

**BEFORE THE POLLUTION CONTROL BOARD
OF THE STATE OF ILLINOIS**

IN THE MATTER OF:)
Petition of Emerald Performance)
Materials LLC for an Adjusted) AS 13-2
Standard from 35 Ill. Adm. Code) (Adjusted Standard)
304.122(b))

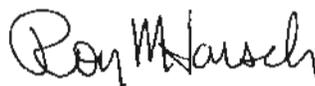
NOTICE OF FILING

TO: See Attached Service List

PLEASE TAKE NOTICE that on **Tuesday, October 8, 2013**, we filed the attached **Response to Hearing Officer Order** with the Clerk of the Illinois Pollution Control Board, a copy of which is herewith served upon you.

Respectfully submitted,

Emerald Performance Materials LLC



By: _____

One of Its Attorneys

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THIS FILING IS SUBMITTED ELECTRONICALLY

ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)
)
 PETITION OF EMERALD PERFORMANCE) AS 13-2
 MATERIALS, LLC FOR ADJUSTED) (Adjusted Standard – Water)
 STANDARD FROM 35 ILL. ADM. CODE)
 304.122(b))

RESPONSE TO HEARING OFFICER ORDER

Now comes Emerald Performance Materials, LLC (“Emerald”) by its attorneys, Drinker Biddle & Reath LLP to provide the following response to the Hearing Officer Order dated August 1, 2013 which directed Emerald to respond to the following questions by October 8, 2013:

1. Toxicity Testing:

Emerald provided results of toxicity testing in Attachment 4 of the Response to HOO covering a round of sampling in 2006 and four sampling events from 2011 to 2012. Resp. to HOO at 15, Att. 4. The following is a summary of the results, along with a calculation by the Board's staff of the corresponding dilution ratios:

Date	LC50 (percent effluent)		NOEC (percent effluent)		Dilution Ratio (based on LC50 PP)
	Pimephales promelas (PP) (Fathead minnow)	Ceriodaphnia dubia (water flea)	Pimephales promelas	Ceriodaphnia dubia	
09/26- 29/06, 09/28 - 29/ 06 10/1-2/06	16.0*	16.0**	2	8	6.25:1
6/13/11	8.50*	11.27**	6.25	6.25	11.8:1
7/25/11	8.68**	12.5**	6.25	6.25	11.5:1
10/12/11	22.75*	31.86**	6.25	12.5	4.4:1
1/23/12	<6.25**	9.42**	<6.25	6.25	>16.0:1

*: Based on 96-hour test

** : Based on 48-hour test

LC50: Median lethal concentration

NOEC: No Observed Effect Concentration

Dilution Ratio (based on LC50 PP): Parts background river water to parts effluent from Emerald/PolyOne
 Resp. to HOO at 15, Table B, Att. 4.

(a) *A note below Table B on page 15 of the Response to HOO states, "There was a*

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problem with the sample collected on July 25, 2011 and the laboratory was only able to perform a 48-hour test on the Pimephales promelas." Resp. to HOO at 15. Would you please indicate if the same is true of the January 23, 2012 sample? Attachment 4 for the January 23, 2012 sample analysis states, "Note: Calculations were performed on the 48 hr Pimepales promelas data rather than 96 hr due to UPS failure to deliver the renewal effluent." Resp. to HOO, Att. 4.

RESPONSE

Yes, according to the laboratory report, the same is true for the January 23, 2012 sample.

- (b) *Emerald's NPDES Permit Special Condition 14 required a biomonitoring testing frequency for four quarters beginning 18 months before the expiration date of the Permit. Pet. Exh. 3 at 7. Since the Agency appeared to note that the laboratory did not dilute the January 23, 2012 sample sufficiently to determine the LC50 value without a less-than "<" notation, would Emerald please submit into the record before hearing the results of a more recent Whole Effluent Toxicity (WET) testing that sufficiently dilutes the sample? Although the Agency has recommended this as a condition of the adjusted standard if granted (Ag. Rec. at 22, Condition B), please indicate Emerald's ability to provide the results before hearing.*

RESPONSE

A more recent Whole Effluent Toxicity (WET) testing using a modified dilution series to ensure that the LC50 can be determined is currently scheduled to be completed in the fourth quarter of 2013. The results will be forwarded to the Agency and the Board prior to any hearing that may be scheduled.

