



January 26, 2023

Kalin Puent
VTC Sunlight
18110 SE 34th Street, Building 4, STE 410
Vancouver, WA 98683

RE: Final Air Discharge Permit for Reactor R1

Dear Mr. Puent:

A final determination to issue Air Discharge Permit (ADP) 23-3562 has been completed for ADP Application CL-3185 pursuant to Section 400-110(4) of the General Regulations for Air Pollution Sources of the Southwest Clean Air Agency (SWCAA). Public notice for ADP Application CL-3185 was published in the permit section of SWCAA's website on March 22, 2022. SWCAA did not receive a request for a public comment period in response to the public notice and has concluded that significant public interest does not exist for this determination. Therefore, a public comment period will not be provided for this permitting action. Electronic copies of ADP 23-3562 and the associated Technical Support Document are available for public review in the "Recent Air Discharge Permits" section under the "Air Permits" link on SWCAA's website (<http://www.swcleanair.gov>). Original copies are enclosed for your files.

ADP 23-3562 may be appealed directly to the Pollution Control Hearings Board (PCHB) at P.O. Box 40903, Olympia, Washington 98504-0903 within thirty (30) days of receipt as provided in Revised Code of Washington (RCW) 43.21B.

If you have any questions or comments, or desire additional information, please contact me or Clint Lamoreaux at (360) 574-3058, extension 131.

Sincerely,

Uri Papish
Executive Director

UP:cl

Enclosure: Technical Support Document and Air Discharge Permit 23-3562





SWCAA
Southwest Clean Air Agency

**AIR DISCHARGE PERMIT
23-3562**

Issued: January 26, 2023

VTC Sunlight
18110 SE 34th Street, Building 4, Suite 410, Vancouver, WA

SWCAA ID – 2539



REVIEWED BY: _____

Clint H. Lamoreaux
Clinton Lamoreaux, Chief Engineer

APPROVED BY: _____

Uri Papish
Uri Papish, Executive Director

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1. Equipment/Activity Identification

ID No.	Equipment/Activity	Control Equipment/Measure
1	Semiconductor Wafer Manufacturing	Inorganic workstations and solvent baths covered when not in use
2	Emergency Generator Diesel Engine (455 hp Detroit Diesel)	Ultra Low Sulfur Diesel ($\leq 0.0015\%$ S) Limited operation - (≤ 100 hr/yr + emergency usage)
3	Reactor R1	Wet Scrubber

2. Permit Requirements

The following tables detail the specific requirements of this Air Discharge Permit (ADP). In addition to the requirements listed below, equipment at this facility may be subject to other federal, state, and local regulations. The requirement number is identified in the left-hand column. The text of the requirement is contained in the middle column. The emission unit, equipment, or activity to which the requirement applies is listed in the right-hand column.

ADP 18-3315 is superseded in its entirety by this Air Discharge Permit.

Emission Limits

Req. No.	Emission Limits	Equipment/Activity ID No.				
1.	<p>With the exception of the pollutants listed below, facilitywide emissions of toxic air pollutants must not exceed the applicable small quantity emission rate (SQER) identified in WAC 173-460 as a 12-month rolling total, or the volatile organic compound emission limit in Condition 2, whichever is less.</p> <table border="0"> <tr> <td style="text-align: center;"><u>Pollutant</u></td> <td style="text-align: center;"><u>Emission Limitation</u></td> </tr> <tr> <td style="text-align: center;">Ammonia</td> <td style="text-align: center;">1.75 tons per year</td> </tr> </table> <p>Annual emissions must be calculated using a material balance methodology as described in the Technical Support Document for this Air Discharge Permit unless an alternative method has been pre-approved by SWCAA.</p>	<u>Pollutant</u>	<u>Emission Limitation</u>	Ammonia	1.75 tons per year	Facility-wide
<u>Pollutant</u>	<u>Emission Limitation</u>					
Ammonia	1.75 tons per year					
2.	Annual emissions of volatile organic compounds must not exceed 1.17 tons per year.	Facility-wide				
3.	With the exception of the Emergency Generator Engine, visible emissions from all points of emission must not exceed zero percent opacity for more than 3 minutes in any one-hour period as determined in accordance with SWCAA Method 9 (See Appendix A of SWCAA 400).	1				

