

AIR EMISSION PERMIT NO. 08500032- 004

IS ISSUED TO

HUTCHINSON TECHNOLOGY INC.

Hutchinson Technology Inc. - Hutchinson
40 West Highland Park Drive Northeast
Hutchinson, McLeod County, MN 55350-9784

The emission units, control equipment and emission stacks at the stationary source authorized in this permit are as described in the following permit application(s):

Permit Type	Application Date	Issue Date
Total Facility Operating Permit	05/15/1995	03/04/2002
Administrative Amendment	08/08/2002	09/04/2002
Major Amendment	11/15/2002	6/3/2003
Major Amendment	11/04/2003 and 12/18/2003	See below

This permit authorizes the Permittee to operate and modify the stationary source at the address listed above unless otherwise noted in Table A. The Permittee must comply with all the conditions of the permit. Any changes or modifications to the stationary source must be performed in compliance with Minn. R. 7007.1150 to 7007.1500. Terms used in the permit are as defined in the state air pollution control rules unless the term is explicitly defined in the permit.

Permit Type: Federal; Pt 70/Limits to Avoid NSR

Major Amendment:

Issue Date: March 4, 2002

Issue Date: May 4, 2004

Expiration: March 4, 2007
All Title I Conditions do not expire.

Ann M. Foss
Major Facilities Section Manager
Majors and Remediation Division

for Sheryl A. Corrigan
Commissioner
Minnesota Pollution Control Agency

TABLE OF CONTENTS

Notice to the Permittee

Permit Shield

Facility Description

Table A: Limits and Other Requirements

Table B: Submittals

Appendices: Attached and Referenced in Table A

NOTICE TO THE PERMITTEE:

Your stationary source may be subject to the requirements of the Minnesota Pollution Control Agency's (MPCA) solid waste, hazardous waste, and water quality programs. If you wish to obtain information on these programs, including information on obtaining any required permits, please contact the MPCA general information number at:

Metro Area	(651) 296-6300
Outside Metro Area	1-800-657-3864
TTY	(651) 282-5332

The rules governing these programs are contained in Minn. R. chs. 7000-7105. Written questions may be sent to: Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, Minnesota 55155-4194.

Questions about this air emission permit or about air quality requirements can also be directed to the telephone numbers and address listed above.

PERMIT SHIELD:

Subject to the limitations in Minn. R. 7007.1800, compliance with the conditions of this permit shall be deemed compliance with the specific provision of the applicable requirement identified in the permit as the basis of each condition. Subject to the limitations of Minn. R. 7007.1800 and 7017.0100, subp. 2, notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements.

FACILITY DESCRIPTION:

Hutchinson Technology, Inc. (HTI) is a manufacturer of suspension assemblies for all sizes of computer disk drives. The suspension assembly holds the read/write head at extremely small distances above the spinning disks. HTI currently holds about 50 percent of the world market, with its only competitors being in Asia. Two types of suspension assemblies are made, conventional and TSA (suspensions incorporating integrated electrical leads). The TSA product will eventually become the core product manufactured by the HTI.

The high tech market HTI is in can prove to be very volatile. Sales of all types of suspension assemblies from HTI have increased and decreased at rates greater than 10 percent per year over the last five years. Most products in this industry usually only have lifetimes of about three years. Because of this volatility, HTI needs to have a permit that is as flexible as possible so that it can respond quickly to changing market demands.

The significant emission sources at the facility are all evaporative and include: the photoetching solutions, and the many different cleaning solvents used throughout all areas of the plant. About 75 percent of the Volatile Organic Compound (VOC) emissions at the facility are emitted during the application of the photoresist solution by either the two roller coaters or the two dip coaters. The roller coaters are vented through a hood to a thermal oxidizer while the dip coaters are vented to a process boiler.

Other emission units at the facility are controlled as well. The air from the plasma etching solutions is vented to a scrubber to remove HF. Other evaporative sources such as the cleanliness and strippers have spray nozzles in the exhaust vents that spray water countercurrent to the exhaust gas flow. Testing has not been done to determine the control efficiencies of the spray nozzles, so the control efficiency is not claimed by the facility. The HF scrubber, the thermal oxidizer and boiler control efficiency have all been tested and their control efficiencies have been claimed in the permit.

There are Metal Hydroxide Sludge Dryers that are listed in the permit as only having natural gas combustion emissions. It was discovered that these units may also generate Particulate Matter (PM), and these emissions are through the process of drying sludge. HTI believes the PM emissions are less than 1 ton per year per sludge dryer.

PERMIT ACTION 003 (Major Amendment):

The **main purpose of this permit amendment** is to authorize insignificant modifications at the source that contribute Hazardous Air Pollutant (HAP) emissions. The total facility allowable HAPs does not change.

This permit amendment also incorporates the following changes:

- 1) Plasma Etcher Scrubbing System Operational/Monitoring Requirement Correction;
- 2) Addition of Permit Language for Sludge Dryers;
- 3) Correction of Plasma Etcher HAP Emission Factor for Hydrogen Fluoride

PERMIT ACTION 004 (Major Amendment):

Existing facility limits on HAPs and VOCs will not be increased as a result of this permit action. This permit amendment incorporates the following changes:

1. Applicability Determination received 8/8/02: The Permittee will use Henry's Law to calculate Butyl Carbitol (Glycol Ethers) emissions and Raoult's Law to calculate monoethanolamine (MEA) emissions.
2. Major modification received 11/4/03: Increase maximum temperature for EU018 and EU080 and all GP003 sumps; increase MEA concentration in EU018 and EU080; remove EU119 from GP003; and add EU162 to GP003.
3. Major modification received 12/18/03: Increase emission factor for hydrogen fluoride (HF) GP006 plasma etchers, and administrative clarifications.

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/05/04

Facility Name: Hutchinson Technology Inc - Hutchinson

Permit Number: 08500032 - 004

Table A contains limits and other requirements with which your facility must comply. The limits are located in the first column of the table (What To do). The limits can be emission limits or operational limits. This column also contains the actions that you must take and the records you must keep to show that you are complying with the limits. The second column of Table A (Why to do it) lists the regulatory basis for these limits. Appendices included as conditions of your permit are listed in Table A under total facility requirements.

Subject Item:**Total Facility**

What to do	Why to do it
GENERAL REQUIREMENTS	hdr
Operation and Maintenance Plan: Retain at the stationary source an operation and maintenance plan for all air pollution control equipment. Include in the plan a list of corrective actions that will be taken if any of the pollution control equipment monitored parameters are out of their proper operating ranges.	Minn. R. 7007.0800, subp. 14 and Minn. R. 7007.0800, subp. 16(J)
Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in Tables A, B, and/or C.	Minn. R. ch. 7017
Limits set as a result of a performance test (conducted before or after permit issuance) apply until superseded as specified by Minn. R. 7017.2025 following formal review of a subsequent performance test on the same unit.	Minn. R. 7017.2025
Monitoring Equipment: Install or make needed repairs to monitoring equipment within 60 days of issuance of the permit if monitoring equipment is not installed and operational on the date the permit is issued.	Minn. R. 7007.0800, subp. 4(D)
Monitoring Equipment Calibration: Annually calibrate all required monitoring equipment (any requirements applying to continuous emission monitors are listed separately in this permit).	Minn. R. 7007.0800, subp. 4(D)
Operation of Monitoring Equipment: Unless otherwise noted in Tables A, B, and/or C, monitoring a process or control equipment connected to that process is not necessary during periods when the process is shutdown, or during checks of the monitoring systems, such as calibration checks and zero and span adjustments. If monitoring records are required, they should reflect any such periods of process shutdown or checks of the monitoring system.	Minn. R. 7007.0800, subp. 4(D)
Circumvention: Do not install or use a device or means that conceals or dilutes emissions, which would otherwise violate a federal or state air pollution control rule, without reducing the total amount of pollutant emitted.	Minn. R. 7011.0020
Shutdown Notifications: Notify the Commissioner at least 24 hours in advance of a planned shutdown of any control equipment or process equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. If the owner or operator does not have advance knowledge of the shutdown, notification shall be made to the Commissioner as soon as possible after the shutdown. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 3. At the time of notification, the owner or operator shall inform the Commissioner of the cause of the shutdown and the estimated duration. The owner or operator shall notify the Commissioner when the shutdown is over.	Minn. R. 7019.1000, subp. 3
Breakdown Notifications: Notify the Commissioner within 24 hours of a breakdown of more than one hour duration of any control equipment or process equipment if the breakdown causes any increase in the emissions of any regulated air pollutant. The 24-hour time period starts when the breakdown was discovered or reasonably should have been discovered by the owner or operator. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 2. At the time of notification or as soon as possible thereafter, the owner or operator shall inform the Commissioner of the cause of the breakdown and the estimated duration. The owner or operator shall notify the Commissioner when the breakdown is over.	Minn. R. 7019.1000, subp. 2
Notification of Deviations Endangering Human Health or the Environment: As soon as possible after discovery, notify the Commissioner or the state duty officer, either orally or by facsimile, of any deviation from permit conditions which could endanger human health or the environment.	Minn. R. 7019.1000, subp. 1

