Mississippi Department of Environmental Quality
Office of Pollution Control

I-sys 2000 Master Site Detail Report

Site Name: Hercules Inc

PHYSICAL ADDRESS

LINE 1:	613 West 7th Street
LINE 2:	
LINE 3:	
MUNICIPALITY:	Hattiesburg
STATE CODE:	MS
ZIP CODE:	39401-

MAILING ADDRESS

LINE 1:	613 West 7th Street
LINE 2:	
LINE 3:	
MUNICIPALITY:	Hattiesburg
STATE CODE:	MS
ZIP CODE:	39401-

OTHER INFORMATION

MASTER ID:	002022
COUNTY:	Forrest
REGION	SRO
SIC 1:	2822
AIR TYPE:	TITLE V
HW TYPE:	LARGE QUANTITY
SOLID TYPE:	
WATER TYPE:	INDUSTRIAL
BRANCH:	Chemical

ECED CONTACT:
Yassin, Mohammad

BASIN:

AIR PROGRAMS ☑ SIP ☐ PSD ☐ NSPS ☐ NESHAPS ☑ MACT

Mississippi Department of Environmental Quality
Office of Pollution Control

Pemits

PROGRAM	PERMIT TYPE	PERMIT #	MDEQ PERMIT CONTACT	ACTIVE
HAZ. WASTE	EPA ID	MSD008182081		NO
AIR	TITLE V	080000001	Ketchum, Brian	YES
AIR	SOP	080000001	Ketchum, Brian	NO
WATER	NPDES - MAJOR	MS0001830	Cook, Charles	NO
WATER	NPDES - MAJOR	MS0001830	Cook, Charles	NO
WATER	NPDES - MAJOR	MS0001830	Beasley, Jerry	YES
WATER	PRE-TREATMENT	MSP091286	Tomkins, Tracy	YES
GENERAL	SARA TITLE III	MSR110153	Lavallee, Louis	YES
AIR	TITLE V	0800-00001	Glenn, Montie	NO

Compliance Actions

MEDIA	ACTIVITY TYPE	SCHEDULED	COMPLETED	INSPECTED B
WATER	CEI - NA	3/17/99	3/17/99	Yassin, Mohammad
WATER	CMI - PRETREATMENT	11/1/99		Sharp, Loyd
WATER	CMI - NPDES	4/1/00		Sharp, Loyd
WATER	CMI - NPDES	11/1/99		Sharp, Loyd
WATER	CEI - NA	9/30/00		Yassin, Mohammad
HAZ WASTE	Compliance Evaluation Inspection	9/30/00		Yassin, Mohammad
AIR	State Compliance Inspection	9/30/00		Yassin, Mohammad
HAZ WASTE	Compliance Evaluation Inspection	6/30/99	6/30/99	Yassin, Mohammad
AIR	State Compliance Inspection	6/29/99	6/29/99	Yassin, Mohammad
WATER	CEI - NA	6/30/99	6/30/99	Yassin, Mohammad

ABBREVIATIONS / DEFINITIONS

ug/L: micrograms/Liter
mg/L: milligrams/Liter
mg/kg: milligrams/kilogram
ug/g: micrograms/gram
ppm: parts per million
ppb: parts per billion

<: less than
MCL: Maximum Contaminant Level
MDL: Method Detection Limit
LSPC: result less than lower specification
USPC: result greater than upper specification
TIE: Tentatively Identified or Estimated
>: greater than
z: surrogate

COC Date: Date Chain of Custody Signed
COC Time: Time Chain of Custody Signed

SAMPLE COMMENTS:

*FLOW-No way to measure flow from lagoon.

ENVIRONMENT CONDITION: CLOUDY

WHERE TAKEN: FINAL EFFLUENT

Approved By: Carrie Phill

Enclosure 1

INSTRUCTIONS FOR COMPLETING THE SECTION 114 INFORMATION REQUEST FOR PRODUCERS AND/OR USERS OF EPICHLOROHYDRIN

Please return completed questionnaire to:

Mr. Jack Farmer (MD-13)
Director
Emission Standards and Engineering Division
U. S. Environmental Protection Agency
Research Triangle Park, North Carolina 27711

If you are unable to respond to an item as stated, please contact Mr. Mark Meech of EPA at (919) 541-5499 or Ms. Brenda Shine of Midwest Research Institute at (919) 467-5215 for clarification of the question. If necessary, use additional sheets for your responses. If measurement units are different from those specified, indicate the units used.

This request should be completed for each facility producing and/or using epichlorohydrin. For each offsite epichlorohydrin storage facility, please provide the information requested in Nos. 1 through 5 and Sections E and F of Enclosure 1. If multiple facilities exist, reproduce and complete the forms for each facility and identify each facility by a number (e.g., facility Nos. 1, 2, 3).

Name of company: ______________________________

Name of facility: ______________________________

Facility EPA I.D. No.: ______________________________

Response completed by: ______________________________

Title: ______________________________

Facility address: Physical (No. and Street): ______________________________

City ______________ State ______________ Zip ______________

Facility address: Mailing (No. and Street or Post Office Box):

____

City ______________ State ______________ Zip ______________

Facility telephone No.: (   ) ______________________________

Mailing address of respondent (if different from above): ______________________________

____

Telephone No. of respondent (if different from above): ______________________________

ENCLOSURE 1

Requested Information for Producers and/or Users of Epichlorohydrin

This questionnaire addresses epichlorohydrin (1-chloro-2,3-epoxypropane or "EPI") emissions under normal operating conditions as well as episodes during which emission rates significantly exceed the annual average emission rate for an emission source. Questionnaire responses will be used to model both long- and short-term ambient concentrations of epichlorohydrin.

For facilities that have responded to previous information requests pertaining to long-term and short-term epichlorohydrin emissions, a copy of the completed response(s) is included. Note that some of the questions in this current questionnaire have been answered previously, and, for these questions, the information from the previous response(s) may be updated, if necessary, and resubmitted.

1. This information request is for the most recent, complete 3-year period for which data are available. If the process unit in question has not been in operation for 3 years, please provide any data which are available or may be estimated for the period of time that the unit has operated.

   Indicate 3-year period (month/year): ______________________

2. Please provide a brief description of the epichlorohydrin production process (if applicable). Also, describe the process(es) in which epichlorohydrin is used to produce other products and identify those products.

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3. For each process unit producing and/or using epichlorohydrin, provide a process flow diagram and identify all raw material and all product streams which contain epichlorohydrin. Also, identify all process emission points and all control devices used.

4. For each process unit described in Item 3, provide:

   a. Design capacity for product, lb/yr ____________________

   ____

   b. Capacity utilization for the 3-year period, percent[a] ________

   c. Hours of operation

   Hours/day __________ Days/year __________

   d. Amount of epichlorohydrin produced, lb/yr ______________

   ____

   e. Amount of epichlorohydrin consumed, lb/yr ______________

   ____

5. Provide a plot plan showing the entire property fence line surrounding the facility and the location of all emission sources and buildings within facility boundaries.

   Provide the following information on the plot plan:

   a. A drawing, to scale, of all buildings housing sources that emit epichlorohydrin and all buildings owned or operated by you that are within 10 building heights of each epichlorohydrin emission point. For each building in the plot plan, give the following.

Building identification	______	______	______
Building height, m	______	______	______
Building width, m	______	______	______
Building length, m	______	______	______
Distance from closest emission source to building, m[b]	______	______	______

   If necessary, these dimensions may be approximated; however, exact measurements are preferable. Consider as a building any enclosed structure whose maximum cross-sectional area ([longest structure length or diameter]x[structure height]) exceeds 50 m^2. Structures include buildings, cooling towers, and storage tanks.

   b. The location of each epichlorohydrin emission source in the facility.

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[a] If capacity utilization rates have varied significantly over the 3-year period, list the range and the weighted average.

[b] If emission source is within building, distance = 0.

c. The latitude and longitude of an identified single point located on the plot plan, specified in degrees, minutes, and seconds.

d. The distance and direction from the center of the emission point to the nearest plant fence line.

e. The distance and direction from the center of the emission point to the nearest residence.

f. The direction of true north.

g. The scale used in preparing the drawing.

h. Description of topography surrounding the facility (e.g., flat, hilly, mountainous) ______________________________

i. Description of the land use immediately adjacent to the facility (e.g., industrial, residential, agricultural). Indicate the location of any schools, hospitals, nursing homes, or shopping malls within 1 mile of the facility.

6. For each process unit in which epichlorohydrin is processed, provide the information requested in the attached set of data sheets. The data sheets are organized into nine sections: Section A--Process Vent Emissions, Section B--Pressure Relief Events, Section C--Equipment Leaks, Section D--Equipment Opening Losses, Section E--Raw Material/Product Storage Emissions, Section F--Handling Emissions, Section G--Secondary Emissions, Section H--Miscellaneous Releases, and Section I--Limitation of Simultaneous Short-Term Emissions. IN ADDITION, PLEASE PROVIDE INFORMATION ON ANY OTHER SOURCE OF EPICHLOROHYDRIN EMISSIONS.

SECTION A--PROCESS VENT EMISSIONS

General Instructions

Process vents are emission points to the atmosphere within a process unit. For each process vent, provide the process vent and control device information requested on the following page (if more data sheets are needed, make additional copies). Emissions from pressure relief devices such as rupture discs, safety relief valves, and manual vent valves are addressed in Section B. Emission sources reported here should not be included in Sections B through H. For example, emissions reported for day tanks in this section should not be listed in Section E, Raw Material/ Product Storage Emissions. The EPA does not require you to perform sampling to respond to this request. In the absence of sampling data, give your best estimate of the emission characteristics and provide calculations as requested in Subpart IV.

Process Vent Emissions--Long-Term

Data spanning a 3-year period of time is not requested for long-term process vent emissions. Instead, provide only data representative of emission stream characteristics over the most recent 1-year period. Process vent emissions which vary from these characteristics should be reported on pages 11 through 13 (short-term emissions).

Process Vent No.: ___

TYPE OF PROCESS: Batch ( ) Continuous ( )

NAME OF PROCESS ____________________

I. Process Vent Description

A. Name of emission source (as labeled on process flow diagram):

____

B. Are the vent emissions continuous? ________
If yes, give: Annual release duration, h/yr: ________
If no, give: Frequency of release, times/yr: ________
Duration of each release, min: ________

C. Is the process vent equipped with a control device? ________
If yes, complete Subparts II and III.
If no, complete Subpart II only.

II. Process Vent Emission Data--BEFORE CONTROL DEVICE

A. Name of emission source: ________

B. Height above grade and diameter of stack/vent (if uncontrolled)

Height, m ________ Diameter, m ________

C. Emission stream characteristics (before control device)

Average flow rate (from continuous processes), acmm:[a] ________
Peak flow rate (from batch processes), acmm:[a] ________
Peak flow rate duration, min: ________
Frequency:[b] ________
Temperature, K: ________

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[a]acmm = actual cubic meters per minute; to convert from acfm (actual cubic feet [ft^3] per minute), multiply by 0.0283.
[b]Frequency of peak flow; for example: twice a week, 3 times a day, once a month.

Composition by volume, wet basis: ______________________

____

____

(Composition by volume to the nearest 1 percent is required. Either molecular weight or density of the entire stream at specified conditions (temperature and pressure) can be reported below in lieu of complete composition.)

Molecular weight or density, g/m^3 (specify): ______________

Approximate heat content, Kcal/scm[c] ______________

Epichlorohydrin emissions, kg/yr: ______________

[c]Kcal per standard cubic meter; denotes heat of combustion of vent stream. To convert from BTU/scf, multiply by 8.899.

