

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)	
)	R 23-18(A)
AMENDMENTS TO 35 ILL. ADM. CODE)	
201, 202, AND 212)	(Rulemaking – Air)
)	
)	

NOTICE OF FILING

To: Attached Service List

PLEASE TAKE NOTICE that on this day, the 28th day of August, 2023, I caused to be filed with the Clerk of the Illinois Pollution Control Board **Pre-filed Testimony of Ross Gares** and a **Certificate of Service**, a true and correct copy of which is attached hereto and hereby served upon you.

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PRE-FILED TESTIMONY OF ROSS GARES

I. Introduction

My name is Ross Gares, and I am presenting testimony in this matter on behalf of Rain CII Carbon LLC (“Rain Carbon”). I am Director of Calcining Operations for Rain Carbon and oversee all of Rain Carbon’s facilities in the U.S., including its coke calcining facility located at 12817 East 950th Avenue in Robinson, Illinois (the “Facility”), the subject of this matter before the Illinois Pollution Control Board (the “Board”). I have held my current position since October 2019. Prior to that, I was the plant manager at Rain Carbon’s calcining facility in Lake Charles, Louisiana, from 2016 through 2019, and the plant manager at Rain Carbon’s calcining facility in Norco, Louisiana, from 2012 through 2016. I have worked at Rain Carbon for over 17 years and have substantial experience operating and managing Rain Carbon’s calcining facilities. As part of my current duties as Director of Calcining Operations, I advise all Rain Carbon U.S. facilities, including the aforementioned Facility, on the start-up and operation of coke calciners and associated equipment. In addition, I assist all U.S. facility managers in achieving various key metrics, including in the area of environmental compliance, and oversee the monitoring of U.S. facility performance.

My testimony is being submitted in support of Rain Carbon’s proposed amendments to the Illinois Administrative Code to provide alternative emission limits and standards (“AELs”) applicable to the Facility’s coke calcining kilns during periods of start-up, malfunction, and

breakdown (“SMB”). The proposed AELs are narrowly tailored. They provide AELs for particulate matter (“PM”) during SMB and AELs for opacity and volatile organic materials (“VOM”) during periods of malfunction and breakdown. Relief from the emissions limitations is necessary because there are no technically feasible or available pollution control technologies or pollution control practices that can maintain the minimum inlet temperature to the pollution control device for the kilns necessary to ensure compliance with emission limits.

The SMB Rulemaking (PCB No. R23-18) will upset Rain Carbon’s ability to operate the Facility. The Facility is bound by the terms of a 2017 settlement agreement with the Illinois Environmental Protection Agency (“Illinois EPA”) that requires the Facility to maintain a minimum operating temperature of 1800°F at the inlet to the pyroscrubber (the pollution control device for the kilns) on a 3-hour rolling average. However, the 1800°F requirement does not apply during periods of SMB when the kilns and pyroscrubber inlet must either heat up from the ambient temperature or reheat (sometimes referred to as a warm restart) during a malfunction/breakdown from any retained temperature (collectively, “start-up”). That requirement is conditioned upon it not applying during periods of start-up or periods of malfunction/breakdown. Illinois EPA granted the Facility relief in the Facility’s Clean Air Act Program Permit issued in 2019 (“CAAPP permit”) by requiring the Facility to undertake specific heating procedures that minimize emissions during SMB and ensure the Facility takes advantage of the best available pollution control practices. That relief, however, was given pursuant to the rules now vacated by the SMB Rulemaking. Without the Facility’s necessary SMB relief, the Facility would be effectively required to maintain 1800°F at the pyroscrubber inlet from the moment it first adds green coke to the kiln—a condition that is not achievable. Similarly, without such SMB relief, the Facility will often be forced to shut down and restart the kilns

during malfunction events, rather than use best pollution control practices to maintain temperature in the kiln to avoid unnecessary shutdown/start-up events.