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/05/04

Facility Name: Hutchinson Technology Inc - Hutchinson

Permit Number: 08500032 - 004

Notification of Deviations Endangering Human Health or the Environment Report: Within 2 working days of discovery, notify the Commissioner in writing of any deviation from permit conditions which could endanger human health or the environment. Include the following information in this written description: 1. the cause of the deviation; 2. the exact dates of the period of the deviation, if the deviation has been corrected; 3. whether or not the deviation has been corrected; 4. the anticipated time by which the deviation is expected to be corrected, if not yet corrected; and 5. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation.	Minn. R. 7019.1000, subp. 1
Operation Changes: In any shutdown, breakdown, or deviation the Permittee shall immediately take all practical steps to modify operations to reduce the emissions of any regulated air pollutant. The Commissioner may require feasible and practical modifications in the operation to reduce emissions of air pollutants. No emission units that have an unreasonable shutdown or breakdown frequency of process or control equipment shall be permitted to operate.	Minn. R. 7019.1000, subp. 4
Air Pollution Control Equipment: Operate all pollution control equipment whenever the corresponding process equipment and emission units are operated, unless otherwise noted in Table A.	Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 16(J)
Fugitive Emissions: Do not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne. Comply with all other requirements listed in Minn. R. 7011.0150.	Minn. R. 7011.0150
Application for Permit Amendment: If a permit amendment is needed, submit an application in accordance with the requirements of Minn. R. 7007.1150 through Minn. R. 7007.1500. Submittal dates vary, depending on the type of amendment needed.	Minn. R. 7007.1150 through Minn. R. 7007.1500
Extension Requests: The Permittee may apply for an Administrative Amendment to extend a deadline in a permit by no more than 120 days, provided the proposed deadline extension meets the requirements of Minn. R. 7007.1400, subp. 1(H).	Minn. R. 7007.1400, subp. 1(H)
Record keeping: Retain all records at the stationary source for a period of five (5) years from the date of monitoring, sample, measurement, or report. Records which must be retained at this location include all calibration and maintenance records, all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. Records must conform to the requirements listed in Minn. R. 7007.0800, subp. 5(A).	Minn. R. 7007.0800, subp. 5(C)
Noise: The Permittee shall comply with the noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during the operation of any emission units. This is a state only requirement and is not federally enforceable.	Minn. R. 7030.0010 - 7030.0080
The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16.	Minn. R. 7007.0800, subp. 16
Inspections: Upon presentation of credentials and other documents as may be required by law, allow the Agency, or its representative, to enter the Permittee's premises to have access to and copy any records required by this permit, to inspect at reasonable times (which include any time the source is operating) any facilities, equipment, practices or operations, and to sample or monitor any substances or parameters at any location.	Minn. R. 7007.0800, subp. 9(A)
Emission Fees: due 60 days after receipt of an MPCA bill.	Minn. R. 7002.0005 through Minn. R. 7002.0095
FACILITY SPECIFIC REQUIREMENTS	hdr
This permit establishes limits on the facility to keep it a non-major source under New Source Review. The Permittee shall not make any changes at the source that would make the source a major source under New Source Review until a major permit amendment has been issued. This includes changes that might otherwise qualify as insignificant modifications and minor or moderate amendments.	Title I Condition: emission unit restriction to avoid major source status under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 2
Environmental Review: the Permittee shall not begin construction of any single project or projects that are connected or phased, which will cause a total increase in actual emissions of greater than 99 tons per year for any criteria pollutant, without first getting a permit amendment to authorize the project. Connected and phased have meanings as defined in Minn. R. 4410.0200 subps. 9b and 60. The Permittee shall not begin construction of any project which is listed in Minn. R. 4410.4300 or Minn. R. 4410.4400 without first obtaining a permit amendment to authorize the project. Such project(s) may require the completion of an Environmental Assessment Worksheet or an Environmental Impact Statement prior to issuance of the amendment.	Minn. R. 4410.4300 and Minn. R. 4410.4400
Labeling Requirements: the Permittee shall label all emission units at the stationary source that are in groups (GP) 001-007 with their respective EU and GP numbers within 60 days after permit issuance. The EU and GP number labels on each emission unit shall be permanent and readily visible from a distance. The letters shall be at least 3 inches in height.	Minn. R. 7007.0800, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/05/04

Facility Name: Hutchinson Technology Inc - Hutchinson

Permit Number: 08500032 - 004

Equipment Inventory List: the Permittee shall maintain a written list that identifies all emission units at the facility and the group (i.e. GP 001-007 or insignificant) that the emission unit belongs. The list shall include the EU and GP numbers, the emission unit name, the type of equipment, and the date(s) of installation and modification/reconstruction.	Minn. R. 7007.0800, subp. 5
Submit: due 91 days after end of each calendar year starting 03/04/2002 (April 1) the Equipment Inventory List.	Minn. R. 7007.0800, subp. 6
Updating the Equipment Inventory List: the list shall be updated to include any new, modified, or changed equipment before installing any new equipment, or making a change or modification (as defined at Minn. R. 7007.0100, subp. 14) to existing equipment. A dated, written record of the following four (4) determinations shall be made before each modification or change: 1) Determine Pollution Prevention measures applicable to the proposed modification or change; 2) Determine if any other applicable requirements would be triggered, other than those included in this permit; 3) Examine the MSDS for all new materials used on site for VOC and/or HAP content, and determine whether all emissions from the new material can be tracked by any of the methods specified in the Groups in this permit. 4) Determine whether all applicable total facility 12-month rolling sum limits for VOC, HAP, PM, PM10, NOx, CO, SO2, single HAP, and total HAP will be met.	Minn. R. 7007.0800, subp. 5
(continued) If the answer is "yes" to item number two, or "no" to either items number three or four, then you must obtain the appropriate amendment to this permit (as described at Minn. R. 7007.1150 through 1500) before you commence construction on the modification or change. If the change involves a change that qualifies as an insignificant modification (Minn. R. 7007.1250), only the first two (2) determinations above must be made and recorded.	Minn. R. 7007.0800, subp. 5
Addition/Modification of Emission Units: The Permittee may add emission units to the stationary source that are either: 1) described in GP 001 through GP 007, or 2) qualify as an insignificant modification (as described in Minn. R. 7007.1250). When adding new emission units to GP 001 through GP 007 the emissions from these emission units must be able to be calculated according to the procedure for the appropriate Group (as described in this permit and its appendices). The addition of new emission units which do not fit into an existing Group, and are not insignificant modifications, must follow the permit amendment procedures at Minn. R. 7007.1150 through 1500. The specific emission units at this stationary source may be modified, but the changed stationary source must meet all conditions in this permit at all times.	Title I Condition: emission unit restriction to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 2
Insignificant Modifications Recordkeeping: The potential emissions of all criteria pollutants emitted from emission units which are added and qualify as insignificant modifications (Minn. R. 7007.1250) must be recorded and kept on file at the facility. A list of insignificant emission units must be included as a part of the equipment inventory list. The cumulative total of potential criteria emissions from all insignificant modifications must be determined each time a subsequent insignificant modification is made. If the addition of new emission units cause the cumulative total of emissions from all insignificant modifications, for ANY criteria pollutant to be greater than: 1) four times the amount listed in Minn. R. 7007.1250, subp. 1(B)(2), on annual basis, or 2) 15 tons per year for Total Particulate Matter, the Permittee shall apply for a major amendment to this permit to adjust the allocation of emissions for ALL criteria pollutants under their respective Total Facility Caps.	Title I Condition: emission unit restriction to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 5
(continued) After the adjustment is made, and the amendment is issued, the cumulative totals for potential emissions from insignificant activities for ALL criteria pollutants will be reset to zero and will begin accumulating again with the next insignificant modification.	Title I Condition: emission unit restriction to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 5
Emissions Monitoring and Recordkeeping: by the 15th day of each month calculate and record: 1) emissions of each pollutant from each Group for the previous month, using the methods described in this permit and Appendix A of this permit; 2) total facility monthly emissions of each pollutant by summing the monthly emissions of each pollutant from each Group (calculated above in item 1); 3) 12-month rolling sum emissions for each pollutant by summing the total facility monthly emissions of each pollutant (calculated above in item 2) and add it to the total from the previous 11 months. To calculate a 12-month rolling sum during the first eleven months after permit issuance, use historical operating records to determine monthly emissions of each pollutant for each month in the 12-month rolling sum period prior to permit issuance.	Title I Condition: recordkeeping to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subps. 4 and 5
Total Particulate Matter: less than or equal to 249 tons/year using 12-month Rolling Sum for the total facility. This total shall be allocated as such: 234 tons per year for GP 001-007 and 15 tons per year for Insignificant Modifications.	Title I Condition: limit taken to avoid classification as a major source under 40 CFR Section 52.21