III. Process Vent Emission Data--AFTER CONTROL DEVICE

A. Control device used: ____________________

B. Estimated control device pollutant removal efficiency
Epichlorohydrin, %: ____________________
Volatile organic compounds, %: ____________________

C. Height above grade and diameter of control device stack/vent
Height, m ____________ Diameter, m ____________

D. Utilization:[a] ____________________

E. Emission stream characteristics (after control device)

Average flow rate (from continuous processes), acmm:[b] ________

Peak flow rate (from batch processes), acmm:[b] ________

Peak flow rate duration, min: ____________

Frequency:[c] ____________________

Temperature, K: ____________________

Composition by volume: ____________________

____

____

(Composition by volume to the nearest 1 percent is required. Either molecular weight or density of the entire stream at specified conditions (temperature and pressure) can be reported below in lieu of complete composition.)

Molecular weight or density, g/m^3 (specify): ________

Approximate heat content, Kcal/scm:[d] ________

Epichlorohydrin emissions, kg/yr (at full capacity) ________

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[a]Indicate control device hours of operation per process hours of operation (e.g., 6,700 h/6,900 h).

[b]acmm = actual cubic meters per minute; to convert from acfm (actual cubic feet [ft^3] per minute), multiply by 0.0283.

[c]Frequency of peak flow; for example: twice a week, 3 times a day, once a month.

[d]Kcal per standard cubic meter; denotes heat of combustion of vent stream. To convert from BTU/scf, multiply by 8.899.

IV. Process Vent Emissions Determination Method

Describe the method(s) by which the emission stream characteristics and the control device efficiency was determined. If estimates have been made, show calculation steps and note assumptions.

V. Process Vent Emissions--Short-Term Emissions

For each process vent, give the short-term emissions information requested in Table 1 for each event resulting in short-term emissions. Short term emissions are defined as emissions which significantly exceed the annual average emission rate for an emission source. Typical examples of such events would be process startups, shutdowns, and process or control device malfunctions. Please include emissions information for the 3-year period specified on page 2. Note that emissions resulting from equipment openings during sampling should not be included in this section, but rather in Section D--Equipment Opening Losses. The EPA does not require you to perform sampling to respond to this request. In the absence of sampling data, give your best estimate of the emission characteristics, and note any assumptions or calculations in the space provided below.

Unit: ____________

Vent ID: __________

For similar events which occur a number of times over the 3-year period, please list the emission stream chracteristics once and indicate the frequency of the event in the space provided in Table 1.

TABLE 1. PROCESS VENT EMISSIONS SUMMARY (SHORT-TERM)

Parameters	Vent emission summary		
	Event 1	Event 2	Event 3
Event or procedure causing emission (startup, shutdown, control device malfunction)			
Date and time event started			
Type of control device (if any)			
Control device efficiency			
Total epichlorohydrin emissions during event, kg[a]			
Frequency of event, no. times/yr			
Duration of event, min			
Flow rate during event, acmm			
Temperature of vent gas, K			
Vent height above ground level, m			
Vent diameter, m			
Approximate heat content of stream, Kcal/scm			
Composition of vent stream, percent[b]			
Density of stream, g/m^3			
Molecular weight of stream			

[a] Show one example calculation detailing methodology used to calculate emissions.
[b] Composition by volume to the nearest 1 percent is required. Either molecular weight or density of the entire stream at specified conditions (temperature and pressure) can be reported in lieu of complete composition.

VI. For each short-term emission event listed in Table 1, describe any control measures taken to minimize emissions.

VII. For each short-term emission event listed in Table 1, describe any known impacts outside the property line of the facility.

SECTION B--PRESSURE RELIEF EVENTS

I. General Instructions

For the 3-year period, give the pressure relief event information requested in Table 2. A pressure relief event is considered to be the venting of process equipment (i.e., reactor vessels, columns, storage tanks) through rupture discs, safety relief valves, manual, or emergency vents. An event may consist of one pressure relief device discharge or a series of pressure relief device discharges stemming from the same set of circumstances. Pressure relief emissions can be either liquids or gases. Note any assumptions or calculations in the space provided below. If more data sheets are needed, please make additional copies.

Unit: ____________________

Emission source: __________

TABLE 2. PRESSURE RELIEF EVENTS

Parameters	Events: Event 1	Event 2	Event 3
Discharge device[a]			
Event or procedure causing emission			
Date and time event started			
Type of control device (if any)			
Control device efficiency			
Total epichlorohydrin emissions during event, kg[b]			
Frequency of event, no. times/yr			
Duration of event, min			
Flow rate during event, acmm			
Temperature, K			
Vent height above ground level, m			
Vent diameter, m			
Approximate heat content of steam, Kcal/scm			
Composition of vent stream, percent[c]			
Density of stream, g/m^3			
Molecular weight of stream			
Discharge pressure, psig			

[a]Rupture disk, safety relief valve, manual vent, etc., on emission source.
[b]Show one example calculation detailing methodology used to calculate epichloronydrin emissions.
[c]Composition by volume to the nearest 1 percent is required. Either molecular weight or density of the entire stream at specified conditions (temperature and pressure) can be reported in lieu of complete composition.

II. For each pressure relief event listed in Table 2, describe any control measures taken to minimize emissions.

III. For each pressure relief events listed in Table 2, describe any known impacts outside the property line of the facility.

SECTION C--EQUIPMENT LEAKS

SECTION C. EQUIPMENT LEAKS FROM PROCESS COMPONENTS IN EPICHLOROHYDRIN SERVICE

I. Provide numbers of process components in contact with epichlorohydrin by completing the following table. Do not include components that have no contact with epichlorohydrin.

II. If this is a batch or intermittent process, give an overall percentage of time per year that epichlorohydrin exists within these process components, %: . ______

Equipment type	No. of components by weight percent				
	1-10% epichlorohydrin	11-25% epichlorohydrin	26-75% epichlorohydrin	76-99% epichlorohydrin	Greater than 99% epichlorohydrin
Pump seals[a]					
Packed					
Mechanical					
Double mechanical[b]					
Compressor seals[a]					
Flanges					
Valves					
Gas[c]					
Liquid					
Pressure relief devices[d]					
Gas					
Liquid					
Sample connections					
Gas					
Liquid					
Open-ended lines[e] (e.g., purge, vent)					
Gas					
Liquid					

[a] List the number of pump and compressor seals, rather than the number of pumps or compressors.
[b] If double mechanical seals are operated with the barrier (B) fluid at a pressure greater than the pump stuffing box pressure and/or are equipped with a sensor (S) that will detect failure of the seal system, the barrier fluid system, or both, indicate with a "B" and/or an "S," respectively.
[c] Conditions existing in the pipe during normal operation.
[d] Report all pressure relief devices, including those equipped with control devices.
[e] Lines closed during normal operation that would be used during maintenance operations.

SECTION C. EQUIPMENT LEAKS FROM PRESSURE RELIEF DEVICES WITH CONTROLS

III. Complete the following table to indicate which pressure relief devices in gas service are controlled (i.e., protected by rupture discs or O-rings or vented to a flare, etc.).

No. of pressure relief devices	Epichlorohydrin service[a]	Control device	Estimated control efficiency[b]

[a]Weight percent epichlorohydrin in stream.
[b]The EPA will assign a control efficiency of 100 percent for rupture discs and O-rings and 98 percent for a flare.

SECTION C. EQUIPMENT LEAK EMISSIONS

IV. If a formal leak detection and repair program is in place, complete the following table regarding leak detection and repair procedures.

Equipment type	Leak detection: Concentration, ppm	Leak detection: Measured at ___ inches from source	Detection device[a]	Frequency of leak detection monitoring	Repairs initiated (days after detection)	Repairs completed (days after initiated)
Pump seals						
Packed						
Mechanical						
Double mechanical						
Compressor seals						
Flanges						
Valves						
Gas						
Liquid						
Pressure relief devices (gas only)						
Sample connections[b]						
Gas						
Liquid						
Open-ended lines[b]						
Gas						
Liquid						

[a]Portable organic vapor analyzer (POVA), fixed point monitoring (FPM), etc.
[b]If capped for a leak detection and repair (LDAR) program, please specify.

SECTION D--EQUIPMENT OPENING LOSSES

SECTION D. EQUIPMENT OPENING LOSSES

I. Complete the following table for equipment opening losses in the 3-year period for equipment which contains or contacts either a liquid that is at least 10 percent by weight epichlorohydrin or a gas that is at least 10 percent by volume epichlorohydrin. Equipment opening losses include those from routine openings of equipment (e.g., from vessels after batch reactions) as well as opening of equipment for cleaning and maintenance. Estimate the quantity of emissions of epichlorohydrin from opening of equipment in epichlorohydrin service. Liquid spills resulting from equipment opening should not be reported here but should be reported in Section H. If standard practice is to purge equipment to <2 ppm (or some other minute concentration) prior to opening, do not list here but include as an answer in Part II of this section. If more data sheets are needed, please make additional copies.

Parameters	Equipment openings		
Unit			
Description of equipment			
Date and time of event			
Description of event			
Type of control device (if any)			
Control device efficiency			
Total epichlorohydrin emissions, kg[a]			
Frequency of event, no. times/yr			
Duration of emissions, min			
Flow rate, accm			
Temperature of material in equipment at opening, K			
Above-ground height of release, m			
Diameter of equipment opening, m			
Approximate heat content of material, Kcal/scm			
Composition of release, volume percent[b]			
Density of material, g/m^3			
Molecular weight of material			

[a] Show one example calculation detailing methodology used to calculate emissions.
[b] Composition by volume to the nearest 1 percent is required. Either molecular weight or density of the entire stream at specified conditions (temperature and pressure) can be reported in lieu of complete composition.

II. Describe any equipment opening procedures that are followed to reduce emissions from equipment openings. This includes equipment draining or purging procedures prior to opening and controls used to reduce emissions. Give an estimate of the effectiveness of these emission reduction procedures and identify which entries in the preceding table would be affected.

III. Describe any control devices that are used to reduce emissions from equipment openings. For each control device, please provide an estimated control efficiency.

IV. Please describe any known impacts outside the property line of the facility resulting from equipment openings.

SECTION E--RAW MATERIAL/PRODUCT STORAGE EMISSIONS

SECTION E. RAW MATERIAL/PRODUCT STORAGE EMISSIONS

I. Provide the following information for all storage vessels that service a liquid that is at least 10 percent by weight epichlorohydrin. If more data sheets are needed, please make additional copies.

Parameters	Tanks		
Tank ID No.			
Tank type[a-c]			
Tank capacity, gal			
Turnovers/yr			
Tank dimensions, diameter/height, ft[d]			
Average vapor space height, ft			
Product composition, weight percent[e]			
Approximate heat content of vapor, Kcal/scm			
Average molecular weight of vapor			
Storage temperature, °F			
True vapor pressure of product, psi			
Product density, g/mℓ			
Tank vent diameter, in.			
Tank paint factor[f]			
Average diurnal temperature change, °F			
Specify tank emission controls[g]			
Control efficiency			
Epichlorohydrin emissions, mg/yr[h]			

[a] 1. Fixed roof
2. External floating roof
3. Internal floating roof
4. Pressure

[b] If external floating roof, specify:
a. Metallic shoe seal
b. Liquid-mounted resilient seal
c. Vapor-mounted resilient seal

with

1. Primary seal only
2. Weather shield
3. Rim-mounted secondary seal

[c] If internal floating roof, specify
a. Vapor mounted
b. Liquid mounted

1. With secondary seal

[d] For example, a 30 ft diameter tank that is 20 ft high would be listed as 30/20.

[e] Identify product composition as completely as possible, noting the weight percentage of epichlorohydrin.

[f] Select from Table 3.

[g] Other than floating roofs.

[h] Show example calculation for one tank using AP-42 equations.

TABLE 3. PAINT FACTORS

Tank color		Paint factors	
		Paint condition	
Roof	Exterior walls	Good	Poor
White	White	1.00[a]	1.15
Al (specular)	White	1.04	1.18
White	Al (specular)	1.16	1.24
Al (specular)	Al (specular)	1.20	1.29
White	Al (diffuse)	1.30	1.38
Al (diffuse)	Al (diffuse)	1.39	1.46
White	Gray	1.30	1.38
Light gray	Light gray	1.33	1.44
Medium gray	Medium gray	1.40	1.58

[a]Use 1.0 if no other information is available.