- (c) *The petition states that Emerald's effluent combines with the discharge from the City of Henry's municipal wastewater treatment plant and is discharged together through the Henry Plant's outfall and diffuser into the Illinois River, but compliance sampling is performed before the waste streams are combined. Pet. at 18. Special Condition 6 of the NPDES Permit (Pet. Ex. 3) states,*

For the purpose of this permit, the discharge from outfall 001 is limited to the discharges from outfalls A01 and B01, free from other waste water dischargers. Sampling for the monitoring requirements for the discharge shall be taken at a point representative of the discharge and prior to entry into the receiving stream or mixture with the City of Henry POTW's effluent. Pet. Exh. 3 at 6.

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Special Condition 14 of the NPDES permit requires "biomonitoring of the effluent from Discharge Number(s) 001." Pet. Exh. 2 at 7. Please clarify if the biomonitoring WET testing was performed on effluent from just the Henry Plant or the combined discharge with the City of Henry (Publicly-Owned Treatment Works (POTW)).

RESPONSE

The biomonitoring WET testing required by Special Condition 14 of the NPDES Permit (IL0001392) was performed on effluent from just the Henry Plant and not the combined discharge with the City of Henry POTW.

- (d) *Table A of the Response to HOO has a section entitled, "Previous Ammonia Variance — Dispersion Required, Effluent = 155 mg/L from Emerald, 126 mg/L combined." Resp. to HOO at 13. According to the Diffuser Performance Evaluation, the 126 mg/L combined refers to the total ammonia concentration from both the Noveon Henry Plant (at 155 mg/L, 1 mgd) and the City of Henry POTW (at 30 mg/L, 0.3 mgd). Pet. Exh. 4 at 1-8. Please clarify if the "Dispersion Required" in Table A was calculated based on the combined effluent from Emerald/PolyOne (Henry Plant) and the City of Henry POTW. Please also clarify if the reference to "Previous Ammonia Variance" in Table A of the Response to 1100 should be "Ammonia Adjusted Standard AS 13-2".*

RESPONSE

The "Dispersion Required" in Table A was calculated based on the effluent of Emerald/PolyOne (now Mexichem) and the City of Henry POTW which has a total effluent flow of 1.3 million gallons per day (1 mgd Emerald/Mexichem) and 0.3 mgd City of Henry POTW) with an effluent ammonia concentration of 126 mg/L. All dispersion calculations are based on this 126 mg/L concentration. The reference to "Previous Ammonia Variance" in Table A of the Response to 1100 is referring to the Ammonia Adjusted Standard AS 02-5.

- (e) *Emerald states, "The dispersion achieved in the Zone of Initial Dilution (ZID) is 39.8:1. This means 1 part effluent to 38.8 parts background river water at the edge of the ZID." Resp. to 1100 at 15. Does Emerald mean, "39.8 parts background river water"? When Emerald refers to "1 part effluent", does Emerald mean "1 part combined effluent from Emerald/PolyOne and City of Henry POTW"?*

RESPONSE

When Emerald states "39.8 parts background river water", the 39.8 refers to the total amount of water at the edge of the ZID, which is a combination of the river water and the effluent from the

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diffuser. That is, the total water making up the 39.8 value is: 39.8:1 dispersion at edge of ZID = 38.8 parts river water + 1 part effluent from the diffuser. When Emerald refers to "1 part effluent", the one part effluent refers to the combined effluent from Emerald/Mexichem and the City of Henry POTW.

- (f) *For the chronic standards, Emerald states, "As shown in Table A, above, the critical dispersion required is 101.2:1." Resp. to HOO at 13. Does Emerald mean "121.2:1" as actually appears in Table A?*

RESPONSE

The correct value is 121.2:1. The statement should read: "As shown in Table A, above, the critical dispersion required is 121.2:1."

- (g) *For each of the WET testing results, please provide the dilution ratios that correspond to the percent effluent from Emerald/PolyOne.*

RESPONSE

Emerald agrees with the dilution ratios determined by the Board and shown in the Table included with Question 1 of the Boards Hearing Officer Order dated August 1, 2013.

- (h) *Please indicate whether the corresponding dilution ratios of the WET testing results are less than the dilution/dispersion ratio provided at the edge of the ZID (39.8:1 at 20 feet or 47.9:1 at 92 feet). Resp. to 1100 at 15, Pet. Exh. 4 at vi, 314.*

RESPONSE

Each of the dilution ratios of the WET testing are less than the dilution/dispersion ratio achieved at the edge of the ZID.

- (i) *Please clarify whether the corresponding dilution ratios of the WET testing results are less than the "dispersion required" to meet the acute standard as calculated in Table A of 19.5:1 (or 19.2:1). Resp. to HOO at 13.*

RESPONSE

The "dispersion required" values provided in Table A are based on meeting the ammonia criteria. The values in Table A are not related to the dilution ratios of the WET testing results. The dispersion/dilution ratio required for both the acute ammonia and the WET testing criteria are met at the edge of the ZID.