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/05/04

Facility Name: Hutchinson Technology Inc - Hutchinson

Permit Number: 08500032 - 004

Particulate Matter < 10 micron: less than or equal to 249 tons/year using 12-month Rolling Sum for the total facility. This total shall be allocated as such: 234 tons per year for GP 001-007 and 15 tons per year for Insignificant Modifications.	Title I Condition: limit taken to avoid classification as a major source under 40 CFR Section 52.21
Nitrogen Oxides: less than or equal to 249 tons/year using 12-month Rolling Sum for the total facility. This total shall be allocated as such: 209 tons per year for GP 001-007 and 40 tons per year for Insignificant Modifications.	Title I Condition: limit taken to avoid classification as a major source under 40 CFR Section 52.21
Sulfur Dioxide: less than or equal to 249 tons/year using 12-month Rolling Sum for the total facility. This total shall be allocated as such: 209 tons per year for GP 001-007 and 40 tons per year for Insignificant Modifications.	Title I Condition: limit taken to avoid classification as a major source under 40 CFR Section 52.21
Carbon Monoxide: less than or equal to 249 tons/year using 12-month Rolling Sum for the total facility. This total shall be allocated as such: 149 tons per year for GP 001-007 and 100 tons per year for Insignificant Modifications.	Title I Condition: limit taken to avoid classification as a major source under 40 CFR Section 52.21
Volatile Organic Compounds: less than or equal to 225 tons/year using 12-month Rolling Sum for the total facility. This total shall be allocated as such: 185 tons per year for GP 001-007 and 40 tons per year for Insignificant Modifications.	Title I Condition: limit taken to avoid classification as a major source under 40 CFR Section 52.21
HAP-Single: less than or equal to 4.9 tons/year using 12-month Rolling Sum for the total facility. This total shall be allocated as such: 4.4 tons per year for GP 001-007 and 0.5 tons per year for Insignificant Modifications (beginning with this permit amendment).	Title I Condition: limit taken to avoid classification as a major source under 40 CFR Section 63.2
The Permittee must keep records of all insignificant modifications at the facility and the related HAP emissions.	
HAPs - Total: less than or equal to 19.9 tons/year using 12-month Rolling Sum for the total facility. This total shall be allocated as such: 17.9 tons per year for GP 001-007 and 2.0 tons per year for all Insignificant Modifications (beginning with this permit amendment).	Title I Condition: limit taken to avoid classification as a major source under 40 CFR Section 63.2
The Permittee must keep records of all insignificant modifications at the facility and the related HAP emissions..	
Recordkeeping: maintain a record of the material safety data sheets (MSDS) for each VOC- or HAP- containing material currently used at the facility. Maintain a record of the material safety data sheets (MSDS) for each VOC- or HAP- containing material previously used at the facility for a period of 5 years from the date the material was last used.	Title I Condition: recordkeeping to avoid classification as a major source under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/05/04

Facility Name: Hutchinson Technology Inc - Hutchinson

Permit Number: 08500032 - 004

Subject Item: GP 001 Photoresist Coaters**Associated Items:** EU 001 Dipper 1

EU 002 Dipper 2

EU 003 Roller Coater 1

EU 088 Roller Coater 2

What to do	Why to do it
GP 001 emission units are limited to coaters that use materials containing VOC and HAP (e.g. photoresist).	Title I Condition: emission unit restriction to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 2
<p>Daily Recordkeeping: Record separately for each dip coater and each roller coater, the volume of each VOC- and HAP-containing material added to the coater, when the material is taken from the central storage area.</p> <p>On any day that coater waste is shipped off-site, record the volume of the shipment. By the 15th day of the month calculate and record the mass of VOC and each HAP in the coater waste shipments for the previous month.</p> <p>Note: In order to calculate the mass of VOC and HAP in coater waste shipped off-site, the VOC and HAP content of the coater waste material must be equivalent to the VOC and HAP content in the virgin material (wastes with different VOC and HAP content can not be mixed together).</p>	Title I Condition: recordkeeping to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 5
(continued) If different wastes were mixed, the Permittee must sample from each drum and analyze the waste to determine VOC and HAP content (according to EPA or ASTM methods), in order to receive credit for the mass of VOC and HAP in recycled/recovered waste; or, the Permittee must use the lowest MSDS values of VOC and HAP of the materials that comprise mixed wastes.	Title I Condition: recordkeeping to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 5
<p>Monthly Recordkeeping: by the 15th day of each month calculate and record the following data separately for the roller coaters and for the dip coaters:</p> <p>1) the total quantity of each type of VOC- and HAP-containing material used during the previous month;</p> <p>2) the uncontrolled emissions during the previous month of VOC, Toluene, and Xylene (and any other HAP listed on the MSDS), based on the quantity of each type of VOC- and HAP-containing material used during the previous month, and the maximum percentage of each VOC and HAP component (stated on the relevant MSDS);</p> <p>3) the mass of VOC and each HAP in coater waste shipped during the previous month;</p> <p>In addition, by the 15th day of each month calculate and record:</p>	Title I Condition: recordkeeping to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 5
<p>(continued)</p> <p>4) GP 001 VOC and individual HAP emissions during the previous month based on: the uncontrolled emissions (determined in item two), minus waste shipped (determined in item three)</p> <p>5) apply 84% VOC control efficiency to the emissions from the roller coaters</p> <p>6) apply 42% VOC control efficiency to the emissions from the dip coaters</p> <p>For items 5) and 6) use the control efficiency values stated, or the values from the most recent performance test.</p> <p>See Appendix A for additional information on these emission calculations.</p> <p>During any bypass of control equipment, record the material usage during the bypass and then do not apply the control efficiency for this amount of material usage when doing the emission calculations.</p>	Title I Condition: recordkeeping to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/05/04

Facility Name: Hutchinson Technology Inc - Hutchinson

Permit Number: 08500032 - 004

Subject Item: GP 002 Conventional Strippers

Associated Items: EU 016 Blueline Stripper
EU 018 Vertical Stripper 2
EU 019 Vertical Stripper 3
EU 080 Vertical Stripper 4
EU 081 Vertical Stripper 6
EU 084 Vertical Stripper 9

What to do	Why to do it
GP 002 emission units are limited to units that utilize materials containing VOC and HAP.	Title I Condition: emission unit restriction to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 2
GLYCOL ETHER (includes Butyl Carbitol) EMISSION FACTORS EU016, EU019, EU 081 and EU084: The glycol ether emission factor is 0.0254 lb/operating-hr per stripper EU018 and EU080: The glycol ether emission factor is 0.0633 lb/operating-hr per stripper MEA EMISSION FACTORS EU016: The MEA emission factor is 0.24 lb/operating-hr per stripper EU018 and EU080: The MEA emission factor is 1.3885 lb/operating-hr per stripper EU019, EU081 and EU084: The MEA emission factor is 0.1314 lb/operating-hr per stripper These emission factors apply unless otherwise recalculated per procedure below.	Minn. R. 7007.0800, subp. 2
Glycol Ether Concentration for all Emission Units: less than or equal to 0.006 mole fraction in bath solution. MEA concentration for EU018 and EU080: less than or equal to 0.036 mole fraction in bath solution MEA concentration for EU016, EU019, EU081 and EU084: less than or equal to 0.0049 mole fraction in bath solution These concentrations apply unless otherwise changed per procedure below.	Title I Condition: limit to avoid major source status under 40 CFR Section 63.2; Minn. R. 7007.0800, subp. 2
Temperature: less than or equal to 145 degrees F ; as a 5-day rolling average of readings taken once each operating day, for EU 018 and EU 080 non-HCl stripper sumps. Temperature of the chemical sump is read by a thermocouple.	Title I Condition: limit to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 2
Temperature: less than or equal to 125 degrees F ; as a 5-day rolling average of readings taken once each operating day, for EU 016, EU019, EU081 and EU 084 non-HCl stripper sumps. Temperature of the chemical sump is read by a thermocouple.	Title I Condition: limit to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 2
Recordkeeping: once each day, record the hours each emission unit was operated during the previous day. By the 15th day of each month, calculate and record: 1) GP 002 operating hours for the previous month; 2) GP 002 VOC and individual HAP emissions using monthly operating hours calculated in item one, and emission factors specified in GP 002.	Title I Condition: recordkeeping to avoid classification as a major source under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 5
Any of the following events requires the Permittee to recalculate the GP 002 emissions factors: 1) the temperature of any of the non-HCl stripper sumps exceeding the permitted limit for the Emission Unit as listed in GP 002; 2) any change (i.e. to the ductwork or fan) that increases airflow above the bath; 3) the mole fraction concentration of the VOC/HAP component in the bath solution exceeding the permitted concentration for the Emission Unit as listed in GP 002. The emission factor shall be recalculated on the date the event occurs.	Title I Condition: to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/05/04

Facility Name: Hutchinson Technology Inc - Hutchinson

Permit Number: 08500032 - 004

<p>Emission Factor Recalculation: When necessary the Permittee shall recalculate GP 002 emission factor as follows:</p> <ol style="list-style-type: none"> 1) determine the vapor pressure of the pure VOC/HAP component at the sump temperature using data from the MSDS and/or standard chemical engineering reference texts 2) For MEA emission factor: Use Raoult's Law to determine the partial pressure of the VOC/HAP component at the concentration used in the sumps 3) For Glycol Ether emission factor: Use Henry's Law to determine the partial pressure of the VOC/HAP component at the concentration used in the sumps 4) calculate the mole fraction of the VOC/HAP component in the overlying air 5) calculate the new emission factor by using the design airflow and the molar volume of an ideal gas at the sump temperature 6) maintain records of these calculations on site. 	<p>Title I Condition: to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 5</p>
<p>Corrective Action: if any 5-day rolling average sump temperature exceeds the maximum permitted value, take corrective action according to the O&M Plan, to reduce the temperature to at least the permitted maximum value. Record all corrective actions taken when completed.</p>	<p>Title I Condition: monitoring to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subps. 5 and 14</p>
<p>Monitoring and Recordkeeping: when each sump solution is made, calculate and record the glycol ether, MEA, and HCl concentration in units of mole fraction for glycol ether and MEA, and percent by weight for HCl.</p>	<p>Title I Condition: recordkeeping to avoid classification as a major source under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 4; Minn. R. 7007.0800, subp. 5</p>
<p>Monitoring: the Permittee shall install the necessary monitoring equipment for measuring and recording the temperature as required by this permit, if not already present. The monitoring equipment must be installed, in use, and properly maintained when the cleanlines are in operation.</p>	<p>Title I Condition: monitoring to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 4</p>
<p>Monitoring: once each day, observe and record the temperature in the sump, during operation of GP 002 emission unit(s), and calculate and record the 5-day rolling average temperature, as described in Appendix A of this permit.</p>	<p>Title I Condition: monitoring to avoid classification as a major source under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 4</p>
<p>Recordkeeping: the Permittee shall maintain a hard copy on site of the daily and 5-day rolling average temperatures.</p>	<p>Title I Condition: recordkeeping to avoid classification as a major source under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 5</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/05/04