II. For the 3 year period, give the short-term emission information requested below. Note that emissions due to working losses are addressed in Section E-I. If more data sheets are needed, please make additional copies.

Tank ID No.____________________

Parameters	Events		
Event or procedure causing emission (includes overfills, seal failure and other upset conditions)			
Date and time event started			
.Control device (if any)			
Control device efficiency			
Total epichlorohydrin emissions during event, kg[a]			
Frequency of event, No. times/yr			
Duration of event, min			
Flow rate during event, acmm			
Temperature of vent gas, K			
Vent height above ground level, m			
Vent diameter, m			
Approximate heat content of stream, Kcal/scm			
Composition of vent stream, percent[b]			
Density of stream, g/m^3			
Molecular weight of stream			

[a]Show one example calculation detailing methodology used to calculate emissions.
[b]Composition by volume to the nearest 1 percent is required. Either molecular weight or density of the entire stream at specified conditions (temperature and pressure) can be reported in lieu of complete composition.

III. For each pressure event listed in the preceeding table, describe any control measures taken to minimize emissions.

IV. For each event listed in the preceeding table, describe any known impacts outside the property line of the facility.

SECTION F--HANDLING EMISSIONS

I. For those plants that receive epichlorohydrin as a raw material, please provide the following information.

A. Provide information on incoming raw epichlorohydrin receipt as requested below. The assumption is that epichlorohydrin is received in railcars. If this is not the case, please explain the method of shipment.

Typical railcar capacity, gal	No. of annual shipments	Epichlorhydrin temp., °F	Railcar pressure valve setting, psi
________	________	________	________

B. Describe any vapor balance system that is currently in place including the process components and the destination of epichlorohydrin vapors.[a]

____

____

____

C. If a total vapor balance system is not in use, estimate emissions from railcars below. Provide the basis of the calculations.

____

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____

II. For those plants that produce, sell, and distribute epichlorohydrin on the merchant market, please provide the following information.

A. How much epichlorohydrin is sold, lb/yr? ____________

B. Describe the container(s) used to store and distribute epichlorohydrin (capacity, seals, etc.)

____

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[a]"Vapor balance system" means a vapor control system which returns vapors displaced from a receiving vessel to the vessel that is being unloaded.

C. Describe the process by which the containers are filled. A detailed diagram should accompany the description.

____

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____

D. Describe all emission sources in the filling or handling process and locate them on the diagram.

E. Is the process equipped with emission control devices? ________

If yes, specify type.

____

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____

F. Provide an epichlorohydrin emission estimate for the filling and handling process and describe the methodology used to make the estimate, lb/yr.

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____

Also, provide an emission rate for the duration of a typical filling and describe the methodology used to make the estimate.

____

____

____

G. For what purpose(s) are your customers purchasing epichlorohydrin?

____

____

____

III. For the 3 year period, give the short-term emissions information requested below. If more data sheets are needed, please make additional copies.

Parameters	Events		
Event or procedure causing emission			
Date and time event started			
Type of control device (if any)			
Control device efficiency			
Total epichlorohydrin emissions during event, kg[a]			
Frequency of event, No. times/yr			
Duration of event, min			
Flow rate during event, acmm			
Temperature of vent gas, K			
Vent height above ground level, m			
Vent diameter, m			
Approximate heat content of stream, Kcal/scm			
Composition of vent stream, percent[b]			
Density of stream, g/m^3			
Molecular weight of stream			

[a]Show one example calculation detailing methodology used to calculate emissions.
[b]Composition by volume to the nearest 1 percent is required. Either molecular weight or density of the entire stream at specified conditions (temperature and pressure) can be reported in lieu of complete composition.

IV. For each event listed in the preceeding table, describe any other measures taken to minimize emissions.

V. For each event listed in the preceeding table, describe any known impacts outside the property line of the facility.

SECTION G--SECONDARY EMISSIONS

SECTION G. SECONDARY EMISSIONS

Secondary emissions are those air emissions resulting from the treatment or disposal of wastewater, liquid wastes, or solid wastes. For process waste streams undergoing wastewater treatment, complete Part I of this section. Other secondary emission sources should be listed in Part II.

I. <u>Wastewater Treatment</u>

Source of wastewater	Flow rate, gal/d	Method of treatment	Influent epichlorohydrin concentration, μg/ℓ	Effluent epichlorohydrin concentration, μg/ℓ	Epichlorohydrin concentration in raw sludge, μg/ℓ	Fraction of epichlorohydrin removed by volatilization	Total epichlorohydrin air emissions, lb/d	Effluent discharged to: (specify receiving water or POTW)

SECTION G. SECONDARY EMISSIONS

II. Liquid or Solid Wastes

Source of wastes	Daily volume, specify gal/d or lb/d	Method of treatment	Epichlorohydrin concentration after treatment, weight %	Fraction of epichlorohydrin removed by volatilization	Total epichlorohydrin emissions, lb/d	Control device		Discharge temp., °F
						Vent height, ft	Vent diameter, ft	

SECTION H--ACCIDENTAL RELEASES

<u>General Instructions</u>

For the last 3-year period, give the accidental release information requested in Tables 4 and 5. Accidental releases are considered to be atmospheric epichlorohydrin emissions resulting from liquid spills or other nonintentional releases of epichlorohydrin to the atmosphere not covered in Sections A through G. Please include releases below the reportable quantity (RQ) of 10 lb. If more data sheets are needed, please make additional copies.

Unit: ______________

Vent ID: ______________

NOTE: Copies of accidental release reports will be accepted for this section if the reports contain the information listed in Table 4.

TABLE 4. ACCIDENTAL RELEASES (GAS)

Parameters	Releases		
	Event 1	Event 2	Event 3
Date and time of release	______	______	______
Amount of epichlorohydrin emitted to atmosphere, kg[a]	______	______	______
Duration of release, min	______	______	______

[a]Show one example calculation detailing methodology used to calculate epichlorohydrin emissions.

For each release listed, please provide a narrative description of the circumstances causing the release.

____

____

____

____

____

____

____

____

Unit: ____________

Vent ID: __________

NOTE: Copies of accidental release reports will be accepted for this section if the reports contain the information listed in Table 5.

TABLE 5. ACCIDENTAL RELEASES (LIQUID)

Parameters	Spills		
	Event 1	Event 2	Event 3
Date and time of spill			
Total quantity spilled, kg			
Net epichlorohydrin released to atmosphere, kg[a]			

[a]Show one example calculation describing methodology used to estimate quantity.

For each release listed, please provide a narrative description of the circumstances causing the release.

SECTION I--LIMITATION OF SIMULTANEOUS SHORT-TERM EMISSIONS

I. Do any of the short-term events noted in Sections A, B, D, E, F, G, and H necessarily preclude one another? Indicate which events described in those sections could not occur simultaneously and explain why.

II. Indicate which events described in Sections A, B, D, E, F, G, and H must occur simultaneously or in series and explain why.

SECTION J--AMBIENT MONITORING AND HEALTH EFFECTS DATA

I. <u>Ambient monitoring data</u>[a]

If ambient monitoring data are available, submit the following information:

A. Placement of all ambient monitors on a plot plan of the facility (tie in with Question 5, p. 3).

B. The averaging periods associated with the monitored concentrations.

C. The specific monitoring methods used along with the level of detection.

D. The quality assurance techniques employed for monitoring data.

E. The monitored concentrations with their associated averaging periods identified with the monitor at which they were observed on the plot plan in A.

II. <u>Health Effects Data</u>

Submit any and all health effects data your company has on effects associated with exposure to epichlorohydrin (either human or animal exposures). If these data have either been published in the publicly available literature or previously submitted to EPA, then submit only the reference of the publication and/or the EPA office which received the data.

[a]Ambient monitors exclude personal and indoor monitors.

10-30-86

STATE OF MISSISSIPPI
DEPARTMENT OF NATURAL RESOURCES
BUREAU OF POLLUTION CONTROL
P.O. BOX 10385
JACKSON, MISSISSIPPI 39209

DEPARTMENT OF NATURAL RESOURCES • MISSISSIPPI •

For Agency Use
FACILITY NUMBER
110-0800-00001-038
Date Received
10-21-86
Month Day Year

DATA CODED

APPLICATION FOR PERMIT TO CONSTRUCT AND/OR
OPERATE AIR EMISSIONS EQUIPMENT - GENERAL FORM

APPLICATION FOR: X CONSTRUCTION ____ PERMIT RENEWAL - PLEASE CHECK APPROPRIATE BOX

1. Name, Address, Location, and Telephone Number
   A. Name HERCULES INC
   B. Mailing Address of Applicant
      1. Street Address or P.O. Box 1937
      2. City HATTIESBURG 3. State MS
      4. Zip Code 39401 5. Telephone No. 601 545 3450
   C. Location of Facility
      1. Street West 7th STREET
      2. City HATTIESBURG 3. State MS
      4. Zip Code 39401 5. Telephone No. 601 545 3450
   D. If the facility is located outside the City limits, please provide a sketch or description showing the approximate location and attach to this application.
2. SIC Code 2861
3. Number of Employees 475
4. Principal Product ROSIN DERIVATIVES
5. Principal Raw Materials ROSIN
6. Principal Process ROSIN DERIVATIVES
7. Maximum amount of principal product produced or raw material consumed per day ____
8. (A) Check here if operation which generates air pollutant emissions occurs all year X, or specify the months the operation occurs: ____
   (B) Specify how many days per week the operation occurs: 7
   (C) Specify how many hours per day the operation occurs: 24
9. If this application is for existing facility permit renewal only, has the facility been modified in any way (including production rate, fuel, and/or raw material changes) during period covered by the Operating Permit ____ Yes ____ No or since 1972? ____ Yes ____ No
   If Yes, give year(s) in which modification(s) occurred. ____
10. ALL APPLICATIONS MUST BE SIGNED BY THE APPLICANT.

I certify that I am familiar with the information contained in the application and that to the best of my knowledge and belief such information is true, complete, and accurate, and that I am the owner or chief corporate officer, or his designated representative, responsible for complying with air pollution control laws and regulations.

G.R. YANDLE
Printed Name of Person Signing

PLANT MANAGER
Title

10/7/86
Date Application Signed

[signature]
Signature of Applicant

PLEASE COMPLETE FOLLOWING PAGES WHERE APPLICABLE

FOR ALL APPLICANTS, WHETHER NEW CONSTRUCTION, EXISTING FACILITY, OR RENEWAL

CONTROL EQUIPMENT COVERED UNDER THIS APPLICATION - PLEASE CHECK ALL APPLICABLE AND INDICATE NUMBER OF UNITS.

PARTICULATE EMISSIONS CONTROL EQUIPMENT

1. Cyclone(s) ______
2. Water Scrubber ______
3. Baghouse ______
4. Electrostatic Precipitator ______
5. Venturi Scrubber ______
6. Cyclonic Baghouse ______
7. Cyclonic Scrubber ______
8. Other ______

GASEOUS EMISSIONS CONTROL EQUIPMENT

1. Water Scrubber ______
2. Activated Carbon Bed __1__
3. Other ______

WASTE DISPOSAL SYSTEMS

1. Solid Waste Incinerator ______
2. Liquid Waste Incinerator ______
3. Wood or Other Waste Fuel Recovery Boiler ______
4. Gaseous Waste Flare ______
5. Liquid Waste Flare ______
6. Other ______

Pneumatic Conveying System ______

Other (please describe)

FOR ALL APPLICANTS

FUEL BURNING EQUIPMENT
(Except for Refuse Disposal)

This form has 3 pages; each is a continuation of the equipment information from the page before. Please fill in as completely as possible, listing all fuel burning equipment. Reasons should be given explaining any data not filled in.