In effect, the SMB Rulemaking will force the Facility into more start-ups and restarts, which will result in higher emissions. Without the relief proposed by Rain Carbon's AELs, the Facility will be forced to violate its CAAPP permit and the 2017 IEPA Settlement. The Facility lacks alternative options. The proposed AELs do nothing more than maintain (and in some respects further limit) the reasonable limited relief Illinois EPA previously afforded to the Facility to ensure best pollution control practices during SMB events.

The Facility ultimately strives to minimize SMB events. But start-ups and malfunctions/breakdowns are not avoidable and are inherent to the operations of an industrial facility. To that end, the Facility worked with the U.S. Environmental Protection Agency ("U.S. EPA") to identify and implement new Facility equipment and procedure improvements that will minimize malfunctions/breakdowns and corresponding start-up or restart events. The Facility committed to make those improvements as part of its settlement with U.S. EPA in February of this year.

The proposed AELs will allow the Facility to realize the benefits of the improvements the Facility committed to while minimizing any impact to the environment. As discussed further in the pre-filed testimony of Bryan Higgins, Trinity Consultants,¹ Rain Carbon's proposed AELs **will not** result in a degradation in air quality and **will not** otherwise impact Illinois EPA's Section 110(l) demonstration under the Clean Air Act.

¹ As afforded by the Hearing Officer Order dated August 24, 2023, Rain Carbon intends to file the pre-filed testimony of Bryan Higgins on or before September 5, 2023.

Below, I will provide an overview of the Facility's operations and the occurrence of SMB events at the Facility. I will then discuss the Facility's historical reliance on relief during SMB afforded under Illinois law, the Facility's CAAPP permit, and a 2017 settlement agreement with the Illinois EPA. Finally, I will present the Proposed Rule and explain why it is necessary, proportionate to the relief needed, and should be adopted.

II. Facility Operations

a. Overview of Calcining Operations and Operation of the Pyroscrubbers

The Facility is a coke calcining plant constructed between 1955 and 1959. Operations consist of green coke receiving and handling, coke calcining, and handling and load-out of calcined coke. Rain Carbon operates two calcining lines at the Facility, each utilizing a rotary kiln for calcining. Green coke is the raw material fed into the kiln for processing into calcined coke. The process of calcining coke includes heating green coke in the kilns to remove moisture and volatile material followed by densifying the coke. The calcined coke leaves the kiln and enters the cooler where it is quenched with water and cooled. After cooling, the calcined coke is transferred to the calcined coke bins to await loading into railcars for customers. The calcined coke, a finished product for Rain Carbon, is an essential raw material for the production of aluminum and titanium oxide.²

The Facility operates two pyroscrubbers, serving as the pollution control device for each one of the kilns. The main function of a pyroscrubber in the coke calcining process is to oxidize the carbonaceous contents, including hydrocarbon volatiles, of the exhaust gas from the kiln. Except when in start-up, or during malfunction or breakdown events, the pyroscrubbers are

² Titanium oxide is used in the production of, among other things, paper, paints, pharmaceuticals, toothpaste, cosmetics, and sunscreen.

operated at a minimum of 1800°F (on a 3-hour rolling average), draw kiln exhaust countercurrent to the flow of coke, and are designed to handle high temperature exhaust while removing VOM and PM from the exhaust gases. The pyroscrubbers alone are sufficient to control emissions from the kilns (once above 1800°F) to ensure compliance with the state emission limits for PM, opacity, and VOM of 35 Ill. Adm. Code §§ 212.123, 212.322, and 215.301.

Generally speaking, the high temperatures required for the calcination process, in combination with the additional heat generated in the pyroscrubber, provides sufficient heat to control the emissions of PM, opacity, and VOM. As noted above, the Facility utilizes one natural gas burner in each kiln to raise the pyroscrubber's inlet temperature to approximately 400°F before green coke is introduced into the kiln. The introduction of coke provides the fuel necessary to provide heat to the inlet to the pyroscrubber to bring the temperature from 400°F to at least 1800°F. As more fully explained below, the introduction and reduction of heat to the kilns must be gradual in order to not damage the Facility's refractory lined equipment or cause the kiln to warp.