Req. No.	Emission Limits	Equipment/ Activity ID No.									
4.	Visible emissions from the Emergency Generator Engine must not exceed five percent opacity for more than 3 minutes in any one-hour period as determined in accordance with SWCAA Method 9 (See Appendix A of SWCAA 400) except during startup. For the purposes of this requirement, the startup period ends when the earlier of the following operating events occurs: (a) The engine has reached normal operating temperature; or (b) The engine has been operating for 15 minutes.	2									
5.	Emissions from Reactor R1 must not exceed the following: <table border="1"> <thead> <tr> <th>Pollutant</th> <th>(ppmvd, 1-hour average)</th> <th>(lb/hr, 1-hour average)</th> </tr> </thead> <tbody> <tr> <td>Chlorine (as HCl and/or Cl₂)</td> <td>10</td> <td>0.00010</td> </tr> <tr> <td>Ammonia (NH₃)</td> <td>2,000</td> <td>0.0044</td> </tr> </tbody> </table> <p>Hourly concentrations may be determined through the use of colorimetric detector tubes, EPA reference methods, or other methods approved by SWCAA. Exhaust flow may be determined using a material balance across the reactor. In the absence of other data, an exhaust flow of 1 standard cubic foot per minute may be assumed. Annual emissions must be calculated by multiplying the hourly emission factor by the number of hours of operation as described in the Technical Support Document for this Air Discharge Permit unless an alternative method has been pre-approved by SWCAA.</p>	Pollutant	(ppmvd, 1-hour average)	(lb/hr, 1-hour average)	Chlorine (as HCl and/or Cl ₂)	10	0.00010	Ammonia (NH ₃)	2,000	0.0044	3
Pollutant	(ppmvd, 1-hour average)	(lb/hr, 1-hour average)									
Chlorine (as HCl and/or Cl ₂)	10	0.00010									
Ammonia (NH ₃)	2,000	0.0044									

Operating Limits and Requirements

Req. No.	Operating Limits and Requirements	Equipment/ Activity ID No.
6.	The facility is approved for research and development activities only. The permittee must obtain a new Air Discharge Permit before commencing commercial production.	Facility-wide
7.	Boule canisters must be cooled to no more than 35 degrees Celsius before the canister is unsealed.	1
8.	All containers with acids or solvents including baths, bench sumps, or waste drums must be kept securely closed with a lid in place except when materials are being added, mixed or removed or when the equipment is in active use.	Facility-wide
9.	Exhaust from the Emergency Generator Engine must be discharged vertically above the roof level of the building or enclosure in which the Emergency Generator Engine is located. Any device that obstructs or prevents vertical discharge is prohibited.	2
10.	The Emergency Generator Engine must only be fired on #2 diesel or better. The sulfur content of the fuel fired in the Emergency Generator Engine must not exceed 0.0015% by weight. A fuel certification from the fuel supplier may be used to demonstrate compliance with this requirement.	2
11.	Operation of the Emergency Generator Engine must be limited to maintenance checks, readiness testing, and as necessary to provide emergency power.	2

Req. No.	Operating Limits and Requirements	Equipment/ Activity ID No.
12.	Operation of the Emergency Generator Engine for maintenance checks and readiness testing must not exceed 100 hours per year. Emergency operation of the emergency generator engine is not limited. A nonresettable time totalizer must be installed and used to measure the number of hours the engine operates.	2
13.	The permittee must use recognized good practice and procedures to reduce odors to a reasonable minimum. If SWCAA verifies nuisance level odors beyond the permittee's facility due to ammonia emissions from the facility, the permittee must submit an Air Discharge Permit application for ammonia emission control within 60 days.	Facility-wide
14.	The equipment specified in ADP Application CL-3185 and this Permit must be maintained and operated in total and continuous conformity with the conditions identified in this Permit. SWCAA reserves the right to take any and all appropriate action to maintain the conditions of this Permit, including directing the facility to cease operations until corrective action can be completed.	Facility-wide
15.	Each pollution control device must be operated whenever the processing equipment served by that air pollution control device is in operation. Control devices must be operated and maintained in accordance with good operations and maintenance practices. Furthermore, air pollution control devices must be operated in a manner that minimizes emissions.	Facility-wide
16.	Chlorine and ammonia flow to Reactor R1 was be monitored continuously. Chlorine flow to Reactor R1 must be cease immediately if ammonia flow is not provided in stoichiometric excess to the reactor. Both chlorine and ammonia flow must cease immediately if the scrubber is not operating properly.	3

Monitoring and Recordkeeping Requirements

Req. No.	Monitoring and Recordkeeping Requirements	Equipment/ Activity ID No.
17.	The following information must be collected, recorded at the intervals specified below, and readily available on-site for inspection: <ul style="list-style-type: none"> (a) The number of hours the emergency generator engine is operated must be recorded for each calendar year; (b) The number of hours Reactor R1 is operated must be recorded for each calendar year; (b) The amount of ammonia used must be recorded at least once per month; (c) The amount of ethanol and each solvent purchased and disposed of must be recorded at least once per month; and (d) Upset conditions that may cause excess emissions must be recorded for each occurrence. 	Facility-wide
18.	With the exception of data logged by a computerized data acquisition system, each record required by this Air Discharge Permit shall include the date and the name of the person making the record entry.	Facility-wide

Req. No.	Monitoring and Recordkeeping Requirements	Equipment/ Activity ID No.
19.	All records required by this Air Discharge Permit must be readily available on-site for a minimum period of no less than three years and must be available for inspection by SWCAA representatives.	Facility-wide
20.	The following parameters must be monitored continuously for the Reactor R1 Scrubber and recorded at least once each day of operation: (a) Scrubber pH; and (b) Scrubber recirculation rate.	3