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- (j) *Please clarify whether the dispersion provided at the edge of the ZID (39.8:1 at 20 feet or 47.9:1 at 92 feet) is greater than the "dispersion required" as calculated in Table A.*

RESPONSE

The dispersion achieved at the edge of the ZID is greater than the acute "dispersion required" as calculated in Table A. That is, all acute criteria are met at the edge of the mixing zone. The ZID has been specified by IEPA to be at ~20 ft downstream from the diffuser at which point a dispersion of 39.8:1 is achieved.

- (k) *Since it appears the "dispersion required" values in Table A were calculated based on the combined discharge (126 mg/L ammonia as N) but the LC50 results were based on Emerald/PolyOne's effluent alone, please explain the practical effect of comparing the corresponding dilution ratios from the LC50 percent effluent results to the required dilution ratios in Table A (i.e. the "dispersion required" values). Would the river see effluent with the LC50 values reported for Emerald/PolyOne or rather would it likely see relatively higher LC50 values if the combined effluent underwent WET testing?*

RESPONSE

The practical effect is that the dilution ratios from the LC50 percent effluent results are potentially greater than the LC50 percent effluent results would be from the combined Emerald/PolyOne (Mexichem) and City of Henry POTW effluent at the end of pipe. In other words, the dilution ratios presented in the WET testing results are the maximum expected values for the end of pipe discharge if the Henry dilutional flow was not being discharged. The river actually receives a less toxic (LC50 would be larger / dilution ratio would be smaller) combined effluent from the Emerald/PolyOne plus City of Henry POTW that flows through the diffuser to the River.

2. Agency Recommended Conditions:

If the Board were to grant the adjusted standard, the Agency recommended several conditions, from reducing ammonia in the effluent by 48% to investigating and annually reporting on new methods and technologies. Ag. Rec. at 22-23. Please comment on each of the Agency's recommended conditions.

RESPONSE

The Agency recommended the following conditions; Emerald has met with the Agency to discuss the recommendations and, based on those discussions, provides the following comments.

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- A. *Emerald's effluent limit for ammonia nitrogen be reduced by 48% from 155 mg/l to 80 mg/l to reflect the 48% reduction in the effluent waste load.*

Emerald is not able to accept the Agency proposed reduced effluent limits and is currently evaluating historical data in order to propose alternative reduced effluent limitations.

- B. *Emerald performs aquatic life whole effluent toxicity tests using a fish (fathead minnow) and invertebrate (Ceriodaphnia) using an effluent dilution series that will allow for 100% survival in the lowest effluent concentration tested. A successful test and dilution series will result in an LC50 effluent concentration that does not include a "less than" designation.*

Emerald understands the issue with the previous testing results and for all future whole effluent toxicity testing, Emerald will contract with a laboratory that understands the requirements, conducts the test using additional dilutions if necessary to report the results such that the LC50 effluent concentrations does not include a "less than" designation.

- C. *Emerald conducts quarterly monitoring of ammonia nitrogen in the Illinois River to demonstrate compliance with the ammonia water quality standards in accordance with 35 Ill. Adm. Code 302.212.*

This requirement is a condition contained in the current NPDES permit; based on the amount of data collected to date, as well as safety concerns, Emerald would like to eliminate this sampling in the future.

- D. *Emerald investigates new production methods and technologies that generate less ammonia in Emerald's discharge.*

This requirement is a condition contained in the current NPDES permit; although there are limitations in the modifications that can be made in the production methods and technologies, Emerald can continue to review available new production methods and technologies (via internet searches, consultant or IEPA notifications, etc.) on a regular basis.

- E. *Emerald investigates new treatment technologies, including but not limited to Fenton's reagent treatment, photo assisted Fenton systems, hydrogen peroxide/uv treatment, and evaluates implementation of new and existing technologies based on current plant conditions.*

Illinois EPA has indicated the above list was generated by completing an internet search for treatment technologies; Emerald can incorporate a review of new treatment

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technologies into appropriate project reviews and as well as review available new treatment technologies (via internet searches, consultant or IEPA notifications, etc.) on a regular basis. If a treatment technology would be determined to be potentially viable, a schedule for further evaluation would be developed. It is anticipated that evaluations and studies would proceed with a phased approach, with termination at any point where it is determined to not be a feasible alternative.

- F. Emerald investigates and submits a study to the Illinois EPA on the use of granular activated carbon column of the PC tank waste water before the waste water combines with non-PC tank waste water, followed by biological nitrification.*

Illinois EPA indicated to Emerald that the study should include a technical feasibility evaluation, an economic feasibility analysis, and test data (or other data) analysis. Emerald can complete such a study.