Facility Name: Hutchinson Technology Inc - Hutchinson

Permit Number: 08500032 - 004

Subject Item: GP 003 TSA (Trace) Strippers**Associated Items:** EU 082 Vertical Stripper 7

EU 083 Vertical Stripper 8

EU 162 Vertical Stripper #10

What to do	Why to do it
GP 003 emission units are limited to units that utilize materials containing VOC and HAP.	Title I Condition: emission unit restriction to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 2
The MEA emission factor is 1.7062 lb/operating-hr per stripper.	Minn. R. 7007.0800, subp. 2
MEA: less than or equal to 0.0332 mole fraction in bath solution.	Title I Condition: limit to avoid major source status under 40 CFR Section 63.2; Minn. R. 7007.0800, subp. 2
Temperature: less than or equal to 149 degrees F ; as a 5-day rolling average of readings taken once each operating day, for each of the non-HCl stripper sumps. Temperature of the chemical sump is read by a thermocouple.	Title I Condition: limit to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 2
Recordkeeping: once each day, record the hours each emission unit was operated during the previous day. By the 15th day of each month, calculate and record: 1) GP 003 operating hours for the previous month; 2) GP 003 VOC and individual HAP emissions using monthly operating hours calculated in item one, and emission factors specified in GP 003.	Title I Condition: recordkeeping to avoid classification as a major source under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 5
Any of the following events requires the Permittee to recalculate the GP 003 emissions factors: 1) the temperature of any of the non-HCl stripper sumps exceeding the permitted limit for GP 003; 2) any change (i.e. to the ductwork or fan) that increases airflow above the bath; 3) a mole fraction concentration of the VOC/HAP component in the bath solution exceeding the permitted concentration for GP 003. The emission factor shall be recalculated on the date the event occurs.	Title I Condition: to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 2
Emission Factor Recalculation: When necessary the Permittee shall recalculate GP 003 emission factor as follows: 1) determine the vapor pressure of the pure VOC/HAP component at the sump temperature using data from the MSDS and/or standard chemical engineering reference texts 2) use Raoult's Law to determine the partial pressure of the VOC/HAP component at the concentration used in the sumps 3) calculate the mole fraction of the VOC/HAP component in the overlying air 4) calculate the new emission factor by using the design airflow and the molar volume of an ideal gas at the sump temperature 5) maintain records of these calculations on site.	Title I Condition: to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 5
Corrective Action: if the 5-day rolling average sump temperature exceeds the maximum permitted value, take corrective action according to the O&M Plan, to reduce the temperature to at least the permitted maximum value. Record all corrective actions taken when completed.	Title I Condition: monitoring to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subps. 5 and 14
Monitoring and Recordkeeping: when each sump solution is made, calculate and record the MEA and HCl concentration in units of mole fraction and percent by weight, respectively.	Title I Condition: recordkeeping to avoid classification as a major source under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 4; Minn. R. 7007.0800, subp. 5
Monitoring: the Permittee shall install the necessary monitoring equipment for measuring and recording the temperature as required by this permit, if not already present. The monitoring equipment must be installed, in use, and properly maintained when the cleanlines are in operation.	Title I Condition: monitoring to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 4
Monitoring: once each day, observe and record the temperature in the sump, during operation of GP 003 emission unit(s), and calculate and record the 5-day rolling average temperature, as described in Appendix A of this permit.	Title I Condition: monitoring to avoid classification as a major source under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 4
Recordkeeping: the Permittee shall maintain a hard copy on site of the daily and 5-day rolling average temperatures.	Title I Condition: recordkeeping to avoid classification as a major source under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/05/04

Facility Name: Hutchinson Technology Inc - Hutchinson

Permit Number: 08500032 - 004

Subject Item: GP 005 Combustion Equipment

Associated Items:

- EU 029 O.B. Gas Heater (10 B.)
- EU 030 O.B. Gas Heater (20 B.)
- EU 031 Shipping Receiving Heater
- EU 032 O.B. Hot Water Boiler
- EU 033 4-Bay Warehouse Heater
- EU 034 4-Bay Hot Water Boiler
- EU 035 4-Bay Steam Boiler
- EU 036 4-Bay HVAC-3
- EU 037 4-Bay HVAC-8
- EU 038 Equipcenter Gas Generator
- EU 039 Equipcenter Water Boiler
- EU 040 Equipcenter Water Heater
- EU 041 Equipcenter Shipping, Rec. Heaters
- EU 042 Cooling Tower Heater (Changed to electric 7-95.)
- EU 043 Baby Rupp (MA-11)(Vented inside building)
- EU 044 Sludge Drier
- EU 045 MA-6
- EU 046 MA-9
- EU 047 HVAC-1
- EU 048 MA-3 (Vented inside building)
- EU 049 HVAC-7
- EU 050 HVAC-4
- EU 051 HVAC-5
- EU 052 HVAC-6
- EU 053 MA-10 (Vented inside building)
- EU 054 MA-12
- EU 055 Back-up Generator
- EU 056 Penthouse (MA-4)(Vented inside building)
- EU 057 Penthouse Steam Boiler #3
- EU 058 Penthouse Steam Boiler #4
- EU 059 Shredder Room Heater
- EU 060 Shipping, Receiving Heaters
- EU 061 Water Boiler WB-01
- EU 062 Water Boiler (L48)
- EU 063 Water Boiler (Aldrich)
- EU 064 Mezzanine Steam Boiler (SB-01)
- EU 065 Mezzanine Water Boiler
- EU 066 Mezzanine Water Heater
- EU 067 '93 Shipping, Rec. Heaters
- EU 068 '93 Cart Hotel Heater
- EU 069 '93 Water Boiler (HWB-1)
- EU 070 '93 Water Boiler (HWB-2)
- EU 071 '93 Steam Boiler (SB-1)
- EU 072 '93 Water Heater (WH-1)
- EU 141 Hot Water Boiler (B-1)

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/05/04

Facility Name: Hutchinson Technology Inc - Hutchinson

Permit Number: 08500032 - 004

Associated Items: EU 142 Hot Water Boiler (B-2)
 EU 143 Steam Boiler (B-3)
 EU 144 Steam Boiler (B-4)
 EU 145 Natural Gas Generator

What to do	Why to do it
GP 005 emission units are limited to combustion units. Fuel usage is limited to distillate fuel oil, natural gas, LPG, and gasoline.	Title I Condition: emission unit restriction to avoid major source status under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 2
Indirect Heating Equipment Rated Heat Input: the rated heat input of all indirect heating equipment at the facility in total shall be less than 250 million Btu/hr.	Title I Condition: emission unit restriction to avoid major source status under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 2Minn. R. 7007.0800, subp. 2
Recordkeeping: the Permittee shall monitor and record the amount of each type of fuel used at the facility by maintaining monthly fuel usage records on site. By the 15th day of each month, calculate and record: 1) GP 005 usage of each fuel type during the previous month; 2) GP 005 emissions of SO ₂ , NO _x , and CO as specified in Appendix A of this permit.	Title I Condition: recordkeeping to avoid classification as a major source under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5
Recordkeeping: the Permittee shall include a calculation of the rated heat input of all indirect heating equipment at the facility with the annual submittal of the Equipment Inventory List.	Minn. R. 7007.0800, subp. 5
EXISTING INDIRECT HEATING EQUIPMENT "existing indirect heating equipment" means indirect heating equipment on which construction, modification, or reconstruction did not commence after January 31, 1977.	hdr
Total Particulate Matter: less than or equal to 0.6 lbs/million Btu heat input	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity , except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0510, subp. 2
NEW INDIRECT HEATING EQUIPMENT "new indirect heating equipment" means indirect heating equipment on which construction, modification, or reconstruction commenced after January 31, 1977.	hdr
Total Particulate Matter: less than or equal to 0.4 lbs/million Btu heat input	Minn. R. 7011.0515, subp. 1
Opacity: less than or equal to 20 percent opacity , except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0515, subp. 2
STANDARDS OF PERFORMANCE FOR FOSSIL-FUEL-BURNING DIRECT HEATING EQUIPMENT.	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot unless required to further reduce emissions to meet the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0610, subp. 1(A)(1)
Opacity: less than or equal to 20 percent opacity , except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0610, subp. 1(A)(2)
STANDARDS OF PERFORMANCE FOR STATIONARY INTERNAL COMBUSTION ENGINES	hdr
Sulfur Dioxide: less than or equal to 0.5 lbs/million Btu heat input	Minn. R. 7011.2300, subp. 2
Opacity: less than or equal to 20 percent opacity once operating temperatures have been attained.	Minn. R. 7011.2300, subp. 1

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/05/04

Facility Name: Hutchinson Technology Inc - Hutchinson

Permit Number: 08500032 - 004

Subject Item: GP 006 Plasma Etchers

Associated Items: EU 089 Plasma Etcher 1
 EU 090 Plasma Etcher 2
 EU 100 Plasma Etcher 12
 EU 101 Plasma Etcher 13
 EU 104 Plasma Etcher 16
 EU 105 Plasma Etcher 17
 EU 106 Plasma Etcher 18
 EU 107 Plasma Etcher 19
 EU 108 Plasma Etcher 20
 EU 109 Plasma Etcher 21
 EU 110 Plasma Etcher 22
 EU 111 Plasma Etcher 23
 EU 112 Plasma Etcher 24
 EU 113 Plasma Etcher 25
 EU 114 Plasma Etcher 26
 EU 115 Plasma Etcher 27
 EU 130 Plasma Etcher 28
 EU 131 Plasma Etcher 29
 EU 132 Plasma Etcher 30
 EU 133 Plasma Etcher 31
 EU 134 Plasma Etcher 32
 EU 135 Plasma Etcher 33
 EU 136 Plasma Etcher 34 - clean
 EU 137 Plasma Etcher 35
 EU 138 Plasma Etcher 36 - clean
 EU 139 Plasma Etcher 37 - clean
 EU 140 R&D Plasma Etcher
 EU 153 Plasma Etcher 38
 EU 154 Plasma Etcher 39
 EU 155 Plasma Etcher 40
 EU 156 Plasma Etcher 41
 EU 157 Plasma Etcher 42
 EU 158 Plasma Etcher 43
 EU 159 Plasma Etcher 44
 EU 160 Plasma Etcher 45
 EU 161 Plasma Etcher 46

