

LANE REGIONAL AIR PROTECTION AGENCY

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AIR CONTAMINANT DISCHARGE PERMIT (ACDP)

Issued in accordance with provisions of Title 34, Lane Regional Air Protection Agency's Rules and Regulations, and based on the land use compatibility findings included in the permit record.

Issued To:

**Hynix Semiconductor
Manufacturing America, Inc.**
1830 Willow Creek Circle
Eugene, Oregon 97402

Land Use Compatibility Statement:

From: City of Eugene
Date: October 31, 1995

Mailing Address:

1830 Willow Creek Circle
Eugene, Oregon 97402

Fee Basis:

Table A, Part II
61a Semiconductor Manufacturing
58b Fuel-Burning Equipment

Permit Number: 203531

Permit Type: Regular

SIC: 3674 Semiconductor Manufacturing
4961 Fuel Burning Equipment

Date Renewed: January 1, 2007

Expiration Date: December 31, 2011

Specific Emission Units:

1 Semiconductor Fabrication Facility
5 Natural Gas-Fired Boilers
4 Emergency Diesel-Fired Generators

Issued

By: _____
Sandra Lopez, P.E., Operations Manager for
Merlyn L. Hough, Director

Effective

Date: _____

Permitted Activities

1. Until this permit expires or is revoked, the permittee is herewith allowed to discharge exhaust gases containing contaminants only in accordance with the permit application and the requirements, limitations, and conditions contained in this permit [LRAPA 34-130(10)]. This specific listing of requirements, limitations, and conditions does not relieve the permittee from complying with all other rules of Lane Regional Air Protection Agency (LRAPA).

Emission Unit and Pollution Control Device Identification

2. The emission units and control devices regulated by this permit are:

Emission Unit	Control Device(s)
Fabrication Building (Five (5) Acid Fume Scrubbers)	5 CPSV-3060-4 Acid Fume Scrubbers Point of Use Controls (wet scrubbers, dry scrubbers, thermal oxidizers)
	1 Durr rotary concentrator/thermal oxidizer system 1 Barneby & Sutcliff Model P4 Carbon Adsorber (Backup)
5 Central Utility Building (CUB) Gas-fired Boilers equipped with low-NO _x burners, 26.8 MMBtu/hr each	None
2 Administration Building (AB) Gas-fired Boilers, 2.98 MMBtu/hr each	None
4 Emergency Generators (No. 2 Oil-fired), 2,876 bhp each	None

Emission Limits and Performance Standards

Plant Site Emission Limits (PSELs)

3. Plant-wide emissions shall not exceed the following:
[LRAPA 34-060-4 & 5]

Annual PSELs
(tons/year)

Source	PM ₁₀	SO ₂	NO _x	CO	VOC	H ₂ SO ₄
Fabrication Process Acid Scrubber Stacks	NA	NA	NA	NA	5	1
Fabrication Process VOC Control System Exhaust	NA	NA	1	1	16	0

Source	PM ₁₀	SO ₂	NO _x	CO	VOC	H ₂ SO ₄
5 CUB Gas-fired Boiler Stacks	2	1	7	22	4	0
Totals	2	1	8	23	25	1

NA refers to emissions less than one (1) ton per year.

Limitations for Hazardous Air Pollutants (HAPs)

4. Emissions of hydrogen fluoride (HF) shall not exceed 5.0 tons per year. [LRAPA 34-060-6.B.(2)]
5. Emissions of hydrogen chloride (HCl) shall not exceed 0.5 tons per year. [LRAPA 34-060-6.B.(2)]

