



Received 7/14/2023

**AMERICA'S REBAR**

Subject: Violation Notice, U422100057, from EGLE AQD on 6/29/2023

Dear Mr. Scanlan,

This letter is in response to the Notice of Violation that was dated 6/29/2023. This letter contains a summary of continued improvements relating to odor mitigation at Neuvokas Corporation's manufacturing facility located in Ahmeek, MI and our planned actions moving forward. Since transition a DCPD based resin system in January 2020 there has been focus on reducing the amount of odor being emitted from our manufacturing process. In January of 2021 an air study analysis was completed and issued by Neuvokas to EGLE. At the end of January 2021 a on-site study report was released by EGLE summarizing the manufacturing process based on information provided. As documented in the latest Notice of Violation formal violations notices were sent in August 2021 and December 2021. With each of these violations actions were taken to improve the situation and Neuvokas has approached this issue with continuous improvement projects.

The most recent violation was on June 15<sup>th</sup>, 2023. This was during the later half of a Ecosorb test trial, described later in this letter. EGLE personnel were onsite and detected strong odors with sufficient intensity, frequency, and duration to be in violation of Rule 901(b). It is not entirely known why this location had these odors on this day, after a week of known improvements in overall odor release. The letter describes other open violations, but based on quantitative reduction in odors following these studies Neuvokas believed these violation notices had been closed.

It should also be mentioned that R 336.1901(b) of the Federal Clean Air Act which states that "a person shall not cause ... Unreasonable interference with the comfortable enjoyment of life and property." The Neuvokas property is industrially zoned but in close proximity to a residential area. Neuvokas continuous improvements projects have reduced the amount of odors released, but R 336.1901(b) has no measurable value to determine success. Odors at the edge of Neuvokas property have never measured higher than two ppm and Neuvokas believes there is a concerted effort to report any odor that is detected. It has also been documented that odors are reported on days that the Neuvokas facility is not even in operation. Other individuals from the local community have commented on the noticeable improvement over time. Regardless these complaints are taken seriously.

Some of the significant improvements that have been completed to help remedy this issue are:

- Ventilation system Improvements –
  - High velocity fans replaced existing fans in all exhaust locations. Exhaust fans are capable of 4,000 cfm at each stack. At the same time stacks were installed at discharge locations to increase the height of odor discharge
  - Air intake system has been redesigned to evenly distribute fresh air throughout the facility and assist in removing dead air pockets. The intake system has been sized to bring in slightly less fresh air than what the exhaust stacks are removing to ensure a negative pressure on the building. This minimizes fugative odors escape when doors to the facility are open.

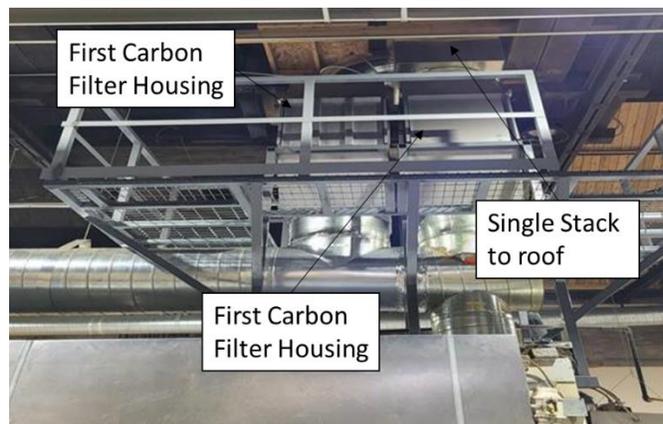


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- Carbon filter system –
  - The largest source of odors generated from the Neuvokas facility come from the curing rooms. To capture these odors carbon filter beds have been installed inline on the exhaust stacks that ventilate each curing room. Smaller carbon filters were first installed on 3/7/2022 and larger carbon systems were installed on 6/6/2022. Hydrosil International Ltd. (an industry leader in gas phase filtration) was consulted to size carbon systems for Neuvokas air flow rates. These systems resulted in a 50-60% average reduction of VOC's being emitted.



- Carbon Filter Recirculation Towers – To help improve air quality and reduce fugative odors within the facility Neuvokas designed and built air recirculation towers that filter shop air through a pleated prefilter and carbon bed. This filtered air is then pushed up towards the ceiling which improves air circulation throughout the facility. Two of these are currently in the Neuvokas facility and are located near each production line. We have recorded a 70% improvement in odors measured within the facility.



- General Data Collection – A daily odor management program has been implemented that includes odor measurements at various locations throughout the Neuvokas facility, including within exhaust ductwork. This has led to prefilter change intervals (twice weekly) and carbon bed material changes at bi-weekly intervals (or when certain odor thresholds are met).