What to do	Why to do it
GP 006 emission units are limited to plasma etchers that emit HF, NOx, and CO.	Title I Condition: emission unit restriction to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 2
Recordkeeping: once each day, record the hours each plasma etcher was operated during the previous day. By the 15th day of each month calculate and record: 1) GP 006 operating hours for the previous month; 2) GP 006 HF, NOx, and CO emissions for the previous month using operating hours calculated in item one, and GP 006 emission factors.	Title I Condition: recordkeeping to avoid classification as a major source under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/05/04

Facility Name: Hutchinson Technology Inc - Hutchinson

Permit Number: 08500032 - 004

The NOx emission factor for the plasma etchers is 0.18 lb/plasma etcher-hr. The CO emission factor for the plasma etchers is 0.32 lb/plasma etcher-hr. The HF emission factor for the plasma etchers is 0.319 lb/plasma etcher-hr.	Minn. R. 7007.0800, subp. 2
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TABLE A: LIMITS AND OTHER REQUIREMENTS

05/05/04

Facility Name: Hutchinson Technology Inc - Hutchinson

Permit Number: 08500032 - 004

Subject Item: GP 007 Miscellaneous Equipment**Associated Items:** EU 027 Flammable Solvent Precision Parts Cleaner

What to do	Why to do it
GP 007 emission units are emission units not included in Groups 001-006 and use VOC- and/or HAP-containing materials.	Title I Condition: emission unit restriction to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 2
Daily Recordkeeping: Record separately for each emission unit in GP 007, the volume of each VOC- and HAP-containing material when the material is taken from the inventory on hand stock. On the day of waste shipment, record the volume of the shipment. By the 15th day of the month calculate and record the mass of VOC and each HAP in the waste shipments for the previous month. Note: In order to calculate the mass of VOC and HAP in waste shipped off-site, the VOC and HAP content of the waste material must be equivalent to the VOC and HAP content in the virgin material (wastes with different VOC and HAP content can not be mixed together).	Title I Condition: recordkeeping to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 5
(continued) If different wastes were mixed, the Permittee must sample each drum and analyze the waste to determine VOC and HAP content (according to EPA or ASTM methods), in order to receive credit for the mass of VOC and HAP in recycled/recovered waste, or, the Permittee must use the lowest MSDS values of VOC and HAP of the materials that comprise mixed wastes.	Title I Condition: recordkeeping to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 5
Monthly Recordkeeping: by the 15th day of each month calculate and record the following data for GP 007: 1) the total quantity of each type of VOC- and HAP-containing material used during the previous month; 2) the emissions during the previous month of VOC and HAP listed on the MSDS, based on the quantity of each type of VOC- and HAP-containing material used during the previous month, and the maximum percentage of each VOC and HAP component (stated on the relevant MSDS); 3) the mass of VOC and each HAP in waste shipped during the previous month; 4) GP 007 VOC and individual HAP emissions during the previous month based on the emissions (determined in item two), minus waste shipped (determined in item three).	Title I Condition: recordkeeping to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/05/04

Facility Name: Hutchinson Technology Inc - Hutchinson

Permit Number: 08500032 - 004

Subject Item: CE 001 Direct Flame Afterburner w/Heat Exchanger**Associated Items:** EU 003 Roller Coater 1

EU 088 Roller Coater 2

What to do	Why to do it
OPERATIONAL REQUIREMENTS	hdr
Control Efficiency: For emission calculations the Permittee can use the following values, or the values from the most recent performance test: 84% for the boiler based on a capture efficiency of 89% and a destruction efficiency of 95% for VOC.	Title I Condition: control efficiency requirement to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 2
Operational Requirement: Route all captured emissions from the roller coaters to the thermal oxidizer at all times except for breakdowns or malfunction or when the roller coaters are being cleaned. Time periods when emissions are not routed to the thermal oxidizer shall be treated as uncontrolled in the emission calculations for the facility.	Title I Condition: operating requirement to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 2
Recordkeeping - Control Equipment Bypasses: Record the date and start and stop times of each thermal oxidizer bypass period. Record the volume of coating material used during the bypass period. Report all bypasses in the facility's semiannual deviation report, and as required by Minn. R. 7019.1000. Apply a capture efficiency of 0% during a bypass period when conducting monthly emissions calculations.	Title I Condition: recordkeeping to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 5; Minn. R. 7007.0800, subp. 6
Temperature: greater than or equal to 1300 degrees F using 3-hour Rolling Average while the roller coaters are operated. This minimum temperature may change if a new minimum is set pursuant to Minn. R. 7017.2025, subp. 3, based on the average temperature recorded during the most recent performance test where compliance for VOC emissions was demonstrated.	Title I Condition: monitoring to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 14
Corrective Action: if the 3-hour rolling average temperature falls below the required minimum value, take corrective action according to the O&M Plan, to restore the temperature to at least the required minimum value as soon as possible. Record all corrective actions taken when completed. If the temperature falls below the required minimum value, all emissions during this time shall be considered uncontrolled and a control efficiency of 0% shall be used in the monthly emissions calculations.	Title I Condition: monitoring to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subps. 5 and 14
TESTING	hdr
Initial Performance Test: due 365 days after 03/04/2002 to determine the VOC capture and destruction efficiencies of the thermal oxidizer control system for use in calculating emissions as described above. Subsequent tests shall be before the end of each 24 months after the Initial Performance Test.	Title I Condition: testing to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7017.2020, subp. 1
Performance Test: due 90 days before Startup of material used in the roller coaters that contains any HAP for which a destruction efficiency test hasn't been conducted under Minn. R. 7017.2020-7017.2060. Until a performance test is conducted, a control efficiency can not be used for the new HAP when calculating monthly emissions.	Title I Condition: testing to avoid major source status under 40 CFR Section 63.2; Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Performance Test and all tests required to establish a HAP destruction efficiency.	Minn. R. 7017.2030, subp.4
TEMPERATURE MONITORING	hdr
Monitoring: the Permittee shall install the necessary monitoring equipment for measuring and recording the temperature at the combustion chamber outlet. The monitoring equipment must be installed, operated, and properly maintained when the roller coaters are in operation. The temperature monitoring device must be accurate to within +/- 10 degrees Fahrenheit, and the recordkeeping system must be capable of tracking and recording a 3-hour rolling average or a raw temperature in a retrievable and readable manner for a period of 5 years.	Title I Condition: monitoring to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 4
Recordkeeping: the Permittee shall maintain either a continuous hard copy readout of the inlet temperature, electronic copy, or maintain a hard copy of manual readings taken at least once every 15 minutes. The Permittee shall also calculate and record 3-hour rolling averages of these readings, as described in Appendix A of this permit.	Title I Condition: monitoring to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/05/04

Facility Name: Hutchinson Technology Inc - Hutchinson

Permit Number: 08500032 - 004

Subject Item: CE 002 Packed-Gas Adsorption Column

Associated Items: EU 089 Plasma Etcher 1
 EU 090 Plasma Etcher 2
 EU 100 Plasma Etcher 12
 EU 101 Plasma Etcher 13
 EU 104 Plasma Etcher 16
 EU 105 Plasma Etcher 17
 EU 106 Plasma Etcher 18
 EU 107 Plasma Etcher 19
 EU 108 Plasma Etcher 20
 EU 109 Plasma Etcher 21
 EU 110 Plasma Etcher 22
 EU 111 Plasma Etcher 23
 EU 112 Plasma Etcher 24
 EU 113 Plasma Etcher 25
 EU 114 Plasma Etcher 26
 EU 115 Plasma Etcher 27
 EU 130 Plasma Etcher 28
 EU 131 Plasma Etcher 29
 EU 132 Plasma Etcher 30
 EU 133 Plasma Etcher 31
 EU 134 Plasma Etcher 32
 EU 135 Plasma Etcher 33
 EU 136 Plasma Etcher 34 - clean
 EU 137 Plasma Etcher 35
 EU 138 Plasma Etcher 36 - clean
 EU 139 Plasma Etcher 37 - clean
 EU 140 R&D Plasma Etcher
 EU 153 Plasma Etcher 38
 EU 154 Plasma Etcher 39
 EU 155 Plasma Etcher 40
 EU 156 Plasma Etcher 41
 EU 157 Plasma Etcher 42
 EU 158 Plasma Etcher 43
 EU 159 Plasma Etcher 44
 EU 160 Plasma Etcher 45
 EU 161 Plasma Etcher 46

What to do	Why to do it
OPERATIONAL REQUIREMENTS	hdr
Control Efficiency: For emission calculations the Permittee can use a control efficiency of 99% for HF, or the value from the most recent performance test.	Title I Condition: control efficiency requirement to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 2
Operational Requirement: Route all emissions from the plasma etchers to the scrubber at all times except for breakdowns or malfunctions.	Title I Condition: control equipment requirement to avoid major source status under 40 CFR Section 63.2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/05/04

