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DPI
DECORATIVE PANELS INTERNATIONAL

May 21, 2019

Ms. Rebecca Radulski
Senior Environmental Engineer
Department of Environment, Great Lakes, and Energy, Air Quality Division
2100 West M-32
Gaylord, Michigan 49735

Re: Violation Notice dated April 30, 2019:
Decorative Panels International Inc. – Alpena Hardboard Mill,
Renewable Operating Permit No. MI-ROP-B1476-2015a

Dear Ms. Radulski:

We are responding to the Violation Notice ("VN") dated April 30, 2019, issued to Decorative Panels International ("DPI" or "the Company") by the Michigan Department of Environment, Great Lakes, and Energy ("EGLE"). The VN alleges #1 Press/Biofilter violations of our above-referenced Renewable Operating Permit ("ROP") and the federal regulation known as *National Emission Standards for Hazardous Air Pollutants: Plywood and Composite Wood Products*, 40 CFR Part 63, Subpart DDDD (hereafter "Wood MACT").

This response is submitted timely before the May 21, 2019 due date. As requested by the VN, this written response addresses the alleged violations, provides a summary of the corrective actions that have been taken by DPI, and identifies steps being taken to prevent any possible reoccurrence. In the interim, DPI reserves all defenses, claims, and rights regarding this VN's allegations.

Process Description: FGMACTDDDD, Press Line 1

Alleged Rule/Permit Condition Violated: Table FGMACTDDDD Table, Emission Limit I.1.

Alleged Violation/Comment: The limit requires Biofilter #1 to demonstrate compliance with one of six methods listed as part of the condition.

As explained previously to EPA and EGLE, the Company continues to pursue corrective action for its Biofilter No. 1. These measures have included engaging a published biofilter expert , James T. Boswell, Ph.D to evaluate our No. 1 Biofilter system; assessing bark media microbiological health monthly; power-washing ductwork; nutrient reintroduction into the biofilter media bed; and conducting trials for introducing ammonia to the Dynawave to facilitate additional formaldehyde removal. DPI has consistently pursued these efforts to improve the performance of Biofilter No. 1 following its meeting with EPA Region 5 in July of 2018.

Pursuant to DPI's Malfunction Abatement Plan, based on two sorbent tube tests (conducted December 18, 2018 and January 18, 2019), a stack test for Biofilter No.1 was performed on March 15, 2019. The results

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of that stack test are referenced in the violation notice dated April 30, 2019. Although DPI is encouraged by the continued operational effectiveness of its No. 3 Biofilter, the poor removal efficiency of the No. 1 biofilter – despite all the steps the Company has taken to improve Biofilter No. 1's performance – is both disappointing and frustrating to the Company. Nevertheless, the Company has a detailed plan to return Biofilter No. 1 to compliance.

Reasons for Performance Deficiencies with Biofilter No. 1

Over the last five months the Company has pursued a host of corrective actions to improve Biofilter No. 1's performance. Although the steps the Company took initially resulted in better biological activity in media in Biofilter No. 1, in March, biological activity appeared to have declined. Based on the continued input from the Company's biofilter expert, Dr. Boswell, and the Company's own root cause analysis, DPI believes the following factors have led to decline in the useful life of current media in Biofilter No.1:

1. **Overly moist conditions in Biofilter No. 1**
   Winter steam application to keep the bed temperature within the designated temperature range have created moisture values that exceed the desired moisture range in the biofilter beds. Overly moist conditions have likely contributed to the decreased effectiveness of the biofilter's media.

2. **The need for sustained nutrient addition**
   Although the Company has been adding nutrients to the biofilter bed over the last several months (as recommended by Dr. Boswell), the media has recently shown signs of decomposition. The Company expects nutrient addition from the onset of media replacement will prevent the decomposition of the media through composting, prolonging the media's useful life.

3. **Pollutant loading entering Biofilter #1**
   Based on recent testing, the influent formaldehyde loading in Biofilter No. 1 is approximately 50% greater (30 ppm) than the influent loading for Biofilter No. 3 (20 ppm). In short, Biofilter No. 1 has trouble meeting its required removal efficiency with this increase influent loading and the diminished efficiency of the Dynawave humidification system versus the humidification system present on biofilter No. 3.

Recent Corrective Action Steps

The first stage of corrective actions included improving the health of the media that is currently in place. Accordingly, we took media samples from varying beds in the No. 1 Biofilter on 9/7/18, 10/18/18, 11/14/18, 12/4/18, 12/11/18, 1/16/19, and 2/4/19. These samples were analyzed by Suez Water Technologies for microbiological activity. In addition, these same samples were tested for moisture, pH, and nutrient levels to ensure that the conditions for sustainable microbiological growth are being maintained. From these results, we determined that fertilizer addition to the biofilter beds would be beneficial. DPI added fertilizer to the beds on 9/21/18, 10/18/18, and 12/18/18, but discontinued the addition during the winter months due to the potential for fracturing the plastic lines. The practice will continue on a monthly basis in the spring, summer, and fall utilizing the delivery system that applies liquid fertilizer evenly to each bed through the existing spray nozzles. During the fertilizer addition on October 18, 2018, DPI removed the covers on all of the beds in order to stir the top 2 – 3 feet of media. At that time, lime and fertilizer was added to the beds to improve the media health. We initially saw improved microbiological activity based on the results reported by Suez Water Technologies based on these corrective actions; however the microbiological activity has decreased over the last few months.