The pyroscrubber is a self-sustaining control device, and the coke fines entering the pyroscrubber from the kiln serve as fuel which in turn removes the VOM and PM (and minimizes opacity). At 1800°F and above, it is generally accepted that there is sufficient temperature in the pyroscrubber to control PM, VOM, and opacity levels (as well as other pollutants) to well within the regulatory limits. During normal (*i.e.*, non-start-up and non-malfunction/breakdown) operations, the Facility typically maintains a temperature in the pyroscrubber between 1800°F to 2400°F.

Each kiln utilizes one natural gas burner. The burners are used to increase the temperature of the kiln and pyroscrubber from ambient to a minimum temperature of 400°F, as measured at the inlet to the pyroscrubber. Green coke is subsequently introduced into the kiln to provide heat necessary to reach 1800°F—the minimum optimal temperature for the control of PM and VOM emissions by the pyroscrubber. The burners are also used as supplemental heat to assist in the stabilization and maintenance of kiln temperatures during various operating conditions. In this capacity, the burners are used (i) during start-up to moderate the increase in heat after green coke is introduced, (ii) during normal, steady-state operations to moderate kiln temperatures, and (iii) most critical to Rain Carbon’s proposed AELs, during periods of malfunction or breakdown to help maintain kiln temperatures when the feed of green coke into the kiln is suspended.

b. SMB Events and the Operation of the Pyroscrubbers Below 1800°F During SMB Are Unavoidable at the Facility

The Facility does not continuously operate. At times it shuts down and must go through start-ups. Similarly, from time to time the Facility experiences events that result in malfunctions or breakdown. Such events are a consequence of the normal operation and general use of an industrial facility. In either case, such SMB conditions result in temporary operation of the pyroscrubber below 1800°F because of the lack of fuel entering the pyroscrubber. As the fuel entering the pyroscrubber reduces as a result of an SMB, so does the inlet temperature. Similarly, during start-up conditions when green coke is being introduced into the kilns the pyroscrubber inlet temperature is low.

As further discussed in my testimony, operation of the rotary kilns while the pyroscrubber inlet temperature is below 1800°F is limited to very specific operational scenarios. These scenarios, while infrequent, are unavoidable. For this reason, Illinois EPA and U.S. EPA

have permitted the Facility relief during SMB events even though during those periods the pyroscrubber temperature may be insufficient to control VOM, PM, and opacity emissions to levels compliant with state emission standards. A reduction in pyroscrubber temperature is limited to the following scenarios:

Start-up. During start-up of the kiln from ambient temperature following an outage or other event that causes the kiln to be taken offline and emptied of coke. If the kiln has been cooled to ambient temperature, it will be pre-heated using the kiln's natural gas burners until the respective pyroscrubber has reached a minimum temperature of 400°F. At this point, green coke is introduced to the rotating kiln. Start-up from ambient temperatures with no green coke in the kiln generally takes no more than 24 hours to complete.

Malfunction/Breakdown. During or in response to a malfunction or breakdown of equipment that results in, or requires, an interruption in the feed of green coke and/or the discharge of calcined coke. Given the inherent variability and unpredictability of malfunctions, the Facility response will vary depending upon the particular malfunction/breakdown. In the event of malfunction or breakdown, the Facility performs an investigation. If reasonable repair time is not possible, shutdown will occur. Other times, when reasonable repair time is possible, the Facility may reduce a kiln's rotations to operate into a "slow roll" mode to maintain the temperature of the pyroscrubbers. The Facility generally tries to maintain temperature in the kiln during malfunction or breakdown in an effort to reduce the amount of time that a calcining line takes to achieve a normal pyroscrubber temperature. This minimizes the duration of potentially higher-than-normal emission rates during start-up and minimizes mechanical integrity issues.

