- Immediate cleanup of any spills or leaks

5.0 Addressing Complaints

Odors associated with handling styrene monomer and styrene-based polyester resin are well documented. While the air permit issued by the Michigan Department of the Environment, Great Lakes and Energy – Air Quality Division (EGLE) will ensure that styrene emissions meet the appropriate health-based standards, odors can be subjective and even emissions that meet health-based standards may still present a nuisance to neighbors. Odors that present a nuisance can be eliminated or mitigated in a number of ways, beginning with an odor investigation.

Maintaining a good relationship with our neighbors is important to Cecil and the key to this relationship is ensuring that odors do not bother the neighbors. Cecil is establishing a program where if odors are noted, they can be quickly addressed. This will help maintain a good relationship with the neighbors and ensure that odor complaints are not lodged with EGLE. As a side note, we understand that the new facility is adjacent to an Axalta facility that manufactures paint and, solvents associated with paint manufacturing can also be odorous; therefore, it would be unfair to immediately associate odor complaints with activities at Cecil Composites.

To facilitate ready communication with the facility, the name of the facility and its phone number will be posted on each door. In addition, a second number available in the case of an emergency during off-hours will also be included.

The following numbers will be posted initially and updated if needed:

During Business Hours: 586.774.5650

After Hours Phone: 303.516.7024

This will enable complainants to speak with a facility representative in the event that they have an odor complaint and will also help eliminate the source of odors.

If a complaint is registered, the following information will be collected from the complainant, where possible:

- Time of the odor
- Location of the odor
- Description of the odor
- Severity of the odor
- Return phone number and/or email of the complainant

Appendix 1 includes a form that can be used to record information on the odor and will allow follow-up by Cecil. Subsequent to the report, Cecil will undergo an internal investigation to attempt to validate the report and evaluate the need for corrective actions. This would be especially useful in the event that the complaint was also logged by EGLE.

In the event that complaints are received by Cecil, Fishbeck proposes a phased approach where additional measures are taken until it appears that the odors have been addressed.

First, a complete investigation will be initiated for each complaint and results will be documented. The following information can be used to assess the odor:

- Production processes and materials usage at the time of the report.
- Meteorological data at the time of the report, such as wind speed and direction, precipitation, etc.
- Any unusual projects or work being completed at the time of the report.
- A visual inspection of the ventilation system.
- A visual inspection of adjacent properties from public right of ways, to observe if any unusual operations or conditions exist.

In the event that odors are confirmed, several options are available to Cecil to reduce odors from the resin. These include improving housekeeping, raising the stack height, upgrading the ventilation system, or the use of masking agents. If necessary, this NMP will be updated.

6.0 Malfunction Reporting

Under Rule 912, Cecil must have a system to report startup, shutdowns, or malfunctions that result in excess emissions. As the ventilation system will be installed primarily for odor control, there is not likely a scenario in which failure to operate the control equipment will result in excess emissions. To ensure compliance with Rule 901, Cecil will monitor the process for a bypass or failure of its ventilation systems. If that bypass or failure lasts more than two hours and results in excess emissions, Cecil will report the malfunction to the EGLE District Office in Warren (586.753.3700). This report can be phoned in, emailed, or faxed and should be made as soon as possible, and **must** be made within two days of the incident or discovery. Information regarding the incident must include the date, time, and specific process equipment operating, as well as control equipment operating, nature of the issue, and corrective measures being taken. Within ten days of the incident or its discovery, a written report must be submitted to:

Michigan Department of Environment, Great Lakes and Energy
Air Quality Division – Warren District Office
27700 Donald Court
Warren, MI 48092-2793

(586) 753-3700

24-hour Pollution Emergency Alert System (800) 292-4706

The report must include:

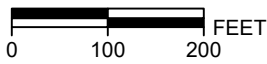
- Date and time of incident
- Probable causes or reasons for the incident
- Information regarding the process equipment operating at the time of incident and an estimate of excess emissions, if possible
- Summary of actions taken to correct and prevent a recurrence

Figures

PLOT INFO: Z:\2021\1210058\CAD\GIS\mapdoc\FIG02-SiteMap.mxd Date: 3/25/2021 11:33:45 PM User: bahamamah