PAGE 1

1. Fill in company name and address, plus year for which data is given (if existing facility) at top of page. Use data for most recent calendar year available.
2. Reference Number. Use an identifying number for each boiler, furnace, kiln, etc., and use the same reference number on each of the three pages to identify information for the same unit.
3. Manufacturer and Model Number. Nameplate data for boiler, furnace, kiln, etc. Waste gas flares and stationary internal combustion engines should also be included on this form.
4. Rated Capacity in Millions of BTU per hour.
5. Type of Burner Unit. Use Codes (1*) at bottom of form. If not listed put (11) and specify.
6. Usage. Type of fuel burning equipment. Use codes (2*) at bottom of form. If not listed put (5) and specify.
7. Heat Usage. Percent of heat used for process and percent for space heating.

FUEL BURNING EQUIPMENT
(Except for Refuse Disposal)

FACILITY NAME	Address		for Agency use Only
HERCULES	West 7th Street Hattiesburg Ms		
FACILITY NUMBER	Information for Calender Year	Date	
Emission Point 038	19 87	10/86	

2 Reference Number	3 Manufacturer and Model Number	4 Rated Capacity 10^6 BTU/hr	5 Type of Burner Unit (use code 1*)	6 Usage (use code 2*)	7 Max Usage % Process	% Space heating
	None					

1* BURNER CODES

1. Cyclone furnace
2. Pulverized coal
3. Spreader Stoker
4. Hand fired
5. Other stoker (specify)
6. Multiple port gas
7. Forced draft gas
8. Atomizing Oil (Steam or Air)
9. Atomizing Oil (Mechanical)
10. Rotary Cup Oil
11. Others (specify)

2* USAGE CODES

1. Boiler, Steam
2. Boiler, Other (specify)
3. Air Heating for Space Heating
4. Air Heating for Process Usage
5. Others (specify)

(FOR AGENCY USE ONLY)

FUEL BURNING EQUIPMENT

038

Reference Number	Stack Parameters					Fuel Data				
	Stack Height Feet	Inside Exit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature Degree F.	Fuel Type	Maximum Amount Per Hour (Specify Units)	Amount Per Year (Specify Units)	Heat Content BTU/Gal, etc. (Specify Units)	Percent Sulfur	Percent Ash
	None									

FUEL SUPPLIERS:

Fuel Type	Supplier

FUEL BURNING EQUIPMENT

038

(FOR AGENCY USE ONLY)

11	12				13			
Reference Number	Air Pollution Control Equipment				Emissions (Tons/Year)			Basis of Estimate
	Manufacturer and Model Number	Type* (Use Table 1)	Efficiency					
			Design	Actual	Particulate	SO_2	Other (specify)	
	None							

*For Wet Scrubber give Gallons per minute Water Flow and Water Pressure if known.

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.	

FACILITY NUMBER

Emission Point 038

Information for Calendar Year	Date
19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

(FOR AGENCY USE ONLY)

MANUFACTURING PROCESS OPERATIONS

Reference Number	Stack Data				Air Pollution Control Equipment			
	Hught Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency	
							Design	Actual
1	25	0.5	1 (est.)	72	HERCULES, TWO STAGE ACTIVATED CARBON ABSORPTION SCRUBBER	11	100	

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

PAGE 3

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

11 12

Reference Number	Process Emissions*			Basis for Estimation	(Agency Comments Only)
	Particulates	Sulfur Oxides	Others (Specify by chemical composition)		
1	None Detected	None Detected		Stoichiometry	

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

Company Name	Information for Year	(Agency Use Only)
HERCULES	1987	
Address	Date	
West 7th Street Hattiesburg M/s.	10/86	

B — Description of Waste Materials

Type (Describe)	C — Maximum Amount Per Day (Pounds)	D — Amount Per Year (Tons)	E — Method of Disposal 1*
TRASH (Paper etc.)	100 (est.)	10 (est.)	City Pick up / 2

If Waste Disposal is by Incineration, Specify the Following:

1. Type of Incinerator:
   - single chamber ☐
   - multiple Chamber ☐
   - Modified (describe) ☐
   - Other (describe) ☐
   - Rotary ☐
   - Flue Fed ☐

2. Manufacturer's Name: ____
   Model Number ____
   Rated Capacity ____
3. Quantity Burned: ____ Pounds / Hour ____ Type Waste
   ____ Pounds / Day
   ____ Tons / Year
4. Operating Schedule ____ Hours / Day
   ____ Days / Year

*1 Disposal Method Codes

1. Open Burning
2. Landfill (No Burning)
3. Incinerator (Complete rest of Form)
4. Conical Burner (TeePee)
5. Burned in Boiler or Furnance
6. Other (Specify)

(AGENCY USE ONLY)

5. Auxiliary Fuel:

Type: None
Amount/Year (Specify Units) ______
Heat Content ______
Percent Sulfur ______
Percent Ash ______
Supplier's Name ______

5. Pollution Control Equipment:

Manufacturer ______
Model Number ______
% Efficiency ______
Type ______
GPM Water Flow (If Wet Scrubber) ______

'. Stack Data:

Height ______ Feet
Inside Exit Diameter ______ Feet
Exit Gas Velocity ______ Feet/Sec.
Exit Gas Volume ______ SCFM
Exit Gas Temp. ______ ^{o}F.

. Estimated Emissions From Refuse Incineration:

Name:			Basis of Estimates:
Particulates	______	Tons/Year	______
Sulfur Oxides	______	"	______

ADDITIONAL INFORMATION

1. Two copies of construction site plot plan.
2. Two copies of detailed equipment drawings.
3. Two copies of a detailed explanation of the process and control equipment.
4. Two copies of a flow diagram of the of the process or operation showing control devices.

SIGNATURES: If for construction, the application must be submitted in duplicate and both copies should also be signed and stamped by an engineer registered in the State of Mississippi. If application is for Existing Facility or Renewal of Permit to Operate, registered engineer's signature not required. All signatures and stamps must be originals on all copies, not photocopies.

CHARLES A. McMAHAN
TYPED NAME & MISSISSIPPI REGISTRATION NUMBER

Charles A. McMahan
SIGNATURE OF ENGINEER REGISTERED IN MISSISSIPPI

Seal of Engineer
Registered in Mississippi

STATE OF MISSISSIPPI
DEPARTMENT OF NATURAL RESOURCES
BUREAU OF POLLUTION CONTROL
P.O. BOX 10385
JACKSON, MISSISSIPPI 39209

DEPARTMENT OF NATURAL RESOURCES • MISSISSIPPI •

For Agency Use
FACILITY NUMBER
110-0800-00001
Date Received
3-27-87
Month Day Year

DATA CODED

APPLICATION FOR PERMIT TO CONSTRUCT AND/OR OPERATE AIR EMISSIONS EQUIPMENT - GENERAL FORM

APPLICATION FOR: _____CONSTRUCTION X PERMIT RENEWAL - PLEASE CHECK APPROPRIATE BOX

1. Name, Address, Location, and Telephone Number
   A. Name HERCULES INC
   B. Mailing Address of Applicant
      1. Street Address or P.O. Box 1937
      2. City HATTIESBURG 3. State MS
      4. Zip Code 39401 5. Telephone No. 601 545 3450
   C. Location of Facility
      1. Street WEST 7th STREET
      2. City HATTIESBURG 3. State MS
      4. Zip Code 39401 5. Telephone No. 601 545 3450
   D. If the facility is located outside the City limits, please provide a sketch or description showing the approximate location and attach to this application.
2. SIC Code 2861
3. Number of Employees 475
4. Principal Product ROSIN DERIVATIVES
5. Principal Raw Materials ROSIN
6. Principal Process ROSIN DERIVATIVES
7. Maximum amount of principal product produced or raw material consumed per day _____
8. (A) Check here if operation which generates air pollutant emissions occurs all year X, or specify the months the operation occurs: _____
   (B) Specify how many days per week the operation occurs: 7
   (C) Specify how many hours per day the operation occurs: 24
9. If this application is for existing facility permit renewal only, has the facility been modified in any way (including production rate, fuel, and/or raw material changes) during period covered by the Operating Permit X Yes _____No or since 1972? _____Yes _____No
   If Yes, give year(s) in which modification(s) occurred. YEARLY
10. ALL APPLICATIONS MUST BE SIGNED BY THE APPLICANT.

I certify that I am familiar with the information contained in the application and that to the best of my knowledge and belief such information is true, complete, and accurate, and that I am the owner or chief corporate officer, or his designated representative, responsible for complying with air pollution control laws and regulations.

G. R. YANDLE
Printed Name of Person Signing

PLANT MANAGER
Title

8/18/86
Date Application Signed

G R Yandle
Signature of Applicant

PLEASE COMPLETE FOLLOWING PAGES WHERE APPLICABLE

FOR ALL APPLICANTS, WHETHER NEW CONSTRUCTION, EXISTING FACILITY, OR RENEWAL

CONTROL EQUIPMENT COVERED UNDER THIS APPLICATION - PLEASE CHECK ALL APPLICABLE AND INDICATE NUMBER OF UNITS.

PARTICULATE EMISSIONS CONTROL EQUIPMENT

1. Cyclone(s) ______
2. Water Scrubber 1
3. Baghouse 3
4. Electrostatic Precipitator ______
5. Venturi Scrubber ______
6. Cyclonic Baghouse ______
7. Cyclonic Scrubber ______
8. Other 2

GASEOUS EMISSIONS CONTROL EQUIPMENT

1. Water Scrubber 14
2. Activated Carbon Bed ______
3. Other 8

WASTE DISPOSAL SYSTEMS

1. Solid Waste Incinerator ______
2. Liquid Waste Incinerator ______
3. Wood or Other Waste Fuel Recovery Boiler ______
4. Gaseous Waste Flare ______
5. Liquid Waste Flare ______
6. Other ______

Pneumatic Conveying System ______

Other (please describe)

FOR ALL APPLICANTS

FUEL BURNING EQUIPMENT
(Except for Refuse Disposal)

This form has 3 pages; each is a continuation of the equipment information from the page before. Please fill in as completely as possible, listing all fuel burning equipment. Reasons should be given explaining any data not filled in.

PAGE 1

1. Fill in company name and address, plus year for which data is given (if existing facility) at top of page. Use data for most recent calendar year available.
2. Reference Number. Use an identifying number for each boiler, furnace, kiln, etc., and use the same reference number on each of the three pages to identify information for the same unit.
3. Manufacturer and Model Number. Nameplate data for boiler, furnace, kiln, etc. Waste gas flares and stationary internal combustion engines should also be included on this form.
4. Rated Capacity in Millions of BTU per hour.
5. Type of Burner Unit. Use Codes (1*) at bottom of form. If not listed put (11) and specify.
6. Usage. Type of fuel burning equipment. Use codes (2*) at bottom of form. If not listed put (5) and specify.
7. Heat Usage. Percent of heat used for process and percent for space heating.

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.	

FACILITY NUMBER	Information for Calendar Year	Date
Emission Point 001	19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input Quantity Per Hour	Feed Input Quantity Per Year	Number of Emission Points To Air	Product Output* Quantity Per Hour	Product Output* Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

(FOR AGENCY USE ONLY)

MANUFACTURING PROCESS OPERATIONS

001

Reference Number	Stack Data				Air Pollution Control Equipment			
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency	
							Design	Actual
2,3,4	40	0.33			WATER SCRUBBER FOLLOWED BY OIL SCRUBBER	22	100	
5	40	0.33	1.8	92	WATER SCRUBBER FOLLOWED BY OIL SCRUBBER	22	100	

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

(FOR AGENCY USE ONLY)

MANUFACTURING PROCESS OPERATIONS

001

11 12

Reference Number	Process Emissions* Particulates	Sulfur Oxides	Others (Specify by chemical composition)	Basis for Estimation	(Agency Comments Only)
2, 3, 4	0	0			
5	None Detected	None Detected	Philips Soltrol 10 2.3 lbs/hr	Measured*	

* All permit measured data reflects original permit application data.

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.	