Relative to normal, steady-state operations, pyroscrubbers operate below 1800°F during the above scenarios relatively infrequently. Over the last six years, the Facility has experienced, on average, less than five start-ups per year (both kilns combined), and less than 10 malfunctions per year (both kilns combined). While start-ups can last up to 24 hours, malfunctions generally, but do not always, last for shorter time periods (4-5 hours in length) and occur while a minimum temperature is maintained in the kiln and pyroscrubber (*i.e.*, the “slow roll” described above).

Though the relative frequency of SMB events is low per year, the occurrence is sufficiently frequent to warrant, and in fact, necessitate the relief sought by Rain Carbon’s proposed AELs. Sufficient control does, however, occur below 1800°F to ensure compliance with VOM and opacity limits during malfunction/breakdown events, which is why, as discussed more below, the Proposed Rule only proposes relief during malfunction/breakdown for PM.

c. Shutdown to Respond to a Malfunction is Inconsistent with Good Air Pollution Control Practices and May Damage the Kilns

Best pollution control practices dictate that the Facility minimize the amount of thermal cycling to the kiln and the pyroscrubbers. The kiln and pyroscrubber are lined with refractory to withstand the high temperatures sustained as part of the coke calcining operations. Refractory reliability is dependent on the amount of thermal cycling that occurs. More frequent heating and cooling of the refractory will lead to premature degradation and eventual failure of the refractory, leading to increased malfunctions, increased Facility downtime, and significant cost (due to repairs and lost operating time) to Rain Carbon.

Allowing the Facility to operate the pyroscrubbers at temperatures below 1800°F during a malfunction will reduce the number of shutdowns and start-ups of the kilns and associated pyroscrubbers. This, in turn, will reduce the thermal cycling impact on the refractory. If Rain Carbon is not granted relief to operate below 1800°F during a malfunction, the Facility may, at

times, be forced to evacuate all of the coke in the kiln and reduce the kiln to ambient temperature. This will result in increased thermal cycling and impact to the refractory. In addition, the evacuation of coke will require that the kilns start-up from ambient temperatures, which will ultimately lead to greater operational periods below 1800°F because, as noted above, the Facility cannot achieve 1800°F at the pyroscrubber inlet without the addition of coke to the kilns to supplement the heat from the natural gas burners.

In short, the SMB Rulemaking, absent approval of Rain Carbon's proposed AELs, increases the potential for thermal cycling, damaged refractory, and greater periods of start-up events. This has the potential to not only have a more significant impact on air quality but lead to significant increased cost and downtime for the Facility. In the interest of best pollution control practices, the ability for the Facility to operate below 1800°F during malfunctions should not, therefore, be eliminated.

III. The Facility Has Relied on the SMB Relief Granted by Illinois EPA and This Board

The Facility has very specific relief during SMB in its CAAPP permit. That relief was established – *and exists independent of* – the CAAPP permit as it was approved as part of a 2017 settlement agreement with Illinois EPA (approved by the Board) that requires the Facility to control opacity, PM, and VOM emissions by maintaining a minimum operating temperature of 1800°F at its pyroscrubbers except during SMB. An agreement with U.S. EPA likewise incorporates, and as a consequence, endorses the SMB relief afforded to the Facility. Together, the Illinois EPA, Board, and U.S. EPA have all recognized that an essential condition of the Facility's operating requirements necessitates relief during SMB events when it is infeasible for the Facility to achieve and maintain the minimum 1800°F operating temperature needed to ensure compliance with the opacity, PM, and VOM emission limits.

a. 2017 IEPA Settlement

In 2017, Rain Carbon and Illinois EPA entered into a settlement agreement—approved by this Board—that requires the Facility to control opacity and emissions of PM and VOM by maintaining a minimum operating temperature of 1800°F at its pyroscrubbers except during SMB (the “2017 IEPA Settlement”). Specifically, Section V.D.1.f. of the 2017 IEPA Settlement establishes the following “future compliance obligation”:

Except during startup and malfunction/breakdown conditions of either ... Kiln #1 or ... Kiln #2, [Rain Carbon] shall at all times operate its pyro scrubbers as follows: (i) maintain a minimum temperature of 1800°F

(Emphasis added).