Emissions Abatement

6. Liquid and gas processes that emit volatile organic compounds (VOCs) shall be abated by the rotary concentrator/thermal oxidizer or the back-up carbon adsorption control system.
7. Liquid and gas processes that emit acid fumes/mist shall be abated by the acid fume scrubbers.
8. The Operation and Maintenance plan described in permit condition 20 shall include documentation of operations and protocol to demonstrate 99% capture efficiency of the emissions vented or routed to the abatement devices listed in permit Conditions 6, 7 and 20.
9. Each acid fume scrubber, shall at a minimum, be equipped with a monitoring and recording device to measure the scrubber pH level, scrubber water flow pressure and conductivity. In addition, each scrubber must be equipped with a flow meter to measure the make-up water flow rate. The scrubber water pH shall be maintained at a pH of 7.5 +/- 2 on a rolling 24-hour basis.
10. Performance of emissions control systems and process equipment effecting air emissions shall meet or exceed the permittee's standards as specified in **Operation and Maintenance Requirements** of this permit. [LRAPA 32-007-1]

General Emission Limitations

11. The permittee shall not cause, suffer, allow, or permit the emission of any air contaminant, excluding uncombined water, into the atmosphere from any air contaminant source for a period or periods aggregating more than three (3) minutes in any one (1) hour which is equal to or greater than 20 percent opacity. [LRAPA 32-010-1.B. & 3.]
12. Particulate emissions shall not exceed 0.1 grain per standard dry cubic foot (dscf) from any air contaminant source. [LRAPA 32-015-2]

Fuel-Burning Limitations

13. Fuel consumed in the five (5) CUB boilers shall be limited to natural gas, except upon approval from LRAPA, the permittee may use propane as a backup fuel in the CUB boilers during natural gas curtailment. Use of any other fuels is prohibited without prior written approval from LRAPA.

14. Natural gas consumption in the boilers shall not exceed 394,000,000 cubic feet per year.
15. Particulate matter emissions from the gas-fired boilers shall not exceed 0.1 grain per cubic foot of exhaust gas, adjusted to 50 percent excess air or calculated to 12 percent carbon dioxide. [LRAPA 32-030]

New Source Performance Standards

16. The permittee shall comply with the New Source Performance Standards (NSPS) for Small Industrial-Commercial-Institutional Steam Generating Units at 40 CFR Part 60 Subpart Dc (§§ 60.40c & 60.48c), which applies to the five (5) CUB boilers. The requirements of this rule include, but may not be limited to, record keeping of fuel usage and semi-annual reporting in accordance with §60.48c. [LRAPA 46-554]

Emergency Generators

17. The emergency generators shall burn only No. 2 fuel oil or lighter grade, with a sulfur content no greater than 0.5%. [LRAPA 32-065-2.B.]
18. The emergency generators shall be used only for emergency backup power during periods when primary power and/or equipment have been suspended. Operation of these generators shall not exceed 500 hours per year for each generator. [LRAPA 34-060-3]

Open Burning

19. Except for the purpose of instruction of employees in the methods of fire fighting, the permittee is prohibited from conducting open burning on the plant site. [LRAPA 47-005-2 and 47-015-3, 4 & 5]

Operation and Maintenance Requirements

20. The permittee shall conduct operations and maintenance in accordance with an LRAPA-approved emission abatement device Operation and Maintenance (O&M) plan. Within sixty (60) days of permit issuance, the permittee shall submit an updated O&M plan that ensures the effective operation of the emissions abatement devices and permit compliance. As a minimum, the permittee shall maintain a current O&M plan for the acid fume scrubbers, rotary concentrator/thermal oxidizer system, carbon adsorption unit and point-of-use (POU) emissions abatement devices. [LRAPA 32.007-1.A]

The O&M plan must incorporate operational standards based on operational features used at the acid fume scrubbers to obtain a compliant level of emissions control. [LRAPA 32-007-1.B.]

21. A copy of the O&M plan shall be kept on site and shall be available for review by LRAPA personnel. [LRAPA 32-007-1.B.]
22. Any changes in the O&M plan that could potentially affect permitted emissions shall be approved by LRAPA. [LRAPA 32-007-1.B.]

23. If LRAPA determines that the O&M plans are not adequate to ensure compliance with the requirements of this permit, LRAPA may establish specific emission action levels. [LRAPA 32-007-2.A.]

Performance Testing

24. Performance testing shall be conducted at the rotary concentrator/thermal oxidizer at least once during the 5-year permit cycle. Testing shall include emissions sampling at the inlet and outlet of the abatement system while source processes are running at or above 90% of maximum representative operating rate. Test results shall be submitted to LRAPA no later than 60 days following completion of testing.