FACILITY NUMBER	Information for Calendar Year	Date
EMISSION POINT 005	19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

(FOR AGENCY USE ONLY)

MANUFACTURING PROCESS OPERATIONS

005

Reference Number	Stack Data				Air Pollution Control Equipment		Collection Efficiency	
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Design	Actual
1A	100	0.0417	47	1700	John Zinc FLARE STE-11-2	05	100	
1B	10	8.0	NIL	AMBIENT	LIMESTONE TANKS (2)	80	100	
1C	15	0.33	NIL	80	DIGESTION SUMP VENT	40	100	

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

PAGE 3

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

005

11 12

Reference Number	Process Emissions* Particulates	Sulfur Oxides	Others (Specify by chemical composition)	Basis for Estimation	(Agency Comments Only)
1A	None Detected	106 Tons/yr		Calculated	
1B	None Detected	None Detected		Measured	
1C	None Detected	None Detected		Measured	

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

FUEL BURNING EQUIPMENT
(Except for Refuse Disposal)

1 FACILITY NAME	Address	for Agency use Only
HERCULES	W 7th STREET HATTIESBURG MS	

FACILITY NUMBER	Information for Calender Year	Date
EMISSION POINT 006	19 85	6/86

2 Reference Number	3 Manufacturer and Model Number	4 Rated Capacity 10^6BTU/hr	5 Type of Burner Unit (use code 1*)	6 Usage (use code 2*)	7 Most Usage % Process	% Space heat
1A	McKee Boiler	1.6	6	2 (DOWTHERM)	100	
1B	McKee Boiler	1.6	6	2 (DOWTHERM)	100	

1* BURNER CODES

1. Cyclone furnace
2. Pulverized coal
3. Spreader Stoker
4. Hand fired
5. Other stoker (specify)
6. Multiple port gas
7. Forced draft gas
8. Atomizing Oil (Stove of Air)
9. Atomizing Oil (Mechanical)
10. Rotary Cup Oil
11. Others (specify)

2* USAGE CODES

1. Boiler, Steam
2. Boiler, Other (specify)
3. Air Heating for Space Heating
4. Air Heating for Process Usage
5. Others (specify)

FUEL BURNING EQUIPMENT

006

(FOR AGENCY USE ONLY)

Reference Number	Stack Parameters: Stack Height Feet	Inside Exit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature Degree F.	Fuel Type	Fuel Data: Maximum Amount Per Hour (Specify Units)	Amount Per Year (Specify Units)	Heat Content BTU/Gal, etc. (Specify Units)	Percent Sulfur	Percent Ash
1A	50	1.0	0.15	1000	NATURAL GAS	0.805 MCF	2,253 MCF	1025 (SCF)	0.00016	0
1B	50	1.0	0.15	1000	NATURAL GAS	(spare)				

FUEL SUPPLIERS:

Fuel Type	Supplier
NATURAL GAS	Willmut Gas Co

(FOR AGENCY USE ONLY)

FUEL BURNING EQUIPMENT

006

11	12				13			
Reference Number	Air Pollution Control Equipment				Emissions (Tons/Year)			Basis of Estimate
	Manufacturer and Model Number	Type* (Use Table 1)	Efficiency					
			Design	Actual	Particulate	SO_2	Other (specify)	
1A	None				NIL	0.001		Calc.
1B	None							

*For Wet Scrubber give Gallons per minute Water Flow and Water Pressure if known.

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.	

FACILITY NUMBER	Information for Calendar Year	Date
EMISSION POINT 006	19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

006

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

Reference Number	Stack Data				Air Pollution Control Equipment			
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency	
							Design	Actual
1A	35	0.25		72	WATER SCRUBBER VENT	46		
1B	60	0.17			HEAT TREATMENT VENT	40		

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

PAGE 3

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

006

11 12

Reference Number	Process Emissions* Particulates	Sulfur Oxides	Others (Specify by chemical composition)	Basis for Estimation	(Agency Comments Only)
1A	None Detected			Stoichiometry	
1B	None Detected			Stoichiometry	

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULES	West 7th Street Hattiesburg Ms.	

FACILITY NUMBER	Information for Calendar Year	Date
Emission Point 008	19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input Quantity Per Hour	Feed Input Quantity Per Year	Number of Emission Points To Air	Product Output* Quantity Per Hour	Product Output* Quantity Per Year
	See Confidential Attachment						

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

008

Reference Number	Stack Data				Air Pollution Control Equipment			
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency	
							Design	Actual
2A	15	1.5			Vapor Hood Water Scrubber	40	100	
2B	10	1.0			Dust Hood Water Scrubber	40	100	

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

PAGE 3

(FOR AGENCY USE ONLY)

MANUFACTURING PROCESS OPERATIONS

008

11 12

Reference Number	Process Emissions* Particulates	Sulfur Oxides	Others (Specify by chemical composition)	Basis for Estimation	(Agency Comments Only)
1	None Detected	None Detected		Measured	
2A	None Detected	None Detected		Measured	
2B	None Detected	None Detected		Measured	

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

FUEL BURNING EQUIPMENT
(Except for Refuse Disposal)

1 FACILITY NAME	Address		for Agency use Only
HERCULES	West 7th STREET HATTIESBURG Ms		
FACILITY NUMBER	Information for Calender Year	Date	
EMISSION POINT 011	19 85	6/86	

2 Reference Number	3 Manufacturer and Model Number	4 Rated Capacity 10^6 BTU/hr	5 Type of Burner Unit (use code 1*)	6 Usage (use code 2*)	7 Most Usage % Process	% Space heat
1	PACKAGE BOILER NO. 5	156	7,9	1	100	

1* BURNER CODES

1. Cyclone furnace
2. Pulverized coal
3. Spreader Stoker
4. Hand fired
5. Other stoker (specify)
6. Multiple port gas
7. Forced draft gas
8. Atomizing Oil (Stove of Air)
9. Atomizing Oil (Mechanical)
10. Rotary Cup Oil
11. Others (specify)

2* USAGE CODES

1. Boiler, Steam
2. Boiler, Other (specify)
3. Air Heating for Space Heating
4. Air Heating for Process Usage
5. Others (specify)

(FOR AGENCY USE ONLY)

FUEL BURNING EQUIPMENT

011

Reference Number	Stack Parameters: Stack Height Feet	Stack Parameters: Inside Exit Dia. Feet	Stack Parameters: Exit Gas Velocity Feet/Sec.	Stack Parameters: Exit Gas Temperature Degree F.	Fuel Type	Fuel Data: Maximum Amount Per Hour (Specify Units)	Fuel Data: Amount Per Year (Specify Units)	Fuel Data: Heat Content BTU/Gal, etc. (Specify Units)	Fuel Data: Percent Sulfur	Fuel Data: Percent Ash
1	71	3	56	250	NATURAL GAS	1.7 TONS	742 TONS	21,956 BTU/lb	NIL	NIL
					No 6 FUEL OIL	0.3 TONS	7 TONS	18,444 BTU/lb	2.05	0.02
					No 2 FUEL OIL	0.3 TONS	29 TONS	18,444 BTU/lb	NIL	NIL

FUEL SUPPLIERS:

Fuel Type	Supplier
NATURAL GAS	WILMUT GAS Co
No 6 FUEL OIL	HESS OIL Co

FUEL BURNING EQUIPMENT

(FOR AGENCY USE ONLY)

011

11	12				13			
Reference Number	Air Pollution Control Equipment				Emissions (Tons/Year)			Basis of Estimate
	Manufacturer and Model Number	Type* (Use Table 1)	Efficiency					
			Design	Actual	Particulate	SO_2	Other (specify)	
1	None				NIL	0.3		CALCULATED

*For Wet Scrubber give Gallons per minute Water Flow and Water Pressure if known.

FUEL BURNING EQUIPMENT
(Except for Refuse Disposal)

1 FACILITY NAME	Address		for Agency use Only
HERCULES	West 7th Street Hattiesburg Ms		
FACILITY NUMBER	Information for Calender Year	Date	
Emission Point 012	19 85	6/86	

2	3	4	5	6	7	
Reference Number	Manufacturer and Model Number	Rated Capacity 10^6BTU/hr	Type of Burner Unit (use code 1*)	Usage (use code 2*)	Most Usage % Process	% Space heat
1	Sealas Furnace No. 1	3.9	6	5 (Process Heat)	100	
2	Sealas Furnace No. 2	3.9	6	5 (Process Heat)	100	(Spare)

1* BURNER CODES

1. Cyclone furnace
2. Pulverized coal
3. Spreader Stoker
4. Hand fired
5. Other stoker (specify)
6. Multiple port gas
7. Forced draft gas
8. Atomizing Oil (Stove of Air)
9. Atomizing Oil (Mechanical)
10. Rotary Cup Oil
11. Others (specify)

2* USAGE CODES

1. Boiler, Steam
2. Boiler, Other (specify)
3. Air Heating for Space Heating
4. Air Heating for Process Usage
5. Others (specify)

FUEL BURNING EQUIPMENT

012

(FOR AGENCY USE ONLY)

Reference Number	Stack Parameters					Fuel Data				
	Stack Height Feet	Inside Exit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature Degree F.	Fuel Type	Maximum Amount Per Hour (Specify Units)	Amount Per Year (Specify Units)	Heat Content BTU/Gal, etc. (Specify Units)	Percent Sulfur	Percent Ash
1	40	2	14.7	1000	Natural Gas	9.3 MCF	213 MCF	1010 BTU/SCF	NIL	NIL
2	40	2	14.7	1000	Natural Gas	9.3 MCF	(SPARE)			

FUEL SUPPLIERS:

Fuel Type	Supplier

FUEL BURNING EQUIPMENT

(FOR AGENCY USE ONLY)

012

11	12				13			
Reference Number	Air Pollution Control Equipment				Emissions (Tons/Year)			Basis of Estimate
	Manufacturer and Model Number	Type* (Use Table 1)	Efficiency					
			Design	Actual	Particulate	So_2	Other (specify)	
1	None				Nil	Nil		
2	None				(SPARE)			

*For Wet Scrubber give Gallons per minute Water Flow and Water Pressure if known.

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.	

FACILITY NUMBER	Information for Calendar Year	Date
EMISSION POINT 012	19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

PAGE 2

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

012

Reference Number	Stack Data				Air Pollution Control Equipment			
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency Design	Collection Efficiency Actual
1	3	0.5	NIL	72	WATER SCRUBBER	40	100	
2					(SPARE)			

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

012

11 12

Reference Number	Process Emissions* Particulates	Sulfur Oxides	Others (Specify by chemical composition)	Basis for Estimation	(Agency Comments Only)
1	NIL	NIL		CALCULATED	
2	(spare)				

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.	

FACILITY NUMBER	Information for Calendar Year	Date
EMISSION POINT 014	19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

(FOR AGENCY USE ONLY)

MANUFACTURING PROCESS OPERATIONS

014

Reference Number	Stack Data				Air Pollution Control Equipment		Collection Efficiency	
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Design	Actual
1A	25	0.83	NIL	72	Flaking Belt Vapor Hood Vent	40	100	
1B	40	(5000CFM Blower)		72	Dracco Baghouse Model 20-S	34	100	
1C	40	(2400CFM Blower)		72	Pangborn Baghouse Model 600	34	100	

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

PAGE 3

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

014

11 12

Reference Number	Process Emissions*			Basis for Estimation	(Agency Comments Only)
	Particulates	Sulfur Oxides	Others (Specify by chemical composition)		
1A	NIL	None Detected		Measured	
1B	NIL	None Detected		Measured	
1C	NIL	None Detected		Measured	

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

FUEL BURNING EQUIPMENT
(Except for Refuse Disposal)

1 FACILITY NAME	Address		for Agency use Only
HERCULES	West 7th Street Hattiesburg Ms		
FACILITY NUMBER	Information for Calender Year	Date	
Emission Point 015	19 85	6/86	

2 Reference Number	3 Manufacturer and Model Number	4 Rated Capacity 10^6BTU/hr	5 Type of Burner Unit (use code 1*)	6 Usage (use code 2*)	7 Most Usage % Process	% Space heat
1	STRUTHERS-WELLS Dowtherm Boiler #7618	8.3	6	2 (Dowtherm)	100	

1* BURNER CODES

1. Cyclone furnace
2. Pulverized coal
3. Spreader Stoker
4. Hand fired
5. Other stoker (specify)
6. Multiple port gas
7. Forced draft gas
8. Atomizing Oil (Stove of Air)
9. Atomizing Oil (Mechanical)
10. Rotary Cup Oil
11. Others (specify)

2* USAGE CODES

1. Boiler, Steam
2. Boiler, Other (specify)
3. Air Heating for Space Heating
4. Air Heating for Process Usage
5. Others (specify)

FUEL BURNING EQUIPMENT

(FOR AGENCY USE ONLY)

015

Reference Number	Stack Parameters: Stack Height Feet	Stack Parameters: Inside Exit Dia. Feet	Stack Parameters: Exit Gas Velocity Feet/Sec.	Stack Parameters: Exit Gas Temperature Degree F.	Fuel Type	Fuel Data: Maximum Amount Per Hour (Specify Units)	Fuel Data: Amount Per Year (Specify Units)	Fuel Data: Heat Content BTU/Gal, etc. (Specify Units)	Fuel Data: Percent Sulfur	Fuel Data: Percent Ash
1	60	2.0	10	1000	NATURAL GAS	3.5 MCF	30,469 MCF	1010 BTU/SCF	NIL	NIL

FUEL SUPPLIERS:

Fuel Type	Supplier
NATURAL GAS	WILMINT GAS CO.