Importantly, the relief during SMB under the 2017 IEPA Settlement was not authorized by the regulatory provisions repealed by the SMB Rulemaking. ***The relief to operate below 1800°F during SMB events was—and remains today—relief provided via settlement.***

b. CAAPP Permit

The Facility’s CAAPP permit memorializes the SMB relief afforded by the 2017 IEPA Settlement. Subject to compliance with specific work practice conditions, the CAAPP permit sets forth specific relief from the otherwise applicable opacity, PM, and VOM standards during SMB. Condition 4.2.4(a)(i)(A) (Start-up Requirements) states that:

Pursuant to 35 IAC 201.149, 201.261, and 201.262, ***the source is authorized*** to operate [K]iln 1 and [K]iln 2 and their associated pyroscrubbers...in violation of the applicable requirements of Conditions 4.2.2(a)(i)(A) [30% opacity standard pursuant to § 212.123(a)], 4.2.2(b)(i)(A) [PM standard pursuant to § 212.322(a) and (c)], and 4.2.2(d)(i)(A) [VOM standard pursuant to §§ 215.301 and 215.302(c)] during start-up.

(See Ex. C to Proposed Rule, CAAPP permit, Condition 4.2.4(a)(i)(A) (emphasis added)).

Condition 4.2.4(a)(i)(B) applies a near identical exemption to the same opacity, PM, and VOM standards during malfunction/breakdown: “[p]ursuant to 35 IAC 201.149, 201.261, and

201.262, the source is authorized to continue operation in violation of the applicable requirements of Conditions 4.2.2(a)(i)(A), 4.2.2(b)(i)(A), and 4.2.2(d)(i)(A) during malfunction breakdown.”

While the relief from SMB authorized under the CAAPP permit references the now repealed SMB rules, the CAAPP permit explicitly references the 2017 IEPA Settlement, which, as noted above, authorized relief during SMB when the pyroscrubber cannot ensure compliance with the applicable PM, opacity, and VOM emission limits. Rain Carbon’s proposed AELs are more stringent than the relief previously authorized under the CAAPP permit and more stringent than the relief still afforded by the 2017 IEPA Settlement.

c. *2023 U.S. EPA Settlement*

Over seven years after U.S. EPA’s SSM State Implementation Plan (“SIP”) call and five years after Rain Carbon entered into the 2017 IEPA Settlement, Rain Carbon and U.S. EPA entered into an administrative consent order in February 2023. In the 2023 U.S. EPA Settlement, the agency concurred that the 2017 IEPA Settlement expressly conditioned the operation of the pyroscrubbers above 1800°F as inapplicable during periods of SMB. U.S. EPA acknowledged that the Facility’s CAAPP permit was modified in 2019 to “reflect the future compliance set forth in the [2017 IEPA Settlement]” that requires operation of the pyroscrubbers “[e]xcept during startup and malfunction/breakdown condition.” U.S. EPA accepted the SMB relief granted by IEPA and did not attempt to take any action to remove or otherwise limit the Facility’s relief from the 1800°F temperature requirement during periods of SMB.

IV. Rain Carbon Has Invested to Minimize SMB, but Relief Is Still Needed

The 2023 U.S. EPA Settlement memorializes Rain Carbon’s commitment to implement various new improvements at the Facility intended to further minimize emissions during SMB events. These improvements are reflective of Rain Carbon’s dedication to reduce the frequency

and duration of restarts after malfunctions or breakdowns. Among other measures, the Facility agreed to: (a) increase each existing kiln burner's natural gas firing capacity, which will reduce the duration that the temperature in the pyroscrubber remains below 1800°F during short-term feed stoppages and start-up events, and (b) make a number of improvements at the Facility to reduce the number and duration of feed chute plugs, thereby reducing the frequency and potential duration that the pyroscrubber must operate below 1800°F during a malfunction or breakdown. The improvements are expected to cost approximately \$1.3 million.