The second stage involved enhancing the performance of the Dynawave pollution control device that is part of the Biofilter No. 1. DPI's biofilter expert, Dr. Boswell, suggested we could achieve an additional level of formaldehyde removal if we increase the amount of fresh water added to the unit, and if we add small amounts of ammonium hydroxide as a neutralizing agent in lieu of a portion of the sodium hydroxide. Research has shown that formaldehyde levels entering the biofilter media bed can be reduced by using ammonia to react with the formaldehyde. This, in turn, should provide a lower level of formaldehyde that will need to be controlled by the biofilter media. DPI procured a formaldehyde test kit from Hach and has been analyzing the formaldehyde levels in the Dynawave water on various dates each month since October, including during the compliance testing on November 1, 2018. DPI adjusted the fresh water addition to determine what impact that has on the data as well. The Company has seen encouraging results based on this information, including reductions in the formaldehyde levels in the Dynawave water of up to 50% based only on the introduction of more fresh water to the system. DPI performed a trial that introduced ammonia to the system prior to and after our recent compliance testing and we achieved an additional reduction of >50% as well. These results were observed real time while tracking the formaldehyde levels observed on the Bureau Veritas FTIR instrument after the March 15 stack test runs. Ammonium hydroxide has proven to be as effective as sodium hydroxide at neutralizing the Dynawave solution.

Additionally, because of the success of the recent compliance test on Biofilter No. 3, the Company has begun a study to compare all of the operating conditions that are present in the humidification system in Biofilter No. 3 to the Dynawave system for Biofilter No. 1. The goal is to create a condition that introduces a similar loading to Biofilter No. 1 that DPI has seen for Biofilter No. 3. This should enhance the Company's ability to monitor the systems and take actions that improve biofilter performance when data from periodic testing indicates a negative trend.

Planned Corrective Action Steps to Find a Permanent Fix for Biofilter No. 1

1. **Replacing Media (and Keeping it "Healthy")**
   Because it appears that media composting is occurring in Biofilter No. 1, the Company scheduled and completed a replacement of the media in Biofilter No. 1 on May 14, 2019. The Company followed the procedure used for the media replacement in Biofilter No. 3, with the expectation that will lead to better operational effectiveness. Additionally, the Company will follow a procedure of consistent biological activity monitoring and nutrient addition to the new media.

2. **Addressing Moisture Issues**
   We believe we can address the moisture problem in two ways. First, we are investigating ways to increase the insulating properties of the biofilter roof through coating or insulation, to prevent heat loss in the winter months and reduce the amount of steam necessary to keep temperatures in the specified range during cold weather. Second, we will plan to run stack testing in the winter months to potentially lower the functional operating temperature range of the biofilter which could decrease the amount of steam used in the system. In addition, following the required compliance testing this summer, we will attempt to increase the operating range in an effort to reduce the volume of water applied for cooling in the summer months.

3. **Removal of Formaldehyde Entering Biofilter No. 1 to Decrease Influent Loading**
   The inefficiency of the Dynawave humidification system compared to the Envirogen system (used in the Biofilter No. 3) potentially leads to the inconsistent compliance testing that we have seen with Biofilter No. 1. Based on input from Dr. Boswell we are investigating two options that should address the problem

   First, DPI has conducted trials using ammonium hydroxide as a neutralizing agent in conjunction with sodium hydroxide in the Dynawave. We have seen reductions in the formaldehyde levels during these trials and the results were confirmed during short duration trials conducted prior to

and after the recent stack testing completed on March 15, 2019. We would like to continue these trials going forward with the approval of the EGLE. The Company is obtaining a quote for a more permanent installation of the infrastructure needed to add specific dosages of ammonium hydroxide to achieve the desired results.

Second, we are investigating both biotrickling filter and wet scrubber technology options that have been used successfully in the wood products manufacturing sector. We contacted a contractor, CECO and arranged a site visit in March in order to assess the applicability of their technology in our system. This system would provide additional treatment after the Dynawave and prior to the gas stream entering the biofilter and get us to formaldehyde levels entering biofilter No. 1 that are normally seen entering Biofilter No. 3. The proposal was received recently and we are in the process of assessing the proposed technology and how it fits into our current operation. In addition, we will need to obtain quotes from other wet scrubber manufacturers in order to competitively compare technology, removal efficiency guarantees, and pricing. We expect to have this analysis complete by the end of the 3rd quarter of 2019.

DPI reserves all defenses, rights and claims in response to this VN allegation, and does not admit any liability in relation to this VN response. The Company remains willing to discuss amicable resolution of these issues, and are committed to reaching compliance with our permit and related regulatory requirements. If you have any questions regarding any of the above, please don't hesitate to contact me.

Sincerely,
Decorative Panels International, Inc.

Scott Ickes
Senior Manager, Compliance

Cc: Tim Clark, DPI
Duncan Gray, DPI
Tammi VanTil, Madison Consulting
Charles Denton, Barnes & Thornburg