FUEL BURNING EQUIPMENT

015

(FOR AGENCY USE ONLY)

11	12				13			
Reference Number	Air Pollution Control Equipment				Emissions (Tons/Year)			Basis of Estimate
	Manufacturer and Model Number	Type* (Use Table 1)	Efficiency Design	Efficiency Actual	Particulate	SO_2	Other (specify)	
1	None				NIL	NIL		

*For Wet Scrubber give Gallons per minute Water Flow and Water Pressure if known.

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.	

FACILITY NUMBER	Information for Calendar Year	Date
Emission Point 015	19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

(FOR AGENCY USE ONLY)

MANUFACTURING PROCESS OPERATIONS

015

Reference Number	Stack Data				Air Pollution Control Equipment			
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency Design	Collection Efficiency Actual
1	6	1.5	20	72	OIL SCRUBBER FOLLOWED by A WATER SCRUBBER	40, 41	100	

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

PAGE 3

(FOR AGENCY USE ONLY)

MANUFACTURING PROCESS OPERATIONS

015

11 12

Reference Number	Process Emissions* Particulates	Sulfur Oxides	Others (Specify by chemical composition)	Basis for Estimation	(Agency Comments Only)
1	None Detected	None Detected		Measured	

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

FUEL BURNING EQUIPMENT
(Except for Refuse Disposal)

1 FACILITY NAME	Address	for Agency use Only
HERCULES	West 7th STREET HATTIESBURG MS	

FACILITY NUMBER	Information for Calender Year	Date
EMISSION POINT 016	19 85	6/86

2 Reference Number	3 Manufacturer and Model Number	4 Rated Capacity 10^6 BTU/hr	5 Type of Burner Unit (use code 1*)	6 Usage (use code 2*)	7 Most Usage % Process	Most Usage % Space heat
1	Foster Wheeler Dowtherm Boiler #3295	5.0	6	2 (Dowtherm)	100	

1* BURNER CODES

1. Cyclone furnace
2. Pulverized coal
3. Spreader Stoker
4. Hand fired
5. Other stoker (specify)
6. Multiple port gas
7. Forced draft gas
8. Atomizing Oil (Stove of Air)
9. Atomizing Oil (Mechanical)
10. Rotary Cup Oil
11. Others (specify)

2* USAGE CODES

1. Boiler, Steam
2. Boiler, Other (specify)
3. Air Heating for Space Heating
4. Air Heating for Process Usage
5. Others (specify)

FUEL BURNING EQUIPMENT

016

(FOR AGENCY USE ONLY)

Reference Number	Stack Parameters					Fuel Data				
	Stack Height Feet	Inside Exit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature Degree F.	Fuel Type	Maximum Amount Per Hour (Specify Units)	Amount Per Year (Specify Units)	Heat Content BTU/Gal, etc. (Specify Units)	Percent Sulfur	Percent Ash
1	50	1.5	11	1000	Natural Gas	1.9 MCF	2,337 MCF	1010 BTU/SCF	NIL	NIL

FUEL SUPPLIERS:

Fuel Type	Supplier
Natural Gas	Wilmut Gas Co

FUEL BURNING EQUIPMENT

016

(FOR AGENCY USE ONLY)

11	12				13			
Reference Number	Air Pollution Control Equipment				Emissions (Tons/Year)			Basis of Estimate
	Manufacturer and Model Number	Type* (Use Table 1)	Efficiency					
			Design	Actual	Particulate	SO_2	Other (specify)	
1	None				NIL	NIL		

*For Wet Scrubber give Gallons per minute Water Flow and Water Pressure if known.

MANUFACTURING PROCESS OPERATIONS

Company Name	Address		FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.		
FACILITY NUMBER	Information for Calendar Year	Date	
EMISSION POINT 016	19 85	6/86	

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

(FOR AGENCY USE ONLY)

016

MANUFACTURING PROCESS OPERATIONS

Reference Number	Stack Data				Air Pollution Control Equipment			
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency Design	Collection Efficiency Actual
1	65	0.25	NIL	212	None			

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

016

11 12

Reference Number	Process Emissions*			Basis for Estimation	(Agency Comments Only)
	Particulates	Sulfur Oxides	Others (Specify by chemical composition)		
1	None Detected	None Detected		Stoichiometry	

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.	

FACILITY NUMBER	Information for Calendar Year	Date
EMISSION POINT 018	19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

(FOR AGENCY USE ONLY)

MANUFACTURING PROCESS OPERATIONS

018

Reference Number	Stack Data				Air Pollution Control Equipment			
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency	
							Design	Actual
1A	12	2.4	75	72	BVELL NORBLO MECHANICAL SHAKER TYPE FABRIC FILTER DUST COLLECTOR MODEL NO. 396-14-20	36		
1B	6	2.6	35	72	Vapor Hood Vent Scrubber	40		

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

PAGE 3

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

018

11	12				
Reference Number	Process Emissions*			Basis for Estimation	(Agency Comments Only)
	Particulates	Sulfur Oxides	Others (Specify by chemical composition)		
1A		None Detected		Stoichiometry	
1B	None Detected	None Detected		Stoichiometry	

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

FUEL BURNING EQUIPMENT
(Except for Refuse Disposal)

1 FACILITY NAME: HERCULES

Address: West 7th Street Hattiesburg Ms

for Agency use Only

FACILITY NUMBER: Emission Point 019

Information for Calender Year: 19 85

Date: 6/86

2 Reference Number	3 Manufacturer and Model Number	4 Rated Capacity 10^6 BTU/hr	5 Type of Burner Unit (use code 1*)	6 Usage (use code 2*)	7 Most Usage % Process	 % Space heat
1	Struthers Wells Dowtherm Boiler # 7482	3.3	6	2 (Dowtherm)	100	

1* BURNER CODES

1. Cyclone furnace
2. Pulverized coal
3. Spreader Stoker
4. Hand fired
5. Other stoker (specify)
6. Multiple port gas
7. Forced draft gas
8. Atomizing Oil (Stove of Air)
9. Atomizing Oil (Mechanical)
10. Rotary Cup Oil

2* USAGE CODES

1. Boiler, Steam
2. Boiler, Other (specify)
3. Air Heating for Space Heating
4. Air Heating for Process Usage

019

FUEL BURNING EQUIPMENT

(FOR AGENCY USE ONLY)

Reference Number	Stack Parameters: Stack Height Feet	Stack Parameters: Inside Exit Dia. Feet	Stack Parameters: Exit Gas Velocity Feet/Sec.	Stack Parameters: Exit Gas Temperature Degree F.	Fuel Type	Fuel Data: Maximum Amount Per Hour (Specify Units)	Fuel Data: Amount Per Year (Specify Units)	Fuel Data: Heat Content BTU/Gal, etc. (Specify Units)	Fuel Data: Percent Sulfur	Fuel Data: Percent Ash
1	40	1.5	14	1000	NATURAL GAS	2.4 MCF	4,451 MCF	1010 BTU/SCF	NIL	NIL

FUEL SUPPLIERS:

Fuel Type	Supplier
NATURAL GAS	WILMUT GAS Co

FUEL BURNING EQUIPMENT

(FOR AGENCY USE ONLY)

11	12				13			
Reference Number	Air Pollution Control Equipment				Emissions (Tons/Year)			Basis of Estimate
	Manufacturer and Model Number	Type* (Use Table 1)	Efficiency Design	Efficiency Actual	Particulate	SO_2	Other (specify)	
1	None				NIL	NIL		

*For Wet Scrubber give Gallons per minute Water Flow and Water [illegible]

MANUFACTURING PROCESS OPERATIONS

Company Name	Address		FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.		
FACILITY NUMBER	Information for Calendar Year	Date	
EMISSION POINT 019	19 85	6/86	

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

019

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

Reference Number	Stack Data				Air Pollution Control Equipment			
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature oF	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency	
							Design	Actual
1	20	0.17			NONE			

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

019

11 12

Reference Number	Process Emissions* Particulates	Sulfur Oxides	Others (Specify by chemical composition)	Basis for Estimation	(Agency Comments Only)
1	NONE DETECTED	NONE DETECTED		Stoichiometry	

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

FUEL BURNING EQUIPMENT
(Except for Refuse Disposal)

1 FACILITY NAME: HERCULES

Address: West 7th Street Hattiesburg Ms.

for Agency use Only

FACILITY NUMBER: Emission Point 020

Information for Calender Year: 19 85

Date: 6/86

2 Reference Number	3 Manufacturer and Model Number	4 Rated Capacity 10^6BTU/hr	5 Type of Burner Unit (use code 1*)	6 Usage (use code 2*)	7 Most Usage % Process	7 Most Usage % Space heat
1	Hydrogen Furnace	21.0	6	5 (process Usage)	100	

1* BURNER CODES

1. Cyclone furnace
2. Pulverized coal
3. Spreader Stoker
4. Hand fired
5. Other stoker (specify)
6. Multiple port gas
7. Forced draft gas
8. Atomizing Oil (Stove of Air)
9. Atomizing Oil (Mechanical)
10. Rotary Cup Oil

2* USAGE CODES

1. Boiler, Steam
2. Boiler, Other (specify)
3. Air Heating for Space Heating
4. Air Heating for Process Usage

FUEL BURNING EQUIPMENT

(FOR AGENCY USE ONLY)

020

Reference Number	Stack Parameters					Fuel Data				
	Stack Height Feet	Inside Exit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature Degree F.	Fuel Type	Maximum Amount Per Hour (Specify Units)	Amount Per Year (Specify Units)	Heat Content BTU/Gal, etc. (Specify Units)	Percent Sulfur	Percent Ash
1	60	2.0	9.5	1000	NATURAL GAS	1.2 MCF	10,675 MCF	1010 BTU/SCF	NIL	NIL

FUEL SUPPLIERS:

Fuel Type	Supplier
NATURAL GAS	WILMINGT GAS Co

020

FUEL BURNING EQUIPMENT

(FOR AGENCY USE ONLY)

11	12				13			
Reference Number	Air Pollution Control Equipment: Manufacturer and Model Number	Type* (Use Table 1)	Efficiency: Design	Efficiency: Actual	Emissions (Tons/Year): Particulate	Emissions (Tons/Year): SO_2	Emissions (Tons/Year): Other (specify)	Basis of Estimate
1	None				NIL	NIL		

*For Wet Scrubber give
Gallons per minute Water
Flow and Water Pressure if kn[illegible]

MANUFACTURING PROCESS OPERATIONS

Company Name	Address		FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.		
FACILITY NUMBER	**Information for Calendar Year**	**Date**	
EMISSION POINT 020	19 85	6/86	

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

020

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

Reference Number	Stack Data				Air Pollution Control Equipment			
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency	
							Design	Actual
1	45	0.17			NONE			

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

PAGE 3

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

020

11 12

Reference Number	Process Emissions*			Basis for Estimation	(Agency Coments Only)
	Particulates	Sulfur Oxides	Others (Specify by chemical composition)		
1	None Detected	None Detected		Stoichiometry	

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.	