Facility Name: Hutchinson Technology Inc - Hutchinson

Permit Number: 08500032 - 004

Recordkeeping - Control Equipment Bypasses: Record the date and start and stop time of each scrubber bypass period. Report all scrubber bypasses in the facility's semiannual deviation report, and as required by Minn. R. 7019.1000. Apply a control efficiency of 0% during a bypass period when conducting monthly emissions calculations.	Minn. R. 7007.0800, subp. 5; Minn. R. 7007.0800, subp. 6
Scrubbing Liquid pH: greater than or equal to 9 pH units after treatment by the caustic portion of the scrubbing system.	Title I Condition: monitoring to avoid major source status under 40 CFR Section 63.2; Minn. R. 7007.0800, subp. 4
Recirculated Liquid Flow Rate: greater than or equal to 4 gallons/minute	Title I Condition: monitoring to avoid major source status under 40 CFR Section 63.2; Minn. R. 7007.0800, subp. 4
Upstream Water Spray Valves: inspect these valves once per calendar quarter to ensure they are in the open position. Make a record of each inspection.	Title I Condition: monitoring to avoid major source status under 40 CFR Section 63.2; Minn. R. 7007.0800, subp. 4
Monitoring and Recordkeeping: the Permittee shall obtain and record the liquid flow rate and scrubbing liquid pH once each day during operation.	Title I Condition: monitoring and recordkeeping to avoid major source status under 40 CFR Section 63.2; Minn. R. 7007.0800, subp. 4; Minn. R. 7007.0800, subp. 5
Corrective Action: if any of the parameters monitored on the scrubber falls outside the range, take the appropriate corrective action as stated in the O&M Plan. Record all corrective actions taken when completed. If any of the scrubber parameters fall outside their required ranges, all emissions during this time shall be considered uncontrolled and a control efficiency of 0% shall be used in the monthly emissions calculations.	Title I Condition: monitoring to avoid major source status under 40 CFR Section 63.2; Minn. R. 7007.0800, subps. 5 and 14
TESTING	hdr
Performance Test: due before 48 months starting 03/04/2002 to determine the HF emission factor, per plasma etcher, after control, for use in calculating emissions as described above.	Title I Condition: testing to avoid major source status under 40 CFR Section 63.2; Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Performance Test	Minn. R. 7017.2030, subp.4
MONITORING	hdr
Monitoring: the Permittee shall install the necessary monitoring equipment for measuring the Scrubbing Liquid pH and the liquid flow rate. The monitoring equipment must be installed, operated, and properly maintained when the plasma etchers are in operation. Records must be kept for a period of 5 years.	Title I Condition: monitoring to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 4
The monitoring equipment must be installed, in use, and properly maintained when the plasma etchers are in operation. Calibrate the monitoring equipment annually, or as required by the manufacturing specification.	Title I Condition: monitoring to avoid major source status under 40 CFR Section 63.2; Minn. R. 7007.0800, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/05/04

Facility Name: Hutchinson Technology Inc - Hutchinson

Permit Number: 08500032 - 004

Subject Item: CE 003 Direct Flame Afterburner w/Heat Exchanger**Associated Items:** EU 001 Dipper 1

EU 002 Dipper 2

What to do	Why to do it
OPERATIONAL REQUIREMENTS	hdr
Control Efficiency: For emission calculations the Permittee can use the following value, or the values from the most recent performance test: 42% for VOC.	Title I Condition: control efficiency requirement to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 2
Recordkeeping - Control Equipment Bypasses: Record the date and start and stop times of any period where the entire boiler control system was bypassed (e.g. through the normally locked out bypass stack, not through the normally used bypass stack whereby part of the gas flow not demanded by the boiler is routed to the atmosphere). Record the volume of coating material used during the bypass period. Report all bypasses in the facility's semiannual deviation report, and as required by Minn. R. 7019.1000. Apply a capture efficiency of 0% during a bypass period when conducting monthly emissions calculations.	Title I Condition: control efficiency requirement to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 2
Boiler Firing Rate: greater than or equal to low fire while the dip coaters are being vented to the boiler.	Title I Condition: monitoring to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 14
Corrective Action: if the boiler firing rate setting falls below the required minimum value, take corrective action according to the O&M Plan as soon as possible, to restore the boiler firing rate to at least the required minimum value. Record all corrective actions taken when completed. If the boiler firing rate falls below the required minimum value all emissions during this time shall be considered uncontrolled and a control efficiency of 0% shall be used in the monthly emissions calculations.	Title I Condition: monitoring to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subps. 5 and 14
TESTING	hdr
Performance Test: due before 24 months starting 03/04/2002 to determine the VOC control (i.e. capture and destruction) efficiencies of the boiler system for use in calculating emissions as described above. All tests shall be done under low boiler load conditions.	Title I Condition: testing to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7017.2020, subp. 1
Performance Test: due 90 days before Startup of material used in the dipcoaters that contains any HAP for which a destruction efficiency test hasn't been conducted under Minn. R. 7017.2020-7017.2060. Until a performance test is conducted, a control efficiency can not be used for the new HAP when calculating monthly emissions.	Title I Condition: testing to avoid major source status under 40 CFR Section 63.2; Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Performance Test and all tests required to establish a HAP destruction efficiency.	Minn. R. 7017.2030, subp.4
TEMPERATURE MONITORING	hdr
Monitoring: the Permittee shall install the necessary monitoring equipment for measuring and recording the firing rate of the boiler. The monitoring equipment must be installed, operated, and properly maintained when the dip coaters are vented to the boiler. The recordkeeping system must be capable of tracking and recording a continuous reading of the boiler firing rate in a retrievable and readable manner for a period of 5 years.	Title I Condition: monitoring to avoid major source status under 40 CFR Section 52.21 and 63.2; Minn. R. 7007.0800, subp. 4
Performance Test: due 90 days before Startup of material used in the dip coaters that contains any HAP for which a destruction efficiency test hasn't been conducted under Minn. R. 7017.2020-7017.2060. Until a performance test is conducted, a control efficiency can not be used for the new HAP when calculating monthly emissions.	Title I Condition: testing to avoid major source status under 40 CFR Section 63.2; Minn. R. 7017.2020, subp. 1

TABLE B: SUBMITTALS

05/05/04

Facility Name: Hutchinson Technology Inc - Hutchinson
Permit Number: 08500032 - 004

Table B lists most of the submittals required by this permit. Please note that some submittal requirements may appear in Table A or, if applicable, within a compliance schedule located in Table C. Table B is divided into two sections in order to separately list one-time only and recurrent submittal requirements.

Each submittal must be postmarked or received by the date specified in the applicable Table. Those submittals required by parts 7007.0100 to 7007.1850 must be certified by a responsible official, defined in Minn. R. 7007.0100, subp. 21. Other submittals shall be certified as appropriate if certification is required by an applicable rule or permit condition.

Send any application for a permit or permit amendment to:

Permit Technical Advisor
Permit Section
Air Quality Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Also, where required by an applicable rule or permit condition, send to the Permit Technical Advisor notices of:

- accumulated insignificant activities,
- installation of control equipment,
- replacement of an emissions unit, and
- changes that contravene a permit term.

Unless another person is identified in the applicable Table, send all other submittals to:

Supervisor
Compliance Determination Unit
Air Quality Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Send submittals that are required to be submitted to the U.S. EPA regional office to:

Mr. George Czerniak
Air and Radiation Branch
EPA Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

Send submittals that are required by the Acid Rain Program to:

U.S. Environmental Protection Agency
Clean Air Markets Division
1200 Pennsylvania Avenue NW (6204N)
Washington, D.C. 20460

TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS

05/05/04

Facility Name: Hutchinson Technology Inc - Hutchinson

Permit Number: 08500032 - 004

What to send	When to send	Portion of Facility Affected
Application for Permit Reissuance	due 180 days before expiration of Existing Permit	Total Facility
Performance Test Notification (written)	due 30 days before Performance Test	CE002
Performance Test Notification (written)	due 30 days before Performance Test and all tests required to establish a HAP destruction efficiency.	CE001, CE003
Performance Test Plan	due 30 days before Performance Test	CE002
Performance Test Plan	due 30 days before Performance Test and all tests required to establish a HAP destruction efficiency.	CE001, CE003
Performance Test Report - Microfiche Copy	due 105 days after Performance Test	CE002
Performance Test Report - Microfiche Copy	due 105 days after Performance Test and all tests required to establish a HAP destruction efficiency.	CE001, CE003
Performance Test Report	due 45 days after Performance Test	CE002
Performance Test Report	due 45 days after Performance Test and all tests required to establish a HAP destruction efficiency.	CE001
Performance Test Report	due 45 days after Performance Test and all tests required to establish a HAP destruction efficiency.	CE003

TABLE B: RECURRENT SUBMITTALS

05/05/04

Facility Name: Hutchinson Technology Inc - Hutchinson

Permit Number: 08500032 - 004

What to send	When to send	Portion of Facility Affected
Semiannual Deviations Report	due 30 days after end of each calendar half-year starting 03/04/2002 . The first semiannual report submitted by the Permittee shall cover the calendar half-year in which the permit is issued. The first report of each calendar year covers January 1 - June 30. The second report of each calendar year covers July 1 - December 31.	Total Facility
Compliance Certification	due 30 days after end of each calendar year starting 03/04/2002 (for the previous calendar year). To be submitted on a form approved by the Commissioner. The report covers all deviations experienced during the calendar year.	Total Facility
Emissions Inventory Report	due 91 days after end of each calendar year starting 03/04/2002 (April 1). To be submitted on a form approved by the Commissioner.	Total Facility

APPENDIX MATERIAL

Facility Name: Hutchinson Technology Inc - Hutchinson

Permit Number: 08500032-004

Appendix A - Methodology For Calculating Emissions

A. Calculating emissions on a 12-month Rolling Sum basis:

To calculate the emissions for Groups 001 and 007 on a **12-month** Rolling Sum basis, each month the Permittee shall sum the monthly emissions from the previous 12-month period. For the first 11 months of operation, monthly emission data for the months prior to permit issuance shall be determined using the Permittee's actual operating history.