While Rain Carbon is working diligently to minimize emissions during SMB events, as discussed above, the SMB events and associated excess emissions cannot be avoided or controlled entirely. Therefore, even though Rain Carbon expects that any temporary SMB emission exceedances from the Facility's operations will continue to decline, relief as proposed in the AELs for Kiln 1 and Kiln 2 remain necessary and appropriate.

V. The Proposed Rule Is Narrowly Tailored to Seek Only the Relief Rain Carbon Needs

The Proposed Rule set forth below proposes to amend Title 35, Sections 212.124 and 212.322 and Section 215.302 to establish alternative, specific, emission standards applicable to the Facility for opacity, PM, and VOM during periods of time when the Facility is in start-up (for opacity, PM, and VOM) and when the Facility is experiencing malfunction/breakdown (for PM) and, in each case, is unable to achieve or maintain an inlet temperature of 1800°F at the inlet to the pyroscrubber servicing Kiln 1 or Kiln 2.

Rain Carbon intentionally proposed AELs that are *more stringent* than the relief afforded to the Facility prior to the Board's repeal of the SMB provisions in R23-18 and afforded to the Facility through the 2017 IEPA Settlement. While under the 2017 IEPA Settlement the Facility is permitted to exceed any emission limit during SMB events, the Proposed Rule sets forth

specific limitations on its operations during SMB. Additionally, the Proposed Rule only provides relief during malfunctions or breakdowns for compliance with the applicable PM limits because only PM compliance (not VOM or opacity) is jeopardized when lower kiln temperatures occur.

As further demonstrated in the forthcoming testimony of Bryan Higgins, Trinity Consultants, filed in support of Rain Carbon's Proposed Rule, the proposed AELs ***will result in an improvement*** in air quality as compared to the emissions allowable under the CAAPP permit (*i.e.*, with the SMB relief granted by the 2017 IEPA Settlement). Thus, at bottom Rain Carbon's Proposed Rule ***will not result in a degradation*** of air quality.

a. AEL for Opacity

Rain Carbon seeks an amendment to 35 Ill. Adm. Code § 212.124 to allow for an alternative averaging period during start-up of Kiln 1 or Kiln 2 to demonstrate compliance with the 30% opacity standard under Section 212.123. The Proposed Rule would amend Section 212.124 as follows:

e) During any period of start-up at the emission unit designated Kiln 1 or Kiln 2 at the Rain CII Carbon LLC facility located in Robinson, Illinois, when average opacity exceeds 30 percent for a six-minute period, as applicable pursuant to Section 212.123(a) of this Subpart, compliance with Section 212.123(a) may alternatively be demonstrated for that six-minute period as follows.

1) Compliance with that six-minute period may be determined based on Test Method 9 (40 C.F.R. Part 60, Appendix A, incorporated by reference in Section 212.113) opacity readings the average of non-consecutive opacity readings during a 1-hour period; provided, however, that compliance may be based on the average of up to three, 1-hour average periods, in the event that compliance is not demonstrated during the preceding hour. For purposes of this subsection (e), "start-up" is defined as the duration from when green coke feed is introduced into the kiln until the temperature at the pyroscrubber inlet servicing the kiln achieves a minimum operating temperature of 1800°F (based on a three-hour rolling average).

The proposed AEL for opacity is designed to address the first few hours of the start-up of a kiln, when the *potential* for opacity is the highest because of the lower pyroscrubber inlet temperature. The Facility does not utilize a continuous opacity monitoring system at its pyroscrubbers. Instead, the Facility conducts Method 9-compliant visible observations to determine opacity during start-up. By allowing for the Facility to demonstrate compliance with the 6-minute average opacity limit (35 Ill. Admin. Code 212.123(a)) over the course of a 1-hour period (and, up to a 3-hour period, if needed), the proposed AEL appropriately accounts for the variability inherent during the initial hours of start-up and establishes an averaging period that can be determined through Method 9 observations.