While these changes have made measured improvements complaints have continued to be received. The history of these complaints is being compiled with Neuvokas odor measurements and the data is being used to create threshold limits. Unfortunately the complaints do not always line up to periods of high odor measurements. This means continued improvements need to be implemented. Our next steps include:

- Ecosorb Odor Treatment –
  - This is an odor treatment option offered through OMI Industries that neutralizes offensive odors using a natural product called Ecosorb 806. This product is custom designed to neutralize the specific odors found in Neuvokas exhaust stacks. OMI Industries analyzed the chemical composition of exhaust to determine the custom mixture

Using this product a facility wide odor study was completed between 6/5/2023 to 6/15/2023. The product was injected into all stacks and the results of this study were promising. EGLE personnel were included in the study and Joseph Scanlan visited the Neuvokas facility on at least two occasions. The image below is one of these days and is an example of qualitative data that was recorded during this test. Quantitative data was also recorded at the discharge of each stack. Based on these results, feedback from EGLE, and continuing to use carbon filtration it is believed that this will create another

step improvement in odors released. A design to implement this into the Neuvokas facility is currently in process.



- Fugitive Odor Improvements –
  - The injection portion of our process and cleaning station will continue to be a source of fugitive odors. Neuvokas has plans to improve the ventilation draw at that portion of the process by using table level ventilation to replace the ventilation hoods that we are currently using. The new manufacturing line (Gen3) has this version of ventilation, and older manufacturing lines need to be converted.
  - To improve waste material in the injection portion of our process a collection barrel will be implemented for excess flush and solvent covered rags. These barrels will be collected by Safety Kleen and incinerated, having these collection barrels will reduce the amount of raw resin and solvents going into our garbage bins.
- Film Coated Rebar –
  - Development of a vapor barrier film that would cover rebar began in March of 2022. This development had multiple goals with the first being elimination of odors generated during the curing phase of our manufacturing process and the second goal is improved manufacturing efficiency.

Concrete pullout is the measure of success and is necessary to ensure composite rebar works in the field. Dozens of films have been tested and the necessary chemistry for this film has been learned through this process. Concrete pullout testing has been completed continuously throughout this process to evaluate the various film materials.

In addition to film material development the manufacturing process to handle these films had to be completed. There are certain components that can be purchased and



## AMERICA'S REBAR

installed, but no other manufacturer produces composite rebar at high speed. This process had to be developed and currently a robust manufacturing process is ready for production.

Multiple sets of dates have been communicated between Neuvokas and EGLE throughout this program and Neuvokas has not been able to maintain these. The latest set of dates was sent below. It is currently mid July and we have not sent samples to the University of Miami yet. There are many reasons for this, but the bottom-line is that it is not done.

- Samples shipped to University of Miami – 5/17/2023
- New manufacturing line producing rebar every day – 6/12/2023 (Need to finish ventilation items and film splicing options)
- Convert 250 fpm production line to film coating – 7/15/2023
- Comments on 150 fpm production line – This line will stop producing bar and we will move film equipment from 250 fpm production line to produce product on this line. Once more ultrasonic equipment is available it will be set up on this line. - 8/15/2023

Currently a film has been identified that bonds to both concrete and the Neuvokas resin system. The manufacturing process to use this film is ready to go and on 7/14/2023 and 7/20/2023 the next batch of bars will be tested at Michigan Tech University. Following these tests samples will be prepared for the University of Miami. The new manufacturing line should be ready for production by 8/15 with the other Neuvokas production following at the original intervals.

Again concrete pullout is the measure of success for the film coating rebar. With the materials discussed above we have had results that exceed control (current rebar) and the results coming in July will further validate these materials.

To reiterate from previous responses these violation notices are a serious item for Neuvokas, and significant funds have been used to improve the situation. Continuous improvement projects have been implemented and these have resulted in measured success greater than 50% reduction multiple times. EGLE personnel have been involved in these tests \ trials and have offered positive feedback. Film coating continues to be a large opportunity for improvement and that will be completed as soon as possible. The opportunity this offers Neuvokas for both process efficiency is odor reduction is massive.

Can odor be 100% eliminated? It is unlikely and that leads to having a measure of success. Is it possible to develop a measurable plan to determine if improvement projects work? Data is available that shows the reduction in odors over time from the Neuvokas facility. How should this data be used to develop a plan that can be successful? How should this be communicated with the local community?



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**AMERICA'S REBAR**

Sincerely,

A handwritten signature in black ink that reads "Matt Kero". The signature is written in a cursive style with a long horizontal flourish extending to the right.

Matt Kero

VP of Engineering

Neuvokas Corporation

906-934-2661

 **100% USA MADE**

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