STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
CALIFORNIA AIR RESOURCES BOARD

SEMICONDUCTOR OPERATIONS REPORTING FORM, TITLE 17, CALIFORNIA CODE OF REGULATIONS, SECTION 95324

FOR OFFICIAL USE ONLY

Date Received:

SECTION A: EMISSIONS DATA REPORT TIME PERIOD

Start Date of Reporting Period:	End Date of Reporting Period:

SECTION B: GENERAL INFORMATION

PART I: FACILITY LOCATION

1. Facility Name:	
2. Mailing Address:	City/State/Zip Code:
3. Street Address (if different from above):	City/State/Zip Code:

PART II: CONTACT INFORMATION

1. Contact Name and Title:	2. Contact Email Address:
3. Contact Telephone Number:	4. Contact Fax Number:

*Use of this form is voluntary, but submittal of the specified data is required under title 17 CCR section 95324.

SECTION C: TIER CATEGORY AND EMISSIONS

Tier Category (check all that apply):

☐ Tier 1: (Operations that processed water surface area >37.7 million square centimeters/calendar year) (Maximum limit is 0.2 Kg CO_2e/square centimeter)

☐ Tier 2: (Operations that processed water surface area >3.7 and ≤37.7 million square centimeters/calendar year)
(Maximum limit is 0.3 Kg CO_2e/square centimeter)

☐ Tier 3: (Operations that processed water surface area ≤3.7 million square centimeters/calendar year) (Maximum limit is 0.5 Kg CO_2e/square centimeter)

☐ Reporting Only (Operations with emissions 0.0008 MMT or less of CO_2e per calendar year)

Emissions (Total MMT CO_2e per calendar year):

☐ Per Subsection 95323(a), an operation that is replacing CVD or etching tools that process 150 millimeter diameter wafers with tools that process 200 millimeter diameter or larger wafers must comply with Table 1 emission standards by January 1, 2014.

SEMICONDUCTOR OPERATIONS REPORTING FORM, TITLE 17, CALIFORNIA CODE OF REGULATIONS, SECTION 95324

SECTION D: GREENHOUSE GAS USAGE

ETCHING PROCESS

C_2F_6

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

C_3F_8

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

C_5F_8

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

CF_4

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

SEMICONDUCTOR OPERATIONS REPORTING FORM, TITLE 17, CALIFORNIA CODE OF REGULATIONS, SECTION 95324

CHF_3

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

CH_2F_2

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

c-C_4F_8

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

C_4F_8O

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

SEMICONDUCTOR OPERATIONS REPORTING FORM, TITLE 17, CALIFORNIA CODE OF REGULATIONS, SECTION 95324

C_4F_6

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

COF_2

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

NF_3

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

SF_6

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

SEMICONDUCTOR OPERATIONS REPORTING FORM, TITLE 17, CALIFORNIA CODE OF REGULATIONS, SECTION 95324

CVD CHAMBER CLEANING PROCESS

C_2F_6

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

C_3F_8

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

C_5F_8

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

CF_4

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

SEMICONDUCTOR OPERATIONS REPORTING FORM, TITLE 17, CALIFORNIA CODE OF REGULATIONS, SECTION 95324

CHF_3

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

CH_2F_2

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

c-C_4F_8

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

C_4F_8O

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

SEMICONDUCTOR OPERATIONS REPORTING FORM, TITLE 17, CALIFORNIA CODE OF REGULATIONS, SECTION 95324

C_4F_6

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

COF_2

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

NF_3

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

SF_6

Monthly Amount (Kg):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Kg):

SEMICONDUCTOR OPERATIONS REPORTING FORM, TITLE 17, CALIFORNIA CODE OF REGULATIONS, SECTION 95324

SECTION E: WAFERS PROCESSED

Monthly Amount (Square Centimeters):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (Square Centimeters):

SECTION F: EMISSIONS REDUCTION STRATEGIES USAGE

Emissions Reductions Strategies Used (check all that apply):

☐ Process Optimization. Estimated emissions reductions in Kg CO_2e per square centimeter of wafer processed (Kg CO_2e/cm^2):

☐ Alternative Chemistries. Estimated emissions reduction in Kg CO_2e per square centimeter of wafer processed (Kg CO_2e/cm^2):

☐ Alternative Chemistries. Estimated emissions reduction in Kg CO_2e per square centimeter of wafer processed (Kg CO_2e/cm^2):

☐ Abatement Equipment

PERMIT

☐ The operator has applied for an authority to construct permit for abatement equipment from the appropriate permitting agency.