Emission Monitoring and Testing Requirements

Req. No.	Emission Monitoring and Testing Requirements	Equipment/ Activity ID No.
21.	The concentration of ammonia must be measured at the Reactor R1 scrubber exhaust no later than the end of September each calendar year. A colorimetric detector tube or other detectors used for safety or industrial hygiene purposes may be used if operated in accordance with the manufacturer's recommendations.	3

Reporting Requirements

Req. No.	Reporting Requirements	Equipment/ Activity ID No.
22.	SWCAA must be notified at least ten days in advance of using any new chemical in excess of 5 gallons (liquids) or 20 pounds (gasses and solids) per year. In response to the notification, SWCAA may require that a written report be submitted with the following: (a) A technical data sheet or Safety Data Sheet for the new chemical; (b) The date the change(s) is (are) to be made; (c) The change(s) in emissions of volatile organic compounds (VOCs), hazardous air pollutants (HAPs) and toxic air pollutants (TAPs) occurring as a result of the change; and (d) A summary of any applicable requirement(s) that would apply as a result of the change(s). If the proposed emission rate of a new TAP exceeds the applicable SQER and/or other emission limits established by this Permit or otherwise circumvents an applicable requirement, New Source Review may be required prior to making the proposed change.	1
23.	The results of ammonia sampling of Reactor R1 must be reported within 15 calendar days of test completion.	3

Req. No.	Reporting Requirements	Equipment/ Activity ID No.
24.	Excess emissions must be reported to SWCAA as follows: <ul style="list-style-type: none"> (a) As soon as possible, but no later than 12 hours after discovery for emissions that represent a potential threat to human health or safety; (b) As soon as possible, but no later than 48 hours after discovery for emissions which the permittee wishes to claim as unavoidable pursuant to SWCAA 400-107; and (c) No later than 30 days after the end of the month of discovery for all other excess emissions. 	Facility-wide
25.	Deviations from permit conditions must be reported no later than 30 days after the end of the month during which the deviation is discovered.	Facility-wide
26.	All air quality related complaints received by the permittee regarding activities controlled by the permittee must be reported to SWCAA within two business days of receipt. Complaint reports must include the date and time of the complaint, the name and contact information (if available) for the complainant, the nature of the complaint, and any actions taken by the Permittee to address the complaint.	Facility-wide
27.	The following emission-related information must be reported to SWCAA by March 15 th for the previous calendar year: <ul style="list-style-type: none"> (a) The total amount of each organic chemical purchased and disposed of; (b) The following for each acid bath: <ul style="list-style-type: none"> (i) The total amount of time each acid bath was open; (ii) The composition of each acid bath; (iii) The temperature of each acid bath; and (iv) The surface area of each acid bath. (c) The total number of hours the emergency generator engine operated; (d) The total number of hours Reactor R1 operated; and (e) Air emissions of criteria air pollutants, volatile organic compounds, toxic air pollutants (TAPs), and hazardous air pollutants (HAPs). 	Facility-wide

3. General Provisions

Req. No.	General Provisions	
A.	For the purpose of ensuring compliance with this ADP, duly authorized representatives of the Southwest Clean Air Agency must be permitted access to the Permittee's premises and the facilities being constructed, owned, operated and/or maintained by the Permittee for the purpose of inspecting said facilities. These inspections are required to determine the status of compliance with this ADP and applicable regulations and to perform or require such tests as may be deemed necessary.	
B.	The provisions, terms, and conditions of this ADP bind the Permittee, its officers, directors, agents, servants, employees, successors and assigns, and all persons, firms, and corporations acting under or for the Permittee.	
C.	The requirements of this ADP survive any transfer of ownership of the source or any portion thereof.	

Req. No.	General Provisions
D.	This ADP must be posted conspicuously at or be readily available near the source.
E.	This ADP will be invalidated, in whole or in part, if construction or installation of any new or modified equipment has not commenced within eighteen (18) months from date of issuance, if construction is discontinued for a period of eighteen (18) months or more without prior SWCAA approval, or if construction is not completed within a reasonable time.
F.	This ADP does not supersede requirements of other Agencies with jurisdiction and further, this ADP does not relieve the Permittee of any requirements of any other governmental Agency. In addition to this ADP, the Permittee may be required to obtain permits or approvals from other agencies with jurisdiction.
G.	Compliance with the terms of this ADP does not relieve the Permittee from the responsibility of compliance with SWCAA General Regulations for Air Pollution Sources, previously issued Regulatory Orders, RCW 70A.15, Title 173 WAC or any other applicable emission control requirements, nor from the resulting liabilities and/or legal remedies for failure to comply.
H.	If any provision of this ADP is held to be invalid, all unaffected provisions of the ADP will remain in effect and be enforceable.
I.	No change in this ADP will be made or be effective except as may be specifically set forth by written order of the Southwest Clean Air Agency upon written application by the Permittee for the relief sought.
J.	The Southwest Clean Air Agency may, in accordance with RCW 70A.15, impose such conditions as are reasonably necessary to assure the maintenance of compliance with the terms of this ADP, the Washington Clean Air Act, and the applicable rules and regulations adopted under the Washington Clean Air Act.