Monthly emissions are calculated as specified in the equations below.

To assist in the calculation of the 12-month rolling sums, the following clarifications are added below. The Permittee shall review any new material used on site for new HAP and/or VOC.

The following pollutants emitted from the facility are classified as both HAP and VOC: glycol ethers, toluene, xylene, and cresol.

The following pollutants emitted from the facility are only classified as VOC: monoethanolamine (MEA), isopropyl alcohol (IPA), cyclohexane, propylene glycol monomethyl ether acetate (PGMEA), naptha, and ethanol.

The following pollutants emitted from the facility are only classified as HAP: HCl, HF, CN, Pb, and chlorine (gas).

NOTE: to make these determinations for new materials consult 40 CFR Section 51.100(s) and Section 112(b) of the Clean Air Act

A.1. Methodology For Calculating Monthly VOC and HAP Emissions Based On Emission Factors - Groups 002-003, and 006

Groups that have emission factors contained in the permit shall calculate emissions based on multiplying the emission factor by the cumulative hours the specific type of emission units were operated for the month. Specifically,

Equation 1:

$$\text{VOC/HAP} = \text{EF}_i \times h_i$$

where:

VOC/HAP = emissions, lb/mo

EF_i = the emission unit specific emission factor for one compound i , lb/emission unit-hr

h_i = the total number of hours the specific type of emission unit was operated for the month

A.2. Methodology For Calculating Monthly VOC and HAP Emissions Based On Material Usage - Groups 001 and 007

Equation 2.a. for emission units qualifying for 100 % capture efficiency:

$$\text{VOC/HAP} = (\sum A_i V_i) \times (1 - \text{control eff}) \times 0.0005$$

Equation 2.b. for emission units qualifying for less than 100 % capture efficiency:

$$\text{VOC/HAP} = [(\sum A_i V_i) \times \text{capture eff} \times (1 - \text{control eff}) \times 0.0005] + [(\sum A_i V_i) \times (1 - \text{capture eff}) \times 0.0005]$$

where:

i = denotes each separate VOC/HAP containing material used

A_i = amount of VOC/HAP containing material used, lb/month

V_i = fraction of VOC/HAP in A_i as applied, by weight

capture eff = capture efficiency of the VOC/HAP control equipment

control eff = control efficiency of the VOC/HAP control equipment

0.0005 = conversion factor, pounds to tons

Determination of the Use of VOC containing material (A_i)

A_i may be determined by either:

1) direct measurement

2) mass balance calculation*

*The mass balance calculation can account for recovered/recycled VOC containing material as long as records are kept of the weights of the recovered material on a monthly basis.

A.3. Methodology For Calculating Monthly Combustion Source Emissions (Indirect heating sources and Internal Combustion Engines) based on emission factors - Group 005

SO₂, NO_x, and CO are calculated using Equation 3:

Equation 3:

$$\begin{aligned} \text{Pollutant} = & 0.0005 \times [(EF \times Q)_{ng} + (EF \times Q)_{lpgb} + (EF \times Q)_{lpgp} + (EF \times Q)_{do}]_{ihs} \\ & + 0.0005 \times [(EF \times Q)_{ng} + (EF \times Q)_{lpgb} + (EF \times Q)_{lpgp} + (EF \times Q)_{do}]_{dhs} \\ & + 0.0005 \times [(EF \times Q)_{ng} + (EF \times Q)_{do} + (EF \times Q)_g]_{rice} = \text{tons/month} \end{aligned}$$

where:

EF = emission factor (see Table 1 and 2)

Q = actual quantity of fuel burned per month (group the units that are appropriate to the emission factor for each fuel type.)

ng = natural gas

lpgb = liquefied petroleum gas (butane)

lpgp = liquefied petroleum gas (propane)

do = distillate oil

g = gasoline

ihs = indirect heating source

dhs = direct heating emission source

rice = reciprocating internal combustion engines

0.0005 = conversion factor, pounds to tons

Table 1

Industrial Indirect and Direct Heating Sources				
Emission Factors				
Pollutant	Natural Gas lb/million ft³	LPG - Butane lb/1000 gal	LPG - Propane lb/1000 gal	Distillate Oil lb/1000 gal
SO _x	0.6	0.09S	0.10S	144S
NO _x	100	21	19	25
CO	84	3.6	3.2	5

Table 2

Industrial Reciprocating Internal Combustion Engines			
Emission Factors			
Pollutant	Natural Gas lb/million ft³	Distillate Oil (Diesel) lb/1000 gallons	Gasoline lb/1000 gallons
SO _x	0.6	31.2	5.31
NO _x	3400.0	469.0	102.0
CO	430.0	102.0	3940.0

Where:

SO₂ = Sulfur Dioxide
 NO_x = Oxides of Nitrogen
 CO = Carbon Monoxide
 MM = Million
 Btu = British thermal unit
 lbs = pounds
 ft³ = cubic feet
 gal = gallons
 S = % sulfur in the fuel

Note: any subsequent revisions of the emission factors in sections 1.3, 1.4, 3.3, 3.4 of AP-42 supercede the numbers in Tables 1 and 2.

B. Calculating GP 001 temperature on a 3-hour Rolling Average basis:

To calculate temperature on a **3-hour** Rolling Average basis, once each hour the Permittee shall sum and average all temperature data points for the previous operating hour, and then sum and average the hourly temperature values from the previous 3 operating hours.

C. Calculating GP 002, GP 003, and GP 004 temperature on a 5-day Rolling Average basis:

To calculate temperature on a **5-day** Rolling Average basis, once each day the Permittee shall sum and average the daily temperature values from the previous 5 operating days.

TECHNICAL SUPPORT DOCUMENT
For
DRAFT AIR EMISSION PERMIT NO. 08500032-004

This technical support document is intended for all parties interested in the permit and to meet the requirements that have been set forth by the federal regulations and Minn. R. (40 CFR, Section 70.7(a)(5) and Minn. R. 7007.0850, subp.1). The purpose of this document is to provide the legal and factual justification for each applicable requirement or policy decision considered in the preliminary determination to issue the permit.

1. General Information

1.1. Applicant and Stationary Source Location:

Applicant/Address	Stationary Source/Address (SIC Code: 3577)
Mr. Eric C. Yost Corporate Environmental Engineer 40 West Highland Park Drive Hutchinson, MN 55350	40 W Highland Park Dr NE Hutchinson McLeod County
Contact: Mr. Eric Yost 320-587-1541; fax – 320-587-1810	

1.2. Description of the Permit Action

Description Of The Facility

Hutchinson Technology, Inc. (HTI) is a manufacturer of suspension assemblies for all sizes of computer disk drives. The suspension assembly holds the read/write head at extremely small distances above the spinning disks. HTI currently holds about 50 percent of the world market, with its only competitors being in Asia. Two types of suspension assemblies are made, conventional and TSA (suspensions incorporating integrated electrical leads). The TSA product will eventually become the core product manufactured by the HTI.

The high tech market HTI is in can prove to be very volatile. Sales of all types of suspension assemblies from HTI have increased and decreased at rates greater than 10 percent per year over the last five years. Most products in this industry usually only have lifetimes of about three years. Because of this volatility, HTI needs to have a permit that is as flexible as possible so that it can respond quickly to changing market demands.

The significant emission sources at the facility are all evaporative and include: the photoetching solutions, and the many different cleaning solvents used throughout all areas of the plant. About 75 percent of the volatile organic compound emissions at the facility are emitted during the application of the photoresist solution by either the two roller coaters or the two dip coaters. The roller coaters are vented through a hood to a thermal oxidizer while the dip coaters are vented to

a process boiler. Other emission units at the facility are controlled as well. The air from the plasma etching solutions is vented to a scrubber to remove HF. Other evaporative sources such as the cleanliness and strippers have spray nozzles in the exhaust vents that spray water countercurrent to the exhaust gas flow. Testing has not been done to determine the control efficiencies of the spray nozzles, so the control efficiency is not claimed by the facility. The HF scrubber, the thermal oxidizer and boiler control efficiency have all been tested and their control efficiencies have been claimed in the permit.

There are Metal Hydroxide Sludge Dryers that are listed in the permit as only having natural gas combustion emissions. It was discovered that these units may also generate particulate matter (PM), and these emissions are through the process of drying sludge. HTI believes the PM emissions are less than 1 ton per year per sludge dryer.

1.3 Description of the Activities Allowed by this Permit Action

Applicability Determination: Received August 8, 2002

The applicability determination is Attachment 2 to this TSD

The Part 70 permit for this facility required an Emission Factor Engineering Test be conducted for monoethanolamine (MEA) and butyl carbitol (a glycol ether) emissions from the conventional and trace strippers. The engineering test was conducted to verify which emission model was appropriate to use for stripper VOC emissions. The models in question used Raoult's law and Henry's Law, including verification of appropriate constants. The results of the engineering test showed that:

- Butyl carbitol emissions could be predicted conservatively by using Henry's Law, and using EPA's Printed Circuit Board Henry's Law constant
- MEA emissions could be predicted conservatively by using Raoult's Law.

MPCA staff concurs with the above conclusion presented by HTI. This information will be used to process the major modification received November 4, 2003.