The test shall be conducted to determine the volatile organic compound (VOC) emission rate and the control efficiency of the rotary/concentrator/thermal oxidizer. Test sampling shall be performed using EPA Method 25A or an equivalent method contingent on LRAPA approval.

25. Within six (6) months of this permit issuance and at such times as required by permit Condition 27, the permittee shall performance test the acid fume scrubbers for hydrogen fluoride (HF) and hydrochloric acid (HCl) to determine: 1) amount emitted in part per million dry volume basis, and 2) mass emission rates of each acid fume scrubber, For the performance test, the permittee shall do as follows:
- (a) Notify LRAPA of the intent to conduct a compliance test accompanied by a source test plan at least 45 calendar days before the test is scheduled to begin.
 - (b) Submit a source test plan that includes, as a minimum, the information listed in the *Oregon DEQ Source Sampling Manual Volume I, Section 2.2, January 1992*.
 - (c) Use EPA Method 26A and DEQ Method 26A, or an equivalent method contingent on LRAPA approval.
 - (d) Procedures and reporting shall, as a minimum, follow the requirements listed in the *Oregon DEQ Source Sampling Manual Volume I, Section 2 January 1992*.
 - (e) Performance tests shall be conducted when the operation of the Fabrication facility is at or above 90 % of maximum production levels.
 - (f) All five (5) acid fume scrubbers shall be operational and tested; at least two (2) shall be tested simultaneously. Testing shall consist of a minimum of three (3) 24-hour runs per test. Tests may be conducted for a period less than 24-hours per run, contingent upon LRAPA approval and upon demonstration by the permittee of an equally effective sampling scenario (timeframe).
 - (g) Maintain records of process/production data. The actual production levels, material application rates and/or material usage during the time frame of the testing shall be calculated and described in stack test plan. The method of estimating capacity and consumption is subject to LRAPA approval.
 - (h) Log or electronically record the observed operating features of each scrubbers during the actual testing. At a minimum include pH, scrubber water flow pressure, and makeup water rate. The O&M plan must incorporate operational standards based on this data to ensure the scrubbers are operated in a manner to obtain control levels consistent with those levels achieved during compliant testing.
 - (i) The results and associated data shall be submitted to LRAPA within 60 days of completion of the performance tests

26. To ensure continued operation of the acid fume scrubbers in a manner consistent with the design and testing conditions, optimal parameter ranges shall be established. The ranges may be derived from test conditions, design parameters, and published best management practice. Notification to LRAPA shall be made for deviations from optimal ranges longer than one (1) week. LRAPA may choose to require semiannual testing of the deviation conditions to determine if there is a significant impact. Subsequent performance tests may be used to request changes to the optimal operating ranges, contingent on prior notice and approval by LRAPA.
27. To determine compliance with permit Condition 4, the permittee shall conduct a semiannual HF emission source test on the outlet of at least two (2) of the acid fume scrubbers, on a rotating scrubber basis. The semi-annual testing shall be performed in accordance with an LRAPA-approved test plan. Annual emissions shall be determined with an emission factor based on the averaging the most recent tests results for the scrubber and actual hours of operation.

$$E = (\text{Est}) (\text{Op}) / (2000 \text{ lb/ton})$$

where

Est = emission factor from the average of the most recent test results in lbs/hr
Op = actual hours of operation in period

For compliance purposes, the permittee shall calculate its HF emissions on at least a semiannual basis.

Pollution Prevention

28. The permittee shall make publicly available, upon request, documentation that demonstrates its actions to comply with the Toxics Use and Hazardous Waste Reduction Act. Compliance with this statute is determined by the Hazardous Waste Section of the Oregon DEQ. [ORS 465.003 to 465.037; OAR 340-135]

Recordkeeping and Reporting Requirements

29. The permittee shall maintain all records required by this permit for a period of five (5) years from date of entry and make these records available for inspection by LRAPA personnel upon request. [LRAPA 34-070-1.A.]