FACILITY NUMBER	Information for Calendar Year	Date
EMISSION POINT 021	19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input Quantity Per Hour	Feed Input Quantity Per Year	Number of Emission Points To Air	Product Output* Quantity Per Hour	Product Output* Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

021

FUEL BURNING EQUIPMENT

(FOR AGENCY USE ONLY)

Reference Number	Stack Parameters					Fuel Data				
	Stack Height Feet	Inside Exit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature Degree F.	Fuel Type	Maximum Amount Per Hour (Specify Units)	Amount Per Year (Specify Units)	Heat Content BTU/Gal, etc. (Specify Units)	Percent Sulfur	Percent Ash
1	40	1.5	2	1000	NATURAL GAS	0.4 MCF	3,186 MCF	1010 BTU/SCF	NIL	NIL

FUEL SUPPLIERS:

Fuel Type	Supplier
NATURAL GAS	WILMUT GAS CO.

021

FUEL BURNING EQUIPMENT

(FOR AGENCY USE ONLY)

11	12				13			
Reference Number	Air Pollution Control Equipment				Emissions (Tons/Year)			Basis of Estimate
	Manufacturer and Model Number	Type* (Use Table 1)	Efficiency					
			Design	Actual	Particulate	SO_2	Other (specify)	
1	None				NIL	NIL		

*For Wet Scrubber give Gallons per minute Water Flow and Water Pressure if known.

FUEL BURNING EQUIPMENT
(Except for Refuse Disposal)

1 FACILITY NAME	Address	for Agency use Only
Hercules	West 7th Street Hattiesburg Ms	

FACILITY NUMBER	Information for Calender Year	Date
Emission Point 021	1985	6/86

2 Reference Number	3 Manufacturer and Model Number	4 Rated Capacity 10^6 BTU/hr	5 Type of Burner Unit (use code 1*)	6 Usage (use code 2*)	7 Most Usage % Process	% Space heat
1	Struthers Wells Dowtherm Boiler No. 3008	3.3	6	2 (Dowtherm)	100	

1* BURNER CODES

1. Cyclone furnace
2. Pulverized coal
3. Spreader Stoker
4. Hand fired
5. Other stoker (specify)
6. Multiple port gas
7. Forced draft gas
8. Atomizing Oil (Stove of Air)
9. Atomizing Oil (Mechanical)
10. Rotary Cup Oil

2* USAGE CODES

1. Boiler, Steam
2. Boiler, Other (specify)
3. Air Heating for Space Heating
4. Air Heating for Process Usage

(FOR AGENCY USE ONLY)

MANUFACTURING PROCESS OPERATIONS

021

Reference Number	Stack Data				Air Pollution Control Equipment			
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency	
							Design	Actual
1A	50	0.08			NONE			
1B	1	0.08						

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

PAGE 3

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

021

11 12

Reference Number	Process Emissions*			Basis for Estimation	(Agency Comments Only)
	Particulates	Sulfur Oxides	Others (Specify by chemical composition)		
1A	None Detected	None Detected		Stoichiometry	
1B	None Detected	None Detected			

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.	

FACILITY NUMBER	Information for Calendar Year	Date
EMISSION POINT 022	19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

(FOR AGENCY USE ONLY)

MANUFACTURING PROCESS OPERATIONS

022

Reference Number	Stack Data				Air Pollution Control Equipment			
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency	
							Design	Actual
1	20	0.17			None			

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

022

11 Reference Number	12 Process Emissions*			Basis for Estimation	(Agency Comments Only)
	Particulates	Sulfur Oxides	Others (Specify by chemical composition)		
1	None Detected	None Detected		Stoichiometry	

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

FUEL BURNING EQUIPMENT
(Except for Refuse Disposal)

1 FACILITY NAME	Address		for Agency use Only
Hercules	West 7th Street Hattiesburg Ms		
FACILITY NUMBER	Information for Calender Year	Date	
Emission Point 023	19 85	6/86	

2	3	4	5	6	7	
Reference Number	Manufacturer and Model Number	Rated Capacity 10^6 BTU/hr	Type of Burner Unit (use code 1*)	Usage (use code 2*)	Most Usage % Process	% Space heat
1	Foster Wheeler Boiler No 23-628	5.0	6	2 (Dowtherm)	100	

1* BURNER CODES

1. Cyclone furnace
2. Pulverized coal
3. Spreader Stoker
4. Hand fired
5. Other stoker (specify)
6. Multiple port gas
7. Forced draft gas
8. Atomizing Oil (Stove of Air)
9. Atomizing Oil (Mechanical)
10. Rotary Cup Oil

2* USAGE CODES

1. Boiler, Steam
2. Boiler, Other (specify)
3. Air Heating for Space Heating
4. Air Heating for Process Usage
5. Others (specify)

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

023

Reference Number	Stack Data				Air Pollution Control Equipment			
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency	
							Design	Actual
1					None			

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

023

FUEL BURNING EQUIPMENT

(FOR AGENCY USE ONLY)

11 Reference Number	12 Air Pollution Control Equipment: Manufacturer and Model Number	Type* (Use Table 1)	Efficiency: Design	Efficiency: Actual	13 Emissions (Tons/Year): Particulate	Emissions (Tons/Year): SO_2	Emissions (Tons/Year): Other (specify)	Basis of Estimate
1	None				NIL	NIL		

*For Wet Scrubber give Gallons per minute Water Flow and Water Pressure if known.

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.	

FACILITY NUMBER	Information for Calendar Year	Date
EMISSION POINT 023	19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

FUEL BURNING EQUIPMENT

(FOR AGENCY USE ONLY)

023

Reference Number	Stack Parameters: Stack Height Feet	Stack Parameters: Inside Exit Dia. Feet	Stack Parameters: Exit Gas Velocity Feet/Sec.	Stack Parameters: Exit Gas Temperature Degree F.	Fuel Type	Fuel Data: Maximum Amount Per Hour (Specify Units)	Fuel Data: Amount Per Year (Specify Units)	Fuel Data: Heat Content BTU/Gal, etc. (Specify Units)	Fuel Data: Percent Sulfur	Fuel Data: Percent Ash
1	65	1.5	4.8	1000	Natural Gas	0.5 MCF	4,007 MCF	1010 BTU/SCF	Nil	Nil

FUEL SUPPLIERS:

Fuel Type	Supplier
Natural Gas	Wilmut Gas Co

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

023

11 12

Reference Number	Process Emissions*			Basis for Estimation	(Agency Comments Only)
	Particulates	Sulfur Oxides	Others (Specify by chemical composition)		
1	None Detected	None Detected		Stoichiometry	

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.	

FACILITY NUMBER	Information for Calendar Year	Date
EMISSION POINT 024	19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

(FOR AGENCY USE ONLY)

MANUFACTURING PROCESS OPERATIONS

024

Reference Number	Stack Data				Air Pollution Control Equipment			
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency	
							Design	Actual
1A	40	0.67	NIL	72	Water Aspirator For Kettle Vent	40		
1B	40	0.67	NIL	72	Dust Collector	33		

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

PAGE 3

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

024

11 12

Reference Number	Process Emissions*			Basis for Estimation	(Agency Coments Only)
	Particulates	Sulfur Oxides	Others (Specify by chemical composition)		
1A	None Detected	None Detected		Stoichiometry	
1B	None Detected	None Detected		Stoichiometry	

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

FUEL BURNING EQUIPMENT
(Except for Refuse Disposal)

1 FACILITY NAME	Address		for Agency use Only
HERCULES	West 7th Street Hattiesburg Ms		
FACILITY NUMBER	Information for Calender Year	Date	
Emission Point 025	19 85	6/86	

2 Reference Number	3 Manufacturer and Model Number	4 Rated Capacity 10^6 BTU/hr	5 Type of Burner Unit (use code 1*)	6 Usage (use code 2*)	7 Most Usage % Process	% Space heat
1	DRIER FURNACE (SILICA)	0.2	6	5 (PROCESS)	100	

1* BURNER CODES
1. Cyclone furnace
2. Pulverized coal
3. Spreader Stoker
4. Hand fired
6. Multiple port gas
7. Forced draft gas
8. Atomizing Oil (Stove of Air)
9. Atomizing Oil (Mechanical)

2* USAGE CODES
1. Boiler, Steam
2. Boiler, Other (specify)
3. Air Heating for Space Heating
4. Air Heating for Process Usage

FUEL BURNING EQUIPMENT

(FOR AGENCY USE ONLY)

025

Reference Number	Stack Parameters					Fuel Data				
	Stack Height Feet	Inside Exit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature Degree F.	Fuel Type	Maximum Amount Per Hour (Specify Units)	Amount Per Year (Specify Units)	Heat Content BTU/Gal, etc. (Specify Units)	Percent Sulfur	Percent Ash
1	45	0.67	7	1000	NATURAL GAS	0.1	840 MCF	1010 BTU/SCF	NIL	NIL

FUEL SUPPLIERS:

Fuel Type	Supplier
NATURAL GAS	WILMUT GAS Co

025

FUEL BURNING EQUIPMENT

(FOR AGENCY USE ONLY)

11	12				13			
Reference Number	Air Pollution Control Equipment				Emissions (Tons/Year)			Basis of Estimate
	Manufacturer and Model Number	Type* (Use Table 1)	Efficiency					
			Design	Actual	Particulate	SO_2	Other (specify)	
1	None				NIL	NIL		

*For Wet Scrubber give Gallons per minute Water Flow and Water Pressure if known.

MANUFACTURING PROCESS OPERATIONS

Company Name	Address		FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.		
FACILITY NUMBER	Information for Calendar Year	Date	
EMISSION POINT 025	19 85	6/86	

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

(FOR AGENCY USE ONLY)

MANUFACTURING PROCESS OPERATIONS

025

Reference Number	Stack Data				Air Pollution Control Equipment			
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency	
							Design	Actual
1	10				DUST BAG	33		

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

025

11 12

Reference Number	Process Emissions*			Basis for Estimation	(Agency Comments Only)
	Particulates	Sulfur Oxides	Others (Specify by chemical composition)		
1	NIL	NIL		Stoichiometry	

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

FUEL BURNING EQUIPMENT
(Except for Refuse Disposal)

1 FACILITY NAME	Address		for Agency use Only
	West 7th Street Hattiesburg Ms.		
FACILITY NUMBER	Information for Calender Year	Date	
Emission Point 026	19 85	6/86	

2	3	4	5	6	7	
Reference Number	Manufacturer and Model Number	Rated Capacity 10^6 BTU/hr	Type of Burner Unit (use code 1*)	Usage (use code 2*)	Most Usage % Process	% Space heat
1	Struthers Wells Dowtherm Boiler #5860	8.3	6	2 (Dowtherm)	100	

1* BURNER CODES

1. Cyclone furnace
2. Pulverized coal
3. Spreader Stoker
4. Hand fired
5. Other stoker (specify)
6. Multiple port gas
7. Forced draft gas
8. Atomizing Oil (Stove of Air)
9. Atomizing Oil (Mechanical)
10. Rotary Cup Oil

2* USAGE CODES

1. Boiler, Steam
2. Boiler, Other (specify)
3. Air Heating for Space Heating
4. Air Heating for Process Usage
5. Others (specify)

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.	