Based on the technical support document and pre-filed testimony of Bryan Higgins, opacity readings during the first few minutes (and, potentially, hours) of start-up are the greatest until such time as the pyroscrubber temperatures are sufficient to better control PM emissions. The proposed AEL, therefore, does not propose an averaging period for the duration of start-up; rather, it provides limited relief during the period of start-up when it is not possible to reach pyroscrubber temperatures sufficient to control PM and, therefore opacity levels.

b. *AEL for PM*

Rain Carbon seeks an amendment to 35 Ill. Adm. Code § 212.322 to allow for a limitation on the number of hours per year that Kiln 1 or Kiln 2 can operate in excess of the process weight PM emission limit during SMB under Section 212.322(c). The Proposed Rule would amend Section 212.322 as follows:

d) Alternative Standard

1) The owner or operator of the Rain CII Carbon LLC facility located in Robinson, Illinois, shall be allowed to emit particulate matter into the atmosphere in excess of the allowable emission rates specified in subsection (c) applicable to the emission unit designated Kiln 1 or Kiln 2 during any period of time that the temperature of the inlet to the

pyroscrubber servicing either emission unit does not achieve a minimum operating temperature of 1800°F during start-up, malfunction, or breakdown (based on a three-hour rolling average).

2) Use of the alternative standard in subsection (d)(1) shall not exceed 720 hours in the aggregate per kiln in a calendar year. It shall not be a violation of this Part to operate the pyroscrubber servicing Kiln 1 or Kiln 2 below the minimum operating temperature in subsection (d)(1) during this time.

3) During any time that Kiln 1 or Kiln 2 is operated while the pyroscrubber servicing the emission unit is not achieving the minimum operating temperature in subsection (d)(1), the owner or operator must:

A) minimize emissions to the extent reasonably practicable;

B) not introduce green coke into the kiln unless or until a minimum operating temperature of 400°F measured at the inlet to the pyroscrubber is achieved; and

C) operate the natural gas-fired burners to minimize the duration that a kiln operates below 1800°F, consistent with technological limitations, manufacturer specifications, and good air pollution control practices for minimizing emissions.

4) The owner or operator must keep and maintain all records necessary to demonstrate compliance with this subsection, including, but not limited to, records of each hour that the pyroscrubber operated below the minimum operating temperature specified in this subsection.

The proposed AEL for PM is intended to cover any operational condition (*i.e.*, whether that be start-up or the result of a malfunction/breakdown of equipment) during which the inlet temperature to the pyroscrubber drops below 1800°F. In order to limit the potential impact of PM emissions that are not sufficiently controlled during such periods, the proposed AEL limits the total annual hours that each kiln can operate below 1800°F and requires that the Facility operate the natural gas burners to minimize the duration under that minimum temperature.

The 720-hour annual limit is reasonably tailored to potential operating conditions at the Facility and would not, if utilized, result in a degradation in air quality. Rain Carbon conducted conservative modeling based on 720 hours per year per kiln of PM emissions in excess of the

applicable PM process weight limits. The modeling results are discussed in detail in the forthcoming pre-filed testimony of Bryan Higgins of Trinity Consultants. The results demonstrate that there will be no interference with Illinois' ability to attain or maintain compliance with the PM National Ambient Air Quality Standards ("NAAQS").