- G. Emerald investigates and submits a study to Illinois EPA on the use of its effluent for spray irrigation on crops.*

Although land application could be used only when the ground is able to absorb the water (i.e., soils not saturated or frozen), Emerald can investigate further, although it is assumed that constituents other than the nitrogen/ammonia contained within the effluent (i.e., salts) will have a significant detrimental effect on the land/crops that would preclude this as a viable option for effluent use. Additionally, it is likely that local farmers/neighbors would be reluctant to use wastewater effluent from the facility.

- II. Emerald investigates and submits a study to Illinois EPA on the dilution of waste water from the PC tank with water from the Illinois River.*

Although the Agency believes Emerald should investigate replacing an appropriate amount of the decreased flow from 2001 to 2011 with water from the Illinois River that will allow single-stage nitrification, Emerald does not agree that this option is viable, and future plans for increasing capacity/production at the plant could negate this as an option.

- I. Emerald prepares and submits to the Illinois EPA annual reports summarizing its activities to comply with above stated recommendations.*

This requirement is a condition contained in the current NPDES permit, Emerald can continue to prepare and submit reports.

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3. Potential Adjusted Standard Conditions:

Emerald stated, "Emerald has not had available capital to spend on additional projects that do not allow some return on investment or at least offset some operating expenses." Resp. to HOO at 9. From the perspective of incurring or avoiding potential future costs of complying with the adjusted standard conditions, please comment on the following conditions:

- (a) Please comment on including a condition in the adjusted standard that would sunset the requested relief in 7 years, coupled with conditions that would establish annually recurring requirements regarding investigations into new treatments and methods to continually demonstrate Emerald is providing "best degree of treatment" to be eligible for the dilution provision in 35 Ill. Adm. Code 304.102 along with the Agency recommended conditions D through I. See Rec. at 22-23.**

RESPONSE

Emerald is currently in discussions with the Illinois EPA regarding conditions that would require investigations into new treatments and production methods, and Emerald understands why the Board indicates that a sunset provision may be appropriate. However, while Emerald believes that a sunset provision is better than having no relief granted by the Board - and can accept a sunset provision - in lieu of evaluations at the end of a sunset period (review of water quality monitoring and more economically reasonable technology that may be available) to determine if a renewal of an adjusted standard is needed, Emerald believes it would be a more effective and meaningful use of monies to evaluate on an ongoing basis new treatment technologies and production methods, and to implement those technologies (if warranted) to ensure the best degree of treatment.

- (b) Instead of a sunset provision, annually recurring requirements regarding investigations into new treatments and methods, and the Agency recommended conditions D through I; please comment on including conditions such as the following in the adjusted standard:**
- (1) until more stringent Illinois ammonia water quality standards are adopted, a condition that would impose the ammonia effluent limit requested by Emerald in its petition along with requirements to discharge through the diffuser and meet currently applicable water quality standards at the edge of the ZID and mixing zone; and**
- (2) if Emerald will continue to utilize the dilution provision under**

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35 Ill. Adm. Code 304.102, a condition to implement and maintain a nonpoint source best management practice (BMP) to provide an environmental benefit that also addresses ammonia (as noted below under "Best Degree of Treatment Determination").

RESPONSE

If a sunset provision were to be included in an adjusted standard granted by the Board, with a provision to discharge through the diffuser to meet applicable water quality standards at the edge of the ZID and mixing zone, Emerald believes that the best, most efficient and meaningful use of monies would be to complete evaluations of new treatment technologies and production methods rather than implementing and maintaining a non-point source BMP that would provide an environmental benefit that also addresses ammonia.

4. Best Degree of Treatment Determination:

In AS 02-5, in order for Noveon to be eligible for a ZID and mixing zone and to utilize the dilution provision in 35 Ill. Adm. Code 304.102, the Board found that Noveon was providing "best degree of treatment" (BDT) at the Henry plant. AS 02-5, slip op at 20 (November 4, 2004). However, the Board's determination of BDT was tied to the sunset date of the adjusted standard. The Board stated:

The Board drafts this adjusted standard so that it terminates after seven years...The Board also notes that in seven years results of the water quality monitoring will be in and new, more economically reasonable technology may become available and revisiting the ammonia nitrogen issue at that time will be beneficial. Petition of Noveon, Inc. for an Adjusted Standard from 35 Ill. Adm. Code 304.122, AS 02-5, slip op at 21 (November 4, 2004).

If Emerald were to request renewal of AS 02-5, the Board stated that it would consider proposals for projects providing potential improvements to the Illinois River in Marshall County. AS 02-5, slip op. at 19 (November 4, 2004).