☐ The operator has a current permit for the abatement equipment from the appropriate permitting agency.

DESTRUCTION REMOVAL EFFICIENCY VALUE

☐ Used the default destruction removal efficiency value in the Tier 2b calculation method in the 2006 Intergovernmental Panel on Climate Change (IPCC) Guideline for National Greenhouse Gas Inventories report.

☐ Used an alternative destruction removal efficiency value.

☐ The alternative destruction removal efficiency value has been approved or is in the process of being approved by the permitting agency.

Enter the alternative destruction reduction removal efficiency value (percent):

Estimated emissions reduction in Kg CO_2e per square centimeter of wafer processed (Kg CO_2e/cm^2):

☐ Other

Estimated emissions reductions in Kg CO_2e per square centimeter of wafer processed (Kg CO_2e/cm^2):

☐ None

SEMICONDUCTOR OPERATIONS REPORTING FORM, TITLE 17, CALIFORNIA CODE OF REGULATIONS, SECTION 95324

SECTION G: EMISSIONS IN MILLION METRIC TONS OF CARBON DIOXIDE EQUIPMENT (MMT CO_2E)

Monthly Amount (MMT CO_2e):

January	February	March	April	May	June
July	August	September	October	November	December

Annual Amount (MMT CO_2e):

SECTION H: FLUORINATED HEAT TRANSFER FLUIDS (HTF)

HTF USAGE

☐ None (Skip to Section I)

1. HTF USAGE

Brand Name of HTF 1:	Annual Amount (mL):

Monthly Amount (mL):

January	February	March	April	May	June
July	August	September	October	November	December

Brand Name of HTF 2:	Annual Amount (mL):

Monthly Amount (mL):

January	February	March	April	May	June
July	August	September	October	November	December

Brand Name of HTF 3:	Annual Amount (mL):

Monthly Amount (mL):

January	February	March	April	May	June
July	August	September	October	November	December

SEMICONDUCTOR OPERATIONS REPORTING FORM, TITLE 17, CALIFORNIA CODE OF REGULATIONS, SECTION 95324

2. HTF PURCHASED

Brand Name of HTF 1:	Annual Amount (mL):

Monthly Amount (mL):

January	February	March	April	May	June
July	August	September	October	November	December

Brand Name of HTF 2:	Annual Amount (mL):

Monthly Amount (mL):

January	February	March	April	May	June
July	August	September	October	November	December

Brand Name of HTF 3:	Annual Amount (mL):

Monthly Amount (mL):

January	February	March	April	May	June
July	August	September	October	November	December

3. HTF ADDED TO SYSTEM INFORMATION

System:	Annual Amount (mL):

Monthly Amount (mL):

January	February	March	April	May	June
July	August	September	October	November	December

System:	Annual Amount (mL):

Monthly Amount (mL):

January	February	March	April	May	June
July	August	September	October	November	December

System:	Annual Amount (mL):

Monthly Amount (mL):

January	February	March	April	May	June
July	August	September	October	November	December

System:	Annual Amount (mL):

SECTION I: EMISSIONS CONTROL EQUIPMENT BREAKDOWNS, MALFUNCTIONS, & FAILURES

1. Emissions Control Equipment Information:

☐ Breakdowns ☐ Malfunctions ☐ Failures

2. Detailed Emissions Control Equipment Information:

A. Breakdown:

B. Malfunctions:

C. Failures:

NOTE: Operators are usually required to report breakdowns, malfunctions, or failures to the appropriate permitting agency at the time of occurrence.

SECTION J: SIGNATURE BLOCK

In signing this form, I certify under the penalty of perjury under the laws of the State of California that the information contained in this form is true, accurate and complete. I further certify that I am duty authorized to make this submittal on behalf of the regulated party.

Signature:	Printed Name:
Title:	Date:

INSTRUCTIONS

Under State law, all data specified in title 17, California Code of Regulations (CCR), section 95324 are required to be submitted to your local air district (permitting agency). However, the use of this Semiconductor Operations Reporting Form (form) is not mandatory. It was developed to simplify reporting for industry, promote consistency in reports, and lessen the review time for district personnel.

Complete all sections that apply to the operation.

You must submit the completed form, or an equivalent collection of data meeting title 17 CCR § 95324, by March 1st of each calendar year for the previous calendar year to your permitting agency. For information on point of contact for your local air district, go to the following website:

http://www.arb.ca.gov/cc/semiconductors/emissionsreport/emissionsreport.htm

To navigate through this form, use the down arrow key or use the mouse to click on the field to enter data. To revise data in a field, highlight the data and enter new data. To remove data, highlight the data and click the delete key.