SITE MAP



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors

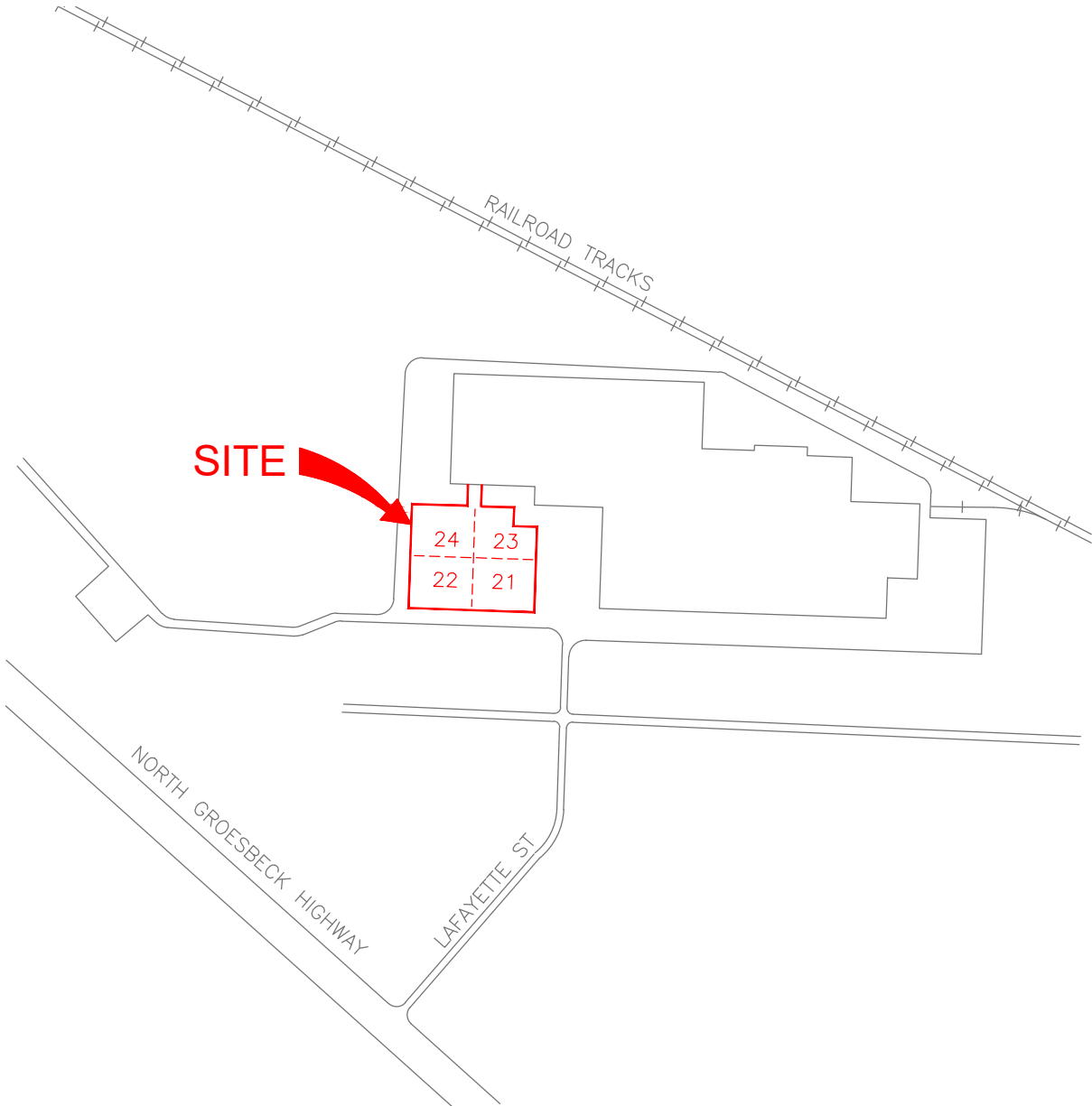


Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

Cecil Composites 151 Lafayette Street, Mt. Clemens, Michigan Nuisance Management Plan

PROJECT NO.
210058

FIGURE NO.
7



SITE PLAN
SCALE: 1" = 500'



Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

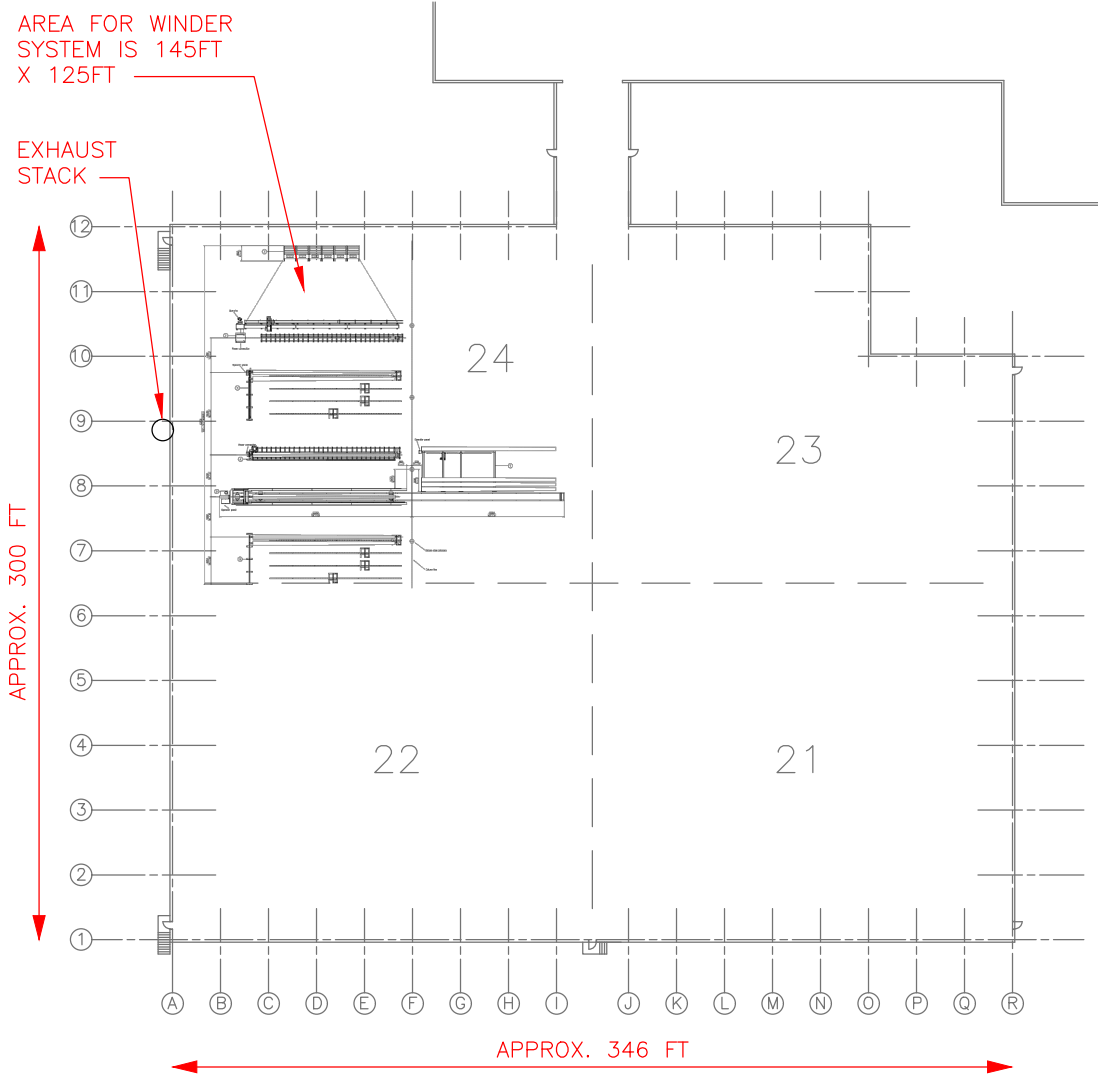
Cecil Composites
151 Lafayette St, Mt. Clemens, Michigan
Nuisance Management Plan

PROJECT NO.

210058

FIGURE NO.

8



EQUIPMENT LOCATION
SCALE: 1" = 80'

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

Cecil Composites
151 Lafayette St., Mt. Clemens, Michigan
Nuisance Management Plan

PROJECT NO.
210058
FIGURE NO.
9

Appendix 1

ODOR COMPLAINT LOGGING FORM

For internal use only.

To be completed by the Plant Manager when receiving a complaint

Date _____		Time of Report _____		Complainant _____	
Address and Phone Number of Complainant _____					
Description of Odor _____					
Time Incident was Detected _____		a.m./p.m.		Duration of Event _____	
Has this happened before? How often? _____					
Weather Conditions		Sunny/Overcast/Other _____		Temperature _____	
Weather Conditions		Precipitation _____		Wind Direction/Speed _____	
Are there weather conditions or times the odor seems more noticeable? _____					
Are there certain days of the week its more noticeable? _____					
Plant Conditions					
Current Production _____					
Materials in Use _____					
Housekeeping and Maintenance Proper? _____					
Ventilation System Operating Properly? _____					
Actions Taken and Time _____					
Comments or Recommendations _____					
Form Completed by and date _____					
Follow-up with Complainant and date _____					