30. The permittee shall keep records of the following:

Parameter	Units of Measurement	Recording Frequency
Natural Gas Combusted in the 5 CUB Gas-fired Boilers [40 CFR 60.48c(g)]	Million Cubic Feet	Monthly*
VOC-containing Photoresist and Spin-on-Glass Chemicals	Gallons	Monthly
VOC-containing Chemicals Used at Wet Stations	Gallons	Monthly
Acid/VOC Process Gases	Liters (at standard temperature and pressure)	Monthly
Hours of Emergency Generator Operation	Hours	Monthly

* See amended Subpart Dc at FR 9886, 2/27/06, §60.48c

31. Within six (6) months of permit issuance, the permittee shall have in place, to the satisfaction of LRAPA, a recordkeeping system that maintains the following production information on at least a semiannual basis:

- (a) volatile organic compounds (VOC) and hazardous air pollutants (HAPS) content of each material used on an as applied basis,
- (b) tools and equipment used on a rolling 3-month or calendar-quarter basis, and
- (c) number and types of units produced.

The permittee shall submit this information and the emissions determined under permit Condition 28 to LRAPA by September 1 of each year. The on-site record and report format to be used is subject to the approval of LRAPA.

32. The permittee shall submit a written report each year demonstrating compliance with the annual PSEs and the annual emission limits for HF and HCl in this permit. This report shall include material usage, fuel usage and hours of operation data as listed in the above Condition 28, and shall be submitted annually on or before March 1 of each year. Emissions estimation shall be based on material usage and the methods of Attachment B, and shall include the requirements of Condition G13. The permittee shall include in the report annual emission estimates for the following: [LRAPA 34-070-5]

Source	Pollutants
Acid Scrubbers	HF, HCl, H ₂ SO ₄ , VOC
Fabrication / VOC Abatement Exhaust	VOC
5 CUB Gas-fired Boilers	PM ₁₀ , SO ₂ , NO _x , CO, VOC

Fee Schedule

33. In accordance with adopted regulations, the permittee will be invoiced annually for the Compliance Determination Fee. [LRAPA 34-150]

SLL/DLE/bp
9/5/07

GENERAL PERMIT CONDITIONS

General Conditions and Disclaimers

- G1. A copy of the permit application and this Air Contaminant Discharge Permit (ACDP) must be available on site for inspection upon request.
- G2. The permittee shall allow the Director or his/her authorized representatives access to the plant site and pertinent records at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data, reviewing and copying air contaminant discharge records and otherwise conducting necessary functions related to this permit in accordance with ORS 468.095. [LRAPA 13-020(1)(h)]
- G3. The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.

Performance Standards and Emission Limits

- G4. The permittee shall not cause or permit the emissions of any particulate matter which is greater than 250 microns in size if such particulate matter does or will deposit upon the real property of another person. [LRAPA 32-055]
- G5. The permittee shall not discharge from any source whatsoever such quantities of air contamination which cause injury, detriment, public nuisance or annoyance to any persons or to the public or which cause injury or damage to business or property; such determination to be made by LRAPA. [LRAPA 32-090(1)]
- G6. The permittee shall not cause or permit emission of water vapor if the water vapor causes or tends to cause detriment to the health, safety or welfare of any person or causes, or tends to cause damage to property or business. [LRAPA 32-090(2)]
- G7. The permittee shall not willfully cause or permit the installation or use of any device or use of any means which, without resulting in a reduction in the total amount of air contaminants emitted, conceals emissions of air contaminants which would otherwise violate LRAPA rules. [LRAPA 33-030(1)]
- G8. The permittee shall not cause or permit the installation or use of any device or use of any means designed to mask the emissions of an air contaminant which causes or tends to cause detriment to health, safety or welfare of any person. [LRAPA 33-030(2)]
- G9. The permittee shall not allow any materials to be handled, transported, or stored; or a building, its appurtenances or road(s) to be used, constructed, altered, repaired, or demolished; or any equipment to be operated, without taking reasonable precautions to prevent particulate matter from being airborne. [LRAPA 48-015(2)]
- G10. The permittee shall not cause or permit the emissions of odorous matter in such a manner as to cause a public nuisance. [LRAPA 49-010(1)]