SECTION A: EMISSIONS DATA REPORT TIME PERIOD

Enter the start date and end date for the reporting period this report covers in following format: MM/DD/YYYY. A reporting period is one calendar year, unless a change in emission strategy occurs. Any change in an emission reduction strategy or the start of a new calendar year requires a new reporting period. This form requires a separate entry for each reporting period.

For new facilities, the start date should reflect the date the operation began.

SECTION B: GENERAL INFORMATION

PART I: FACILITY LOCATION

1. FACILITY NAME: Enter the name of the facility.
2. MAILING ADDRESS: Enter the mailing address of the facility.
3. STREET ADDRESS (IF DIFFERENT FROM ABOVE): Enter the physical address of the facility.

PART II: CONTACT INFORMATION

1. CONTACT NAME AND TITLE: Enter your full name and title.
2. CONTACT E-MAIL ADDRESS: Enter your email address.
3. CONTACT TELEPHONE NUMBER: Enter your telephone number.
4. CONTACT FAX NUMBER: Enter your facsimile number.

SECTION C: TIER CATEGORY AND EMISSIONS

TIER CATEGORY: Select the Tier that corresponds with the number of wafers in million square centimeters processed for the reporting period. If a semiconductor operation emits 0.0008 MMT or less of CO_2e per calendar year, then select Reporting Only box instead of a Tier.

EMISSIONS: Enter the total amount of emissions in million metric tons of carbon dioxide equivalent (MMT CO_2e) emitted in the calendar year for the chemical vapor deposition (CVD) chamber cleaning and/or etching processes. Values greater than one should be rounded to the tenths place and values below one should be rounded to one significant figure. For example, if value is 2.3256, round value to 2.3. If value is 0.0023256, round value to 0.002.

Note 1: The kilograms of greenhouse gas (GHG) emissions are determined using the Tier 2b calculation method in the 2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories report. The IPCC 1996 Second Assessment Report (SAR) provides the global warming potential (GWP) values used to calculate MMT CO_2e of GHG emissions, with the exception of NF_3 which is based on the GWP value from the IPCC Fourth Assessment Report.

Note 2: Per Subsection 95323(a), an operation that is replacing CVD or etching tools that process 150 millimeter diameter wafers with tools that process 200 millimeter or larger wafers should check the final box.

SECTION D. GREENHOUSE GAS USAGE

ETCHING PROCESS: For each gas listed, enter in kilograms the amount of gas used each month and the total amount of gas used in the calendar year.

CVD CHAMBER CLEANING PROCESS: For each gas listed, enter in kilograms the amount of gas used each month and the total amount of gas used in the calendar year.

Note 1: If the amount of gas used is less than 1 kilogram, owners and operators must do their best to estimate the gas usage.

Note 2: Values greater than one should be rounded to the hundredths place and values below one should be rounded to two significant figures. For example, if value is 2.326, round value to 2.33. If value is 0.002326, round value to 0.0023.

SECTION E. WAFERS PROCESSED

Enter in square centimeters the amount of wafers processed each month and total amount of wafers processed in the calendar year. Values greater than one should be rounded to the tenths place and values below one should be rounded to one significant figure. For example, if value is 2.3256, round value to 2.3. If value is 0.0023256, round value to 0.002.

Note 1: "Wafer Surface Area" means the entire surface area of one side of a wafer or multiple wafers, and includes wafers that do not pass owner or operator inspection. Prototype wafers processed for research and development (RD) purposes should also be included in the calculation. A semiconductor operator shall count each wafer once after it has gone through the entire process rather than count multiple runs through the process as the total square centimeters of wafers processed.

For prototype wafers that are used for particle and thickness checks and/or dummy runs, the entire process for the particle and thickness check and/or dummy run will count as a process and therefore be counted as a "number of wafers processed." If same prototype wafer was used in a calendar year and then used again in the next calendar year, calculations for the wafer surface area should be performed for each calendar year.

Note 2: "Wafer" means a thin, usually round, slice of a material from which integrated circuits, or chips, are made. A wafer in this tool refers to a wafer or a mask such as a photomask.

Note 3: Owner or operator of a semiconductor operation that emits 0.0008 million metric tons (MMT) or less of carbon dioxide equivalent (CO_2e) per calendar year is not subject to report the monthly and annual square centimeters of wafers processed.

SECTION F. EMISSIONS REDUCTION STRATEGIES USAGE

Select the type(s) of emissions reduction strategies used at the facility. If “Other” type of emissions reduction strategy is selected, describe in detail the emissions reduction strategy. Only select emissions reduction strategies that can reduce greenhouse gas emissions.

