WACKER

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Compliance Director

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September 21, 2022

To: Tennessee Department of Environment & Conservation
Attn: Mr. Derek Briggs
Division of Air Pollution Control
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243
Delivered via email

Re: Wacker Chemical Corporation and Wacker Polysilicon North America LLC, Charleston, TN Site Emissions Limitation Agreement

Dear Mr. Briggs,

Wacker Chemical Corporation and Wacker Polysilicon North America LLC (Wacker) are agreeing to limit site emissions at the Charleston, TN location to remain below major source status regarding air emissions permit classification and emissions permit limits. Wacker commits to the following limitations and related monitoring:

1. Emission source reference number 06-0282-15 (Boilers, operating permit number 474253):
    a. Natural gas usage shall not exceed 1,493 MMscf per any period of 12 consecutive months at source -15. The gas consumption quantity is tracked and logged per operating permit number 474253, condition S6-1.
    b. The NO_x emission factor value of 0.0204 tons NOx/MMscf was developed in the boiler emissions testing that occurred on January 31st and February 1st, 2017 and will not be exceeded. The permit limit of 30.46 tons NOx per any period of twelve consecutive months divided by the emission factor of 0.0204 tons NOx/MMscf results in the natural gas consumption limitation of 1,493 MMscf/yr for the boilers. The NO_x permit limit of 30.46 tons per any period of twelve consecutive months will not be exceeded.
    c. The CO emissions factor of 0.037 lb CO/MMBtu heat input and the boiler permit limit of CO emissions of 31.31 tons per 12 consecutive months shall not be exceeded. 1,493 MMscf of natural gas consumed per twelve consecutive months at the boilers multiplied by the CO emissions factor and the natural gas heat input factor of 1,078 btu/scf ensures the boiler emissions are less than the permit limit of 31.31 tons per consecutive 12 months.
    d. The SO2 emissions factor of 0.6 lbs/MMscf and SO2 emissions of 0.5 tons per 12 consecutive months shall not be exceeded. 1,493 MMscf of natural gas consumed per twelve consecutive months at the boilers multiplied by the SO_2 emissions factor ensures the boiler emissions are less than the permit limit of 0.5 tons per consecutive 12 months.
    e. The PM emissions factor of 0.005 lb/MMBtu of heat input and 4.23 tons per 12 consecutive months shall not be exceeded. 1,493 MMscf of natural gas consumed per year at the boilers multiplied by the PM emissions factor and the

natural gas heat input factor of 1,078 btu/scf ensures the boiler emissions are less than the permit limit of 4.23 tons per 12 consecutive months.

2. Emission source reference numbers 06-0282-02 and -16 (Emergency Generators) includes permit condition S2-3 that imposes running hour limitations and tracking requirements to ensure operating times are minimized. SO_2 emitted from each source shall not exceed 14.69 pounds per hour on a daily average basis.

3. Emission source reference numbers 06-0282-23 and -24 (Amorphous Fumed Silica, operating permit 479203) limits CO and NOx emissions where compliance is assured by meeting conditions S1-2, S1-4E and F. PM emissions are limited where compliance is assured by meeting condition S2-4A of the permit. SO_2 emitted from this source shall not exceed 0.0023 lb/hr (0.01 ton/consecutive 12 months) on a daily average basis.

4. Emission source reference number 06-0282-25 (Silicon Grinding Operation) is limited to particulate matter emissions of no more than 0.74 lb/hr and 3.24 tons/yr, based on a worst case grain loading performance of the particulate matter control equipment of 0.005 gr/dscf. Assurance of meeting these emissions limitations will be accomplished through proper operation and maintenance of the silicon grinding operation particulate matter control systems.

5. The single hazardous air pollutant HCl emissions shall not exceed 9.9 tons per consecutive 12 months. The HCl emission quantities are controlled by tracking and complying with the existing construction permit conditions, as follows:
    A. The hydrochloric acid generation operation input rates of chlorine and hydrogen are limited, as identified in permit number 474253 (source 06-0282-04, Hydrochloric Acid Generation) condition S4-1. The operation includes two scrubbers, as identified in condition S4-4.b of the permit where the condition requires daily scrubber flow rate and pH recording.
    B. The silicon and HCl input rates at the trichlorosilane plant are limited, per permit number 474253 (source 06-0282-06, Trichlorosilane and Polysilicon Operations), condition S5-1. Condition S5-4C of the permit also requires daily scrubber flow rates and pH recordings.
    C. The silicon tetrachloride input is restricted into the amorphous fumed silica plant, per permit number 479203, condition S1-1 along with the plant production quantity, per condition S1-2. Condition S1-4C of the permit requires daily scrubber flow rate and pH recordings.
    D. Maintenance activity at the chlorosilane reaction plant includes scrubber control, as identified in permit number 474253 (source 06-0282-01, Maintenance Activities at Chlorosilane Reaction Building). Condition S1-4C of the permit requires daily scrubber flow rate recordings.
    E. Floor suction and cleaning box (Equipment Cleaning) operation includes scrubber control, as identified in permit number 474253 (source 06-0282-03). Condition S3-4C of the permit requires daily conductivity and flow rate recordings.
    F. Hydrolysis treatment of chlorosilane reaction residue, as identified in permit number 474253 (source number 06-0282-17) includes two scrubbers for control. Condition S7-1 of the permit limits the process input and condition S7-3 limits annual process time. Condition S7-4C of the permit requires daily scrubber flow rate recordings.
    G. Periodic cleaning of process tanks and distillation columns, as identified in permit number 474253 (source number 06-0282-20), includes processing

restrictrions and scrubber control. Condition S8-4C of the permit requires recordings of scrubber flow.

6. The combined hazardous air pollutant emissions shall not exceed 24.9 tons per consecutive 12 months and any single hazardous air pollutant shall not exceed 9.9 tons per consecutive 12 months. Insignificant and categorically exempt source emissions are included in the site emissions inventory and accounted for when declaring HAP emissions below major source status. The HAP emissions quantities are controlled by the commitments identified in item 5 and by monitoring and recording the natural gas consumption and resulting combined hazardous air pollutants of the Wacker site.

7. Proposed facility-wide emission limits which include insignificant and categorically exempt from permitting emission estimates are included in the table below.

Particulate Matter (PM)	99.9 tons per any period of 12-consecutive months Emissions from categorically exempt and insignificant activity emission units are estimated to be 2.31 tons per 12-consecutive months
Nitrogen Oxides (NO_x)	99.9 tons per any period of 12-consecutive months Emissons from categorically exempt and insignificant activty and emission units are estimated to be 2.57 tons per 12-consecutive months
Carbon Monoxide (CO)	99.9 tons per any period of 12-consecutive months Emissions from categorically exempt and insignificant activity emission units are estimated to be 0.12 tons per 12-consecutive months
Individual Hazardous Air Pollutants (listed pursuant to Section 112(b) of the Federal Clean Air Act	9.9 tons per any period of 12-consecutive months Emissions from categorically exempt and insignificant activity emission units are estimated to be 0.63 tons per 12-consecutive months for HCl and 0.024 tons per 12-consecutive months for HF
Combined Hazardous Air Pollutants	24.9 tons per any period of 12-consecutive months Emissions from categorically exempt and insignificant activity emission units are estimated to be 0.65 tons per 12-consecutive months

Signature: 

Name: Ken Collins

Title: Senior Director, Site Leader

Date: 09/21/2022

Please contact me directly at (423) 780-7953 if you have any questions regarding this topic.

Cordially,

Jeremy Copeland, CHMM
Compliance Director