As noted in AS 02-5, the Board has granted adjusted standards in the past that have incorporated voluntary environmental projects. AS 02-5, slip op. at 19 (November 4, 2004) referring to AS 99-6, AS 91-9, and AS 99-13. In AS 99-6, the Board found the adjusted standard along with the environmental project "is a much better and more cost effective way to obtain sediment loading reductions in the watershed than employing other options to remove residuals from [the facility's wastewater]." Petition of Illinois American Water Company's (IAWC) Alton

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Public Water Supply Replacement Facility Discharge to the Mississippi River for an Adjusted Standard from 35 Ill. Adm. Code 302.203, 304.106, and 304.124, AS 99-6, slip op. at 20 (Sept. 7, 2000). Although AS 996 contained a 7-year sunset provision, the Board renewed the adjusted standard indefinitely as long as the conditions of the receiving stream do not render the adjusted standard obsolete or infeasible, the offset ratio is maintained, and the tons of soil saved from entering the project waterway is maintained above a certain level. **Proposed Extension of Adjusted Standard Applicable to Illinois-American Water Company's Alton Public Water Supply Facility Discharge to the Mississippi River Under 35 Ill. Adm. Code 304.124, and 304.106, AS 07-2, slip op. at 24 (October 18, 2007).** The Board also granted the adjusted standards in AS 91-9 and 99-13 indefinitely as long as conditions were met, including maintaining the benefit of the environmental project.

Owners of the Henry Plant have been petitioning the Board regarding the effluent at issue at various intervals over the past 22 years since 1991. Pet. at 1-4 referring to PCB 91-17, PCB 92-167, AS 02-5, AS 13-2. If the Board were to grant the instant adjusted standard, the Agency's recommendation requested annually recurring conditions to investigate and provide reports on new production methods and treatment technologies. Ag. Rec. at 2223. As requested above under question 3, in lieu of conditions in the adjusted standard for another sunset provision and annually recurring requirements regarding investigations into new treatments and methods, Emerald is asked to comment on conditions, including a requirement to install and maintain a BMP to provide an environmental benefit that also addresses ammonia if Emerald plans to continue utilizing the dilution provision under 35 Ill. Adm. Code 304.102.

- (a) Please address the feasibility of Emerald considering an environmental project relating directly to nonpoint source pollution, which would provide an environmental benefit that also addresses ammonia, such as the agricultural BMPs outlined by the Agency on its website at:
<http://www.epa.state.il.us/water/nutrient>.

RESPONSE

Emerald does not believe at this time that it is realistic to consider an environmental project relating to nonpoint source pollution that would provide a benefit that also addresses ammonia. Emerald's ability to impact non-point source pollution from agricultural operations (or even nearby public wastewater treatment operations) is negligible. Emerald further believes that continued efforts to identify new treatment technologies and/or production methods would ultimately be a more effective use of monies as well as providing the best opportunity to reduce ammonia and improve the water quality of the Illinois River.

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- (b) **Please indicate if Emerald would consider cost-share incentives to implement or install BMPs for an environmental project, such as applying to the Agency for funds through Section 319 (h) of the Clean Water Act nonpoint source management grants as described the Agency on its website at: <http://www.epa.state.il.us/water/financial-assistance/non-point.html>.**

RESPONSE

Emerald would likely not consider cost-share incentives to implement or install BMPs for an environmental project, such as applying to the Agency for funds through Section 319 (h) of the Clean Water Act nonpoint source management grants due to the effort and resources needed to manage such a project, the lack of identified BMPs for the reduction of non-point sources of nitrogen, and as noted above, identifying new treatment technologies and/or production methods would be a more effective use of monies.

- (c) **Please provide information on such BMPs and/or any other environmental projects that Emerald has identified or plans to research as set forth above in the Board's opinion in AS 02-5, including costs, project duration, and the quantifiable environmental benefit.**

RESPONSE

Emerald continues to research and evaluate new production methods and materials, and new treatment technologies, but to date has not identified any BMPs that would be economically feasible or result in a quantifiable environmental benefit.

Emerald Performance, LLC by its attorney



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CERTIFICATE OF SERVICE

It is hereby certified that true copies of the foregoing Notice of Filing and Response to Hearing Officer Order were mailed, first class, on October 8, 2013, to each of the persons on the attached service list.

It is hereby certified that a true copy of the foregoing Notice of Filing and Response to Hearing Officer Order was hand delivered to the following on October 8, 2013.

John T. Therriault
Illinois Pollution Control Board
James R. Thompson Center
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