For each emission reduction strategy enter an estimated emissions reduction in CO_2e per square centimeter of wafer processed. This value is the result of subtracting the total emissions per square centimeter of wafer processed for the current reporting period from the total emissions per square centimeter of wafer processed for the previous reporting period. This estimation should show a reduction in total emissions per square centimeter of wafer processed as a result of implementing the strategy.

If the reduction equipment was operational for the current reporting period as well as the previous reporting period, then the estimation should be zero to reflect no change.

Note 1: Owners and operators using abatement equipment must select the appropriate box whether they have applied for an authority to construct permit or hold a current permit from the appropriate permitting agency.

Note 2: Owners and operators may request that the permitting agency approve the use of an alternative destruction removal efficiency (DRE) value that exceeds the default DRE value in the Tier 2b calculation method.

If an alternative DRE value was used, select the appropriate box to confirm that the alternative DRE value has been approved by the permitting agency. Finally enter the alternative DRE value as a percent.

The reporting of the DRE value or alternative DRE value is optional, though encouraged.

Note 3: Owners and operators may request that the permitting agency approve the use of an alternative DRE value that exceeds the default DRE value in the Tier 2b calculation method. An alternative DRE must be based on independent third party measured results for the emission control equipment used by the operation.

Note 4: Owners and operators must submit a new report if there is any change in emissions reduction strategies used during the same calendar year or the start of a new calendar year.

Note 5: If the facility does not use any emissions reduction strategies to reduce greenhouse gas (GHG) emissions or if the facility emits 0.0008 MMT or less of CO_2e per calendar year, select the box labeled "None," and skip to the next section.

SECTION G. EMISSIONS IN MILLION METRIC TONS OF CARBON DIOXIDE EQUIVALENT (MMT CO_2e)

Enter in MMT CO_2e the amount of emissions emitted each month and total amount of emissions emitted in the calendar year for the sum of the etching and/or chemical vapor deposition (CVD) chamber cleaning. Values greater than one should be rounded to the tenths place and values below one should be rounded to one significant figure. For example, if value is 2.3256, round value to 2.3. If value is 0.0023256, round value to 0.002.

Note 1: If the facility emits 0.0008 MMT or less of CO_2e per calendar year, you may provide annual data in lieu of monthly data in the emission reports.

Note 2: The kilograms of GHG emissions are determined by using the Tier 2b calculation method in the 2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories report. The IPCC 1996 Second Assessment Report (SAR) provides the global warming potential (GWP) values used to calculate MMT CO_2e of GHG emissions, with the exception of NF_3 which is based on the GWP value from the IPCC Fourth Assessment Report.

SECTION H. FLUORINATED HEAT TRANSFER FLUIDS (HTF)

If the facility uses no HTF, then go to Section I.

HTF USAGE: Enter the brand name of the HTF used, the milliliter (mL) of HTF used in a month, and the total mL of HTF used in the calendar year. Values greater than one should be rounded to the hundredths place and values below one should be rounded to two significant figures. For example, if value is 2.326, round value to 2.33. If value is 0.002326, round value to 0.0023.

HTF PURCHASED: Enter the brand name of the HTF purchased, the milliliter (mL) of HTF purchased in a month, and the total mL of HTF purchased in the calendar year. Values greater than one should be rounded to the hundredths place and values below one should be rounded to two significant figures. For example, if value is 2.326, round value to 2.33. If value is 0.002326, round value to 0.0023.

HTF ADDED TO SYSTEM: Select if HTF is added to existing system, to a new system, or to both and existing and a new system. Enter the mL of HTF added to system in a month and in the calendar year. Values greater than one should be rounded to the hundredths place and values below one should be rounded to two

significant figures. For example, if value is 2.326, round value to 2.33. If value is 0.002326, round value to 0.0023.

SECTION I. EMISSION CONTROL EQUIPMENT BREAKDOWNS, MALFUNCTIONS, AND FAILURES

EMISSION CONTROL EQUIPMENT: Report emission control equipment breakdowns, malfunctions, and failures in accordance with the permitting agency's requirements, if applicable. Briefly describe problem. For example if emissions control equipment does not function for three months, record this.

DETAILED EMISSION CONTROL EQUIPMENT INFORMATION: Based upon permitting agency's requirements, provide detailed information about control equipment breakdown, malfunctions, failures and other problems that occurred in the calendar year.

SECTION J. SIGNATURE BLOCK

Sign and date to certify that the information provided in the emissions report is true, accurate, and complete.