Major Modification Request: Received November 4, 2003

This modification request consists of five parts:

1. increasing the maximum temperature for EU018 and EU080 (within GP002, will increase emission factor for Glycol Ethers and MEA, and VOC potential emissions as both HAPs are also VOCs).
2. increasing the maximum temperature for all GP003 sumps
3. increasing the MEA concentration in EU018 and EU080 (within GP002)
4. removing EU119 as of 10/03 (within GP003, see facility description) and
5. adding EU162 to GP003.

Major Modification Request: Received December 18, 2003

The Permittee proposed 3 changes to the permit in this application:

1. increase the emission factor for HF from Group 006 plasma etchers,
2. correct permit language references to emission units, and
3. clarify which group EU140 is contained in.

Comments on Permit: Received from Permittee 2/10/04

The letter is Attachment 5 to this TSD.

1. For CE003, changed language to read “dip” instead of “roller” for dip coaters.
2. For CE002, added “or as required by the manufacturer’s specification” to the requirement to calibrate monitoring equipment to address issues for the in-line flow meter.
3. Deferred final comment to reissuance of total facility permit regarding changing rule citation for thermal oxidizer requirements. (Permittee requested only changes that would not hold up the permit action be corrected at this time. Therefore, this has been deferred.)

Comments on Permit: Received from EPA during 45-day review period 4/26/04

The comments, from e-mail, are attached to this TSD

1. The requirements relating to temperature limits were rewritten to be more clear. The words “using other” were removed, and it was clarified that the Permittee uses a thermocouple to measure temperature.
2. The remaining comments were outside the scope of the modification that was put on public notice. They have been highlighted in our database and in the permit file. They should be addressed when the total facility permit is reissued.

Concurrence with this resolution was received from EPA on 5/3/04 via e-mail. (attached)

1.4 Facility Emissions:

Table 1. Emissions Associated With the Modification

Pollutant	Potential to Emit from modification (lb/hr)	Potential to Emit from modification (TPY)	Net Emission Change (TPY)	NSR/ 112(g) Threshold (TPY)	NSR/ MACT Review Required (Yes or No)
PM					
PM ₁₀					
SO ₂					
NO _x					
VOC**	5.55	24.37	0*	NA	No
CO					
Lead					
HF (GP006HAP)	0.09305	0.40756	0*	NA	No
MEA (GP002& 003 HAP)	5.48	24.04	0*	NA	No
Glycol ether (GP002 HAP)	0.0758	0.332	0*	NA	No
Combined HAPs	5.65	24.78	0*	NA	No

*The facility has an existing limit for HAP emissions which is not being changed by this modification. Therefore, even though the PTE increases, the allowable emissions do not increase.

** MEA and Glycol ethers are also VOCs. HF is not a VOC.

Table 2. Total Facility Classification

Classification	Major/Affected Source	Synthetic Minor	Minor
PSD			X
Part 70 Permit Program	X		

2. Regulatory and/or Statutory Basis

New Source Review

The existing facility has taken limits to avoid major source status under New Source Review regulations. No changes to the limits are authorized by this permit.

Part 70 Permit Program

The existing facility is a major source under the Part 70 permit program.

New Source Performance Standards (NSPS)

No New Source Performance Standards are applicable to this modification.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

The existing facility has accepted limits on HAP usage such that it is a non-major source under 40 CFR Section 63. Thus, no NESHAPs apply.

Compliance Assurance Monitoring (CAM)

Per “Technical Guidance Document: Compliance Assurance Monitoring” by U.S. Environmental Protection Agency (EPA), Scrubbing liquid pH, recirculated liquid flow rate, and quarterly inspection of upstream water spray indicators monitored when a Packed-Gas Adsorption Column is used for VOC control. (CE002 controls GP006 Plasma Etchers)

Justification – Meets CAM requirements per 40 CFR Section 64: This permit amendment contains requirements for the liquid flow rate and scrubbing liquid pH once each day of operation. Also, the Permittee is required to operate and maintain the packed-gas adsorption column according to the control equipment manufacturer’s specifications and the facility Operation and Maintenance plan. The Permittee is further required to operate the control equipment monitoring equipment at all times the control equipment is required to operate.

Table 3. Regulatory Overview of Units Affected by the Modification

EU, GP, or SV	Applicable Regulations	Comments:
GP003	Minn. R. 7007.0800, subp. 2	Changed MEA and glycol ether emission factors due to increased temperatures, increased molar concentrations and change in calculation methodology.
GP006	Minn. R. 7007.0800, subp. 2	Increased HF emission factor from 0.0608 lb/hr to 0.319 lb/hr

3. Technical Information

Emission Factor Determination

MEA Emission Factors: Use Raoult's Law to conservatively model MEA emissions.

Glycol Ethers (including Butyl Carbitol): Use Henry's Law to conservatively model GE emissions. See attachment 3 for detailed spreadsheets.

Method	EF for 125 deg F (lb/hr), 0.00490 mole fraction	EF for 145 deg F (lb/hr), 0.036 mole fraction	EF for 149 deg F (lb/hr), 0.0332 mole fraction
Raoult's Law (MEA)	0.1314 lb/hr 0.575 tpy	1.3885 lb/hr 6.082 tpy	1.7062 lb/hr 7.473 tpy
Henry's Law(Glycol Ethers, including Butyl Carbitol)	0.0254 lb/hr 0.1113 tpy	0.0633 lb/hr 0.2773 tpy	NA

Sample Calculation for Henry's Law Model:

Condition: 145 deg F (63 deg C) and 300 scfm exhaust rate

Note: 300 scfm = 5.0976 E+05 L per hour

$N = PV/RT$ where R = gas constant = 0.082057 L*atm per deg K*mol, T = deg K, P = atm, V = Liters

Note: P = (Henry's Constant)*(molarity of compound), where molarity for Group 002 strippers is 0.2965 mol/L

$$n/hr = (PV/hr)/(0.082057)*(273 \text{ deg K} + 63 \text{ deg C}) = (P*5.0976 \text{ E}05 \text{ L/hr})/27.571$$

$$= (3.23 \text{ E-}05 \text{ atm L/mol}*0.2965 \text{ mol/L})*(5.096 \text{ E}05 \text{ L/hr})/27.571 = 0.1776 \text{ mol/hr}$$

$$\text{Emission Rate} = (0.1776 \text{ mol/hr})(162.2 \text{ g/mol})(1 \text{ lb per } 453.5 \text{ g}) = \mathbf{0.0633 \text{ lb per hour}}$$

EU	Change in VOC PTE		Change in MEA PTE		Final MEA PTE of unit	Change in Glycol ether PTE		Final GE PTE of unit	
	lb/hr	tpy	lb/hr	tpy	tpy	lb/hr	tpy	lb/hr	tpy
018	1.295	5.67	1.257	5.507	1.3885	0.0379	0.166	0.2773	1.2146
080	1.295	5.67	1.257	5.507	1.3885	0.0379	0.166	0.2773	1.2146
082	0.633	2.778	0.633	2.778	7.473	-	-	-	-
083	0.633	2.778	0.633	2.778	7.473	-	-	-	-
119	Removed	Removed	-	-	-	-	-	-	-
162	1.7062	7.473	1.7062	7.473	7.473	-	-	-	-
TOTAL	5.55	24.37	5.48	24.04	na	0.0758	0.332	na	na

Note 1: lb/hr calculation is increase in PTE due to temperature and molarity increases

Note 2: PTE information is used to determine the type of modification required and to increase the understanding of the process emissions. All the emission units already have VOC and HAP limits applied to them, so allowable emissions will not increase.

Hydrogen Fluoride Modification

1. HTI proposes to modify its operations of the plasma etcher and thereby change conditions in which some products receive more photoresist etching with more feed etchant gas (nitrogen trifluoride) added. Consequently, when these products undergo plasma etching there is more hydrogen fluoride (HF) byproduct gas produced. Since the permittee does not want to separately track production of the higher HF emitting products, they have requested that the HF emission factor for Group 006 be increased. The previous emission factor is 0.0608 lb/etcher-hour, the new emission factor will be 0.0319 lb/etcher-hr. This new emission factor assumes worst-case conditions for producing HF including amount of resist etched and the greatest HF generating product line. The plasma etcher exhaust is wet-scrubbed to a 99% control level by a packed gas adsorption column, so the increase in actual emissions is minimal. Group 006 controlled PTE emissions will increase from the current 0.0957 tpy to 0.5033 tpy (36 etchers). Spreadsheets with data and calculations for the HF are in Attachment 4 to this TSD.

4. Add EU104 and EU140 to CE002 in the permit. Correction of an error.
5. EU140 should be included as part of a process group in Attachment 2 (Air Emissions Unit Cross Reference) of a previous TSD. This is noted. It is correct in the permit.

4. Conclusion

Based on the information provided by Hutchinson Technology Inc., the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 08500032-004 and this technical support document, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

Staff Members on Permit Team: Bonnie Nelson (permit writer/engineer)
 Jelil Abdella (enforcement)
 Dan Brady (stack testing)
 John Chikkala (peer reviewer)

- Attachments:
1. Facility Description and CD-01 Forms
 2. Applicability Determination
 3. PTE calculations for changes to MEA and glycol ether emission factors
 4. PTE calculations for changes to Hydrogen Fluoride emission factors
 5. Comments from Permittee (prior to public notice period)
 6. Comments from EPA during 45-day review period

Attachment 1

Facility Description and GI Forms

Attachment 2

Applicability Determination

Attachment 3

PTE Calculations for changes to MEA and glycol ether emission factors

Attachment 4

PTE Calculations for changes to Hydrogen Fluoride emission factors

Attachment 5

Comments from Permittee (prior to public notice period)

Attachment 6

Comments from EPA (during 45-day notice period)