c. *AEI for VOM*

Rain Carbon seeks an amendment to 35 Ill. Adm. Code § 215.302 to allow for an alternative averaging period during start-up of Kiln 1 or Kiln 2 to demonstrate compliance with the VOM emission limit under Section 215.302. The Proposed Rule would amend Section 215.302 as follows:

b) Compliance with the permitted emissions of organic material under subsection (a) during any period of start-up at the emission unit designated Kiln 1 or Kiln 2 at the Rain CII Carbon LLC facility located in Robinson, Illinois, shall be determined by the average of hourly emissions of organic material during start-up of the emission unit; provided, however, that in no event shall the averaging period of any single start-up exceed twenty-four (24) hours. For purposes of the alternative standard in subsection (b), "start-up" is defined as the duration from when green coke feed is introduced into the kiln until the temperature at the pyroscrubber inlet servicing the kiln achieves a minimum operating temperature of 1800°F (based on a 3-hour rolling average). During any period of start-up, the owner or operator must:

- 1) minimize emissions to the extent reasonably practicable;
- 2) not introduce green coke into the kiln until a minimum operating temperature of 400°F measured at the inlet to the pyroscrubber is achieved; and
- 3) operate the natural gas-fired burners to minimize the duration of start-up, consistent with technological limitations, manufacturer specifications, and good air pollution control practices for minimizing emissions.
- 4) The owner or operator must keep and maintain all records necessary to demonstrate compliance with this subsection, including, but not limited to, records of the duration and frequency of each start-up period.

The proposed AEL for VOM is even more narrowly tailored than the proposed AEL for PM. This is because the proposed VOM AEL only intends to apply during start-up periods until the inlet temperature to the pyroscrubber reaches 1800°F over a 3-hour average. The alternative limit does not seek relief during malfunctions for VOM (because the lower pyroscrubber temperatures during malfunctions remain sufficient to control VOM within applicable emission limits). As with the AEL for PM, the modeling results prepared by, and discussed in, Bryan Higgin's pre-filed testimony demonstrates that there will be no impact to air quality by allowing the averaging of VOM emissions over start-up (*i.e.*, up to 24 hours). Averaging over the duration of a start-up is appropriate as VOM emissions are highest toward the beginning of start-up when temperatures in the pyroscrubber are the lowest.

VI. There Are no Physical or Operational Alternatives

Rain Carbon has evaluated alternative control and operational approaches to minimizing the emission of PM, generation of opacity, and emission of VM during SMB events. Rain Carbon has not identified, nor is it aware, of any technically feasible controls that could overcome the reduction in control efficiency of the pyroscrubber during SMB events when the inlet temperature drops below 1800°F.

VII. Conclusion

Rain Carbon's Proposed Rule seeks amendments to Sections 212.124 and 212.322 and Section 215.302 to establish alternative, specific, emission standards applicable to the Facility for opacity, PM, and VOM, respectively, during periods of time when the Facility is in start-up (for opacity and VOM) and SMB (for PM) and is unable to achieve or maintain an inlet temperature of 1800°F at the inlet to the pyroscrubber servicing either Kiln 1 or Kiln 2. The Proposed Rule is more stringent than the relief afforded to the Facility prior to the Board's repeal

of the SMB provisions in R23-18 and will not interfere with the continued attainment of the NAAQS for PM and ozone. It will instead result in an improvement in air quality as compared to the emissions allowable under the CAAPP permit. Therefore, we ask that the Board adopt the Proposed Rule.

Dated: August 28, 2023

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)	
)	R 23-18(A)
AMENDMENTS TO 35 ILL. ADM. CODE)	
201, 202, AND 212)	(Rulemaking – Air)
)	
)	

CERTIFICATE OF SERVICE

I, the undersigned, certify that on this 28th day of August, 2023, I have electronically served a true and correct copy of **Pre-Filed Testimony of Ross Gares** by electronically filing with the Clerk of the Illinois Pollution Control Board and by e-mail upon the persons identified on the attached Service List.

My e-mail address is Alex.Garel-Frantzen@afslaw.com.

The number of pages in the e-mail transmission is 22.

The e-mail transmission took place before 5:00 p.m.

/s/ Alexander J. Garel-Frantzen

Alexander J. Garel-Frantzen

Dated: August 28, 2023

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