Excess Emissions: General Policy

- G11. Emissions of air contaminants in excess of applicable standards or permit conditions are considered unauthorized and are subject to enforcement action, pursuant to LRAPA 36-010 and 36-030. These rules apply to any permittee operating a source which emits air contaminants in

violation of any applicable air quality rule or permit condition resulting from the breakdown of air pollution control equipment or operating equipment, process upset, startup, shutdown, or scheduled maintenance. [LRAPA 32-001(1)]

Excess Emissions: Notification and Record-keeping

- G12. The permittee must immediately (i.e., as soon as possible, but in no case more than one (1) hour after the beginning of the excess emissions period) notify LRAPA by telephone or in person of all cases of excess emissions due to upset or breakdown. [LRAPA 36-020(1)] Notification shall include:
- a. source name;
 - b. nature of the emissions problem;
 - c. name of the person making the report;
 - d. name and telephone number of the contact person for further information;
 - e. date and time of the onset of the upset condition;
 - f. whether or not the incident was planned;
 - g. equipment involved in the upset or breakdown;
 - h. estimated type and quantity of excess emissions;
 - i. estimated time of return to normal operations;
 - j. efforts made to minimize emissions; and
 - k. description of remedial actions to be taken.

Notification shall be made to the LRAPA office. The current LRAPA telephone number during regular business hours (8 a.m. - 5 p.m., M-F) is (541) 736-1056. During nonbusiness hours, weekends, or holidays, the permittee shall immediately notify LRAPA by calling the LRAPA Upset/Complaint Line. The current number is (541) 726-1930.

Follow-up reporting, if required by LRAPA, shall contain all information required by Condition G15.

- G13. At each reporting period specified in this permit, or sooner if required by LRAPA, the permittee shall submit a copy of the upset log entries for the reporting period, as required by Condition G15. [LRAPA 36-025(4)]
- G14. Any excess emissions which could endanger public health or safety shall immediately be reported to the Oregon Emergency Response System (OERS) at 1-800-452-0311.
- G15. The permittee shall keep an upset log of all planned and unplanned excess emissions. [LRAPA 36-025(3) and 36-030(1)] The upset log shall include the following:
- a. date and time each event was reported to LRAPA;
 - b. whether the process handling equipment and the air pollution control equipment were at all times maintained and operated in a manner consistent with good practice for minimizing emissions;
 - c. whether repairs or corrections were made in an expeditious manner when the permittee knew or should have known that emission limits were being or were likely to be exceeded;
 - d. whether the event was one in a recurring pattern of incidents which indicate inadequate design, operation, or maintenance; and
 - e. final resolution of the cause of the excess emissions.

Upset logs shall be kept by the permittee for two (2) calendar years.
[LRAPA 36-025(4)]

Excess Emissions: Scheduled Maintenance

- G16. Where it is anticipated that shutdown, by-pass, or operation at reduced efficiency of production equipment or air pollution control equipment for necessary scheduled maintenance may result in excess emissions, the permittee must obtain prior LRAPA approval of procedures that will be used to minimize excess emissions. Application for approval of procedures associated with the scheduled maintenance shall be submitted and received by LRAPA in writing at least seventy-two (72) hours prior to the event. [LRAPA 36-015(1)] The application shall include the following:
- a. reasons explaining the need for maintenance, including why it would be impractical to shut down the source operation during the period, and why the by-pass or reduced efficiency could not be avoided through better scheduling for maintenance or through better operation and maintenance practices;
 - b. identification of the specific production or emission control equipment or system to be maintained;
 - c. nature of the air contaminants likely to be emitted during the maintenance period, and the estimated amount and duration of the excess emissions, including measures such as the use of overtime labor and contract services and equipment that will be taken to minimize the length of the maintenance period; and
 - d. identification of specific procedures to be followed which will minimize excess emissions.
- G17. No scheduled maintenance which is likely to result in excess emissions shall occur during any period in which an Air Pollution Alert, Air Pollution Warning, or Air Pollution Emergency has been declared, or during an announced "Stage I Red" woodstove advisory period, in areas determined by LRAPA as PM₁₀ Nonattainment Areas. [LRAPA 36-015(4)]
- G18. In cases where LRAPA has not received notification of scheduled maintenance that is likely to cause excess emissions within the required seventy-two (72) hours prior to the event, or where such approval has not been waived pursuant to LRAPA 36-025(2), the permittee shall immediately notify LRAPA by telephone of the situation, and shall be subject to the requirements of Conditions G12 and G13. [LRAPA 36-015(5)]

Air Pollution Emergencies

- G19. The permittee shall, upon declaration of an air pollution episode, take all actions specified in Tables 1, 2, and 3 of LRAPA's Title 51 (see Attachment A) and shall particularly put into effect the LRAPA-approved preplanned abatement strategy for such condition, if applicable. [LRAPA 51-015]

Notification of Construction/Modification

- G20. The permittee shall notify LRAPA in writing and obtain approval in accordance with LRAPA 34-035 before:
- a. constructing or installing any new source of air contaminant emissions, including air pollution control equipment; or
 - b. modifying or altering an existing source that may significantly affect the emissions of air contaminants, or

- c. making any physical change which increases emissions; or
- d. changing the method of operation, the process, or the fuel use, or increasing the normal hours of operation to levels above those contained in the permit application and reflected in this permit and which result in increased emissions.

Notification of Name Change

G21. The permittee shall notify LRAPA in writing, using an LRAPA Application for Administrative Amendment to ACDP form, within 60 days after legal change of the registered name of the company with the Corporation Division of the State of Oregon.

Applicable administrative fees must be submitted with an application for the name change.

Permit Renewal

G22. Application for renewal of this permit must be submitted not less than 60 days prior to the permit expiration date. A Filing Fee, an Application Processing Fee, and an Annual Compliance Determination Fee must be submitted with the application for the permit renewal. [LRAPA 34-035]

G23. The procedure for issuance of a permit shall apply to renewal of a permit. If a completed application for a renewal of a permit is filed with LRAPA in a timely manner, prior to the expiration date of the permit, the permit shall not be deemed to expire until final action has been taken on the renewal application to issue or deny a permit. [LRAPA 34-130(16)]

Termination Conditions

G24. This permit shall be automatically terminated: [LRAPA 34-140(2)]

- a. within sixty (60) days after sale or exchange of the activity or facility which requires a permit;
- b. upon change of nature of the activities, operations, emissions, or discharges from those of record in the last application;
- c. within one (1) year after a plant closure lasting continuously for one (1) or more years;
- d. upon issuance of a new, renewal, or modified permit for the same operation; or
- e. upon written request of the permittee.

G25. In the event that it becomes necessary to suspend or terminate this permit due to non-compliance with the terms of the permit, unapproved changes in operation, false information submitted in the application or any other cause, LRAPA shall notify the permittee by registered or certified mail of its intent to suspend or revoke the permit. Such notification shall include the reasons for the suspension or revocation. The suspension or revocation shall become effective twenty (20) days from the date of mailing of such notices unless, within that time, the permittee requests a hearing. Such a request for hearing shall be made in writing and shall state the grounds for such a request. [LRAPA 34-140(3)]

G26. Termination of this permit resulting from continuous plant closure shall subject the source to review as a new non-permitted source upon application to operate the facility. [LRAPA 34-140(4)]

- G27. If LRAPA finds that there is a serious danger to the public health or safety or that irreparable damage to a resource will occur, it may suspend or terminate this permit, effective immediately. Notice of such suspension or termination must state the reasons for such action and advise that the permittee may request a hearing. Such a request for a hearing shall be made in writing within ninety (90) days of the date of the suspension and shall state the grounds for the request.
[LRAPA 34-140 (5)]
- G28. Any hearing requested shall be conducted pursuant to the rules of LRAPA. [LRAPA 34-140(6)]
- G29. The permittee shall submit, by April 20 of each year, the emission inventory form provided by LRAPA.

DW/bp [revised 10/24/01, 4/18/06]