FACILITY NUMBER	Information for Calendar Year	Date
EMISSION POINT 026	19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

026

Reference Number	Stack Data				Air Pollution Control Equipment			
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency	
							Design	Actual
1A	1.0				Ammoniation Vent	22		
1B	1.0				Amine Reactor Vent	NONE		

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

026

11 12

Reference Number	Process Emissions*			Basis for Estimation	(Agency Comments Only)
	Particulates	Sulfur Oxides	Others (Specify by chemical composition)		
1A	None Detected	None Detected		Stoichiometry	
1B	None Detected	None Detected	20 CFM H_2 PURGE	Stoichiometry	

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

FUEL BURNING EQUIPMENT

(FOR AGENCY USE ONLY)

026

Reference Number	Stack Parameters: Stack Height Feet	Stack Parameters: Inside Exit Dia. Feet	Stack Parameters: Exit Gas Velocity Feet/Sec.	Stack Parameters: Exit Gas Temperature Degree F.	Fuel Type	Fuel Data: Maximum Amount Per Hour (Specify Units)	Fuel Data: Amount Per Year (Specify Units)	Fuel Data: Heat Content BTU/Gal, etc. (Specify Units)	Fuel Data: Percent Sulfur	Fuel Data: Percent Ash
1	55	1.5	14.3	1000	NATURAL GAS	1.5 MCF	13,286 MCF	1010 BTU/SCF	NIL	NIL

FUEL SUPPLIERS:

Fuel Type	Supplier
NATURAL GAS	WILMUT GAS CO

FUEL BURNING EQUIPMENT

026

(FOR AGENCY USE ONLY)

11	12				13			
Reference Number	Air Pollution Control Equipment				Emissions (Tons/Year)			Basis of Estimate
	Manufacturer and Model Number	Type* (Use Table 1)	Efficiency					
			Design	Actual	Particulate	SO_2	Other (specify)	
1	None				NIL	NIL		

*For Wet Scrubber give Gallons per minute Water Flow and Water Pressure if known.

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.	

FACILITY NUMBER	Information for Calendar Year	Date
Emission Point 028	19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

028

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

Reference Number	Stack Data				Air Pollution Control Equipment			
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency	
							Design	Actual
1	1.0	2.0	NIL	72	WATER SCRUBBER			

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

PAGE 3

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

028

11 12

Reference Number	Process Emissions*			Basis for Estimation	(Agency Comments Only)
	Particulates	Sulfur Oxides	Others (Specify by chemical composition)		
1	None Detected	None Detected		Stoichiometry	

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.	

FACILITY NUMBER	Information for Calendar Year	Date
EMISSION POINT 029	19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULLES	West 7th STREET HATTIESBURG Ms.	

FACILITY NUMBER

Emission Point 030

Information for Calendar Year	Date
19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

030

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

Reference Number	Stack Data				Air Pollution Control Equipment			
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency	
							Design	Actual
1	35	0.1			None			

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

PAGE 3

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

030

11 12

Reference Number	Process Emissions*			Basis for Estimation	(Agency Comments Only)
	Particulates	Sulfur Oxides	Others (Specify by chemical composition)		
1	None Detected	None Detected	5 CFM H_2 Purge	Stoichiometry	

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.	

FACILITY NUMBER	Information for Calendar Year	Date
EMISSION POINT 031	19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

(FOR AGENCY USE ONLY)

MANUFACTURING PROCESS OPERATIONS

031

Reference Number	Stack Data				Air Pollution Control Equipment			
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency	
							Design	Actual
1	30	2.0			Oxidizer Vent	None		

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

031

11 12

Reference Number	Process Emissions*			Basis for Estimation	(Agency Comments Only)
	Particulates	Sulfur Oxides	Others (Specify by chemical composition)		
1	None Detected	None Detected		Stoichiometry	

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.	

FACILITY NUMBER	Information for Calendar Year	Date
EMISSION POINT 032	19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

032

Reference Number	Stack Data				Air Pollution Control Equipment			
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency	
							Design	Actual
1	50	0.17			WATER SCRUBBER	46		

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.	

FACILITY NUMBER	Information for Calendar Year	Date
EMISSION POINT 033	19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.	

FACILITY NUMBER	Information for Calendar Year	Date
EMISSION POINT 035	19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input Quantity Per Hour	Feed Input Quantity Per Year	Number of Emission Points To Air	Product Output* Quantity Per Hour	Product Output* Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

035

Reference Number	Stack Data				Air Pollution Control Equipment			
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency	
							Design	Actual
1					None			

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

MANUFACTURING PROCESS OPERATIONS

(FOR AGENCY USE ONLY)

035

11 Reference Number	12 Process Emissions* Particulates	Sulfur Oxides	Others (Specify by chemical composition)	Basis for Estimation	(Agency Coments Only)
1	None Detected	None Detected		Stoichiometry	

*Please Express Emissions as Tons per Year and Pounds per Hour and Identify Units Being Used.

FUEL BURNING EQUIPMENT
(Except for Refuse Disposal)

1 FACILITY NAME	Address	for Agency use Only
HERCULES	West 7th Street Hattiesburg Ms	

FACILITY NUMBER	Information for Calender Year	Date
Emission Point 036	19 85	6/86

2	3	4	5	6	7	
Reference Number	Manufacturer and Model Number	Rated Capacity 10^6BTU/hr	Type of Burner Unit (use code 1*)	Usage (use code 2*)	Most Usage % Process	% Space heat
1	Westvaco Regeneration Furnace	2.95	6	5 (Regeneration)	100	

1* BURNER CODES
1. Cyclone furnace
2. Pulverized coal
3. Spreader Stoker
4. Hand fired
6. Multiple port gas
7. Forced draft gas
8. Atomizing Oil (Stove of Air)
9. Atomizing Oil (Mechanical)

2* USAGE CODES
1. Boiler, Steam
2. Boiler, Other (specify)
3. Air Heating for Space Heating
4. Air Heating for Process Usage

FUEL BURNING EQUIPMENT

(FOR AGENCY USE ONLY)

036

Reference Number	Stack Parameters				Fuel Type	Fuel Data				
	Stack Height Feet	Inside Exit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature Degree F.		Maximum Amount Per Hour (Specify Units)	Amount Per Year (Specify Units)	Heat Content BTU/Gal, etc. (Specify Units)	Percent Sulfur	Percent Ash
1	41		4.9	170	NATURAL GAS	1.8 MCF	16,018 MCF	1010 BTU/SCF	NIL	NIL

FUEL SUPPLIERS:

Fuel Type	Supplier
NATURAL GAS	Wilmut Gas Co

MANUFACTURING PROCESS OPERATIONS

Company Name	Address	FOR AGENCY USE
HERCULES	West 7th STREET HATTIESBURG Ms.	

FACILITY NUMBER	Information for Calendar Year	Date
EMISSION POINT 036	19 85	6/86

Reference Number	Process or Unit Operation Name	Rated Process Capacity Tons/Hour	Feed Input		Number of Emission Points To Air	Product Output*	
			Quantity Per Hour	Quantity Per Year		Quantity Per Hour	Quantity Per Year
	See CONFIDENTIAL ATTACHMENT						

(FOR AGENCY USE ONLY)

MANUFACTURING PROCESS OPERATIONS

036

Reference Number	Stack Data				Air Pollution Control Equipment			
	Height Feet	Inside Unit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature °F	Manufacturer and Model Number	Type* (use Table 1)	Collection Efficiency	
							Design	Actual
1					SEE FUEL BURNING DATA			

*For Wet Scrubbers Give Gallons per minute Water Flow and Water Pressure if known.

(FOR AGENCY USE ONLY)

FUEL BURNING EQUIPMENT

036

11 Reference Number	12 Air Pollution Control Equipment: Manufacturer and Model Number	Type* (Use Table 1)	Efficiency: Design	Efficiency: Actual	13 Emissions (Tons/Year): Particulate	SO_2	Other (specify)	Basis of Estimate
1	WW SLY MFG. Co.	06, 41, 45, 72						
	(FURNACE CONTROLLED BY ANALIZING % O_2 AND % COMBUSTIBLES AND CONTROLLING EACH AT 0 %)							

*For Wet Scrubber give Gallons per minute Water Flow and Water Pressure if known.

FUEL BURNING EQUIPMENT
(Except for Refuse Disposal)

1 FACILITY NAME	Address	for Agency use Only
HERCULES.	WEST 7th STREET HATTIESBURG MS.	

FACILITY NUMBER	Information for Calender Year	Date
EMISSION POINT 037	19 85	6/86

2	3	4	5	6	7	
Reference Number	Manufacturer and Model Number	Rated Capacity 10^6BTU/hr	Type of Burner Unit (use code 1*)	Usage (use code 2*)	Most Usage % Process	Most Usage % Space heat
1	PACKAGE BOILER NO. 6	65	7	1	100	

1* BURNER CODES

1. Cyclone furnace
2. Pulverized coal
3. Spreader Stoker
4. Hand fired
6. Multiple port gas
7. Forced draft gas
8. Atomizing Oil (Stove of Air)
9. Atomizing Oil (Mechanical)

2* USAGE CODES

1. Boiler, Steam
2. Boiler, Other (specify)
3. Air Heating for Space Heating
4. Air Heating for Process Usage

FUEL BURNING EQUIPMENT

(FOR AGENCY USE ONLY)

037

Reference Number	Stack Parameters: Stack Height Feet	Inside Exit Dia. Feet	Exit Gas Velocity Feet/Sec.	Exit Gas Temperature Degree F.	Fuel Type	Fuel Data: Maximum Amount Per Hour (Specify Units)	Amount Per Year (Specify Units)	Heat Content BTU/Gal, etc. (Specify Units)	Percent Sulfur	Percent Ash
1	64	4			NATURAL GAS	65 MCFH	0			
					No 2 FUEL OIL	468 GPH	0			
					No 6 FUEL OIL	438 GPH	0			
					BY-PRODUCTS	48 GPH	0			
					(FUELS OTHER THAN NATURAL GAS WILL BE BURNED ONLY IN AN EMERGENCY SITUATION)					

FUEL SUPPLIERS:

Fuel Type	Supplier
NATURAL GAS	WILMUT GAS CO.
No 2 FUEL OIL	HESS OIL CO.
No 6 FUEL OIL	HESS OIL CO.

(FOR AGENCY USE ONLY)

037

FUEL BURNING EQUIPMENT

11	12				13			
Reference Number	Air Pollution Control Equipment				Emissions (Tons/Year)			Basis of Estimate
	Manufacturer and Model Number	Type* (Use Table 1)	Efficiency					
			Design	Actual	Particulate	SO_2	Other (specify)	
1	None				NIL	NIL		

*For Wet Scrubber give Gallons per minute Water Flow and Water Pressure if known.

REFUSE DISPOSAL AND INCINERATION

A

Company Name	Information for Year	(Agency Use Only)
HERCULLES	1985	
Address	Date	
West 7th STREET HATTIESBURG MS.	6/86	

B

Description of Waste Materials

Type (Describe)	C Maximum Amount Per Day (Pounds)	D Amount Per Year (Tons)	E Method of Disposal 1*
See CONFIDENTIAL ATTACHMENT			

If Waste Disposal is by Incineration, Specify the Following:

1. Type of Incinerator:
   - single chamber ☐
   - multiple Chamber ☐
   - Modified (describe) ☐
   - Other (describe) ☐
   - Rotary ☐
   - Flue Fed ☐

2. Manufacturer's Name: ______
   Model Number ______
   Rated Capacity ______ Pounds / Hour ______ Type Waste
3. Quantity Burned: ______ Pounds / Day
   ______ Tons / Year
4. Operating Schedule ______ Hours / Day
   ______ Days / Year

*1 Disposal Method Codes

1. Open Burning
2. Landfill (No Burning)
3. Incinerator (Complete rest of Form)
5. Burned in Boiler or Furnance
6. Other (Specify)

5-19-80

State of Mississippi
Air Pollution Control

PERMIT

TO OPERATE AIR EMISSIONS EQUIPMENT

THIS CERTIFIES THAT

Hercules, Incorporated
West 7th Street
Hattiesburg, Mississippi

has been granted permission to operate air emissions equipment in accordance with emission limitations, monitoring requirements and other conditions set forth herein. This permit is issued in accordance with the provisions of the Mississippi Air and Water Pollution Control Law (Section 49-17-1 et seq., Mississippi Code of 1972), and the regulations and standards adopted and promulgated thereunder.

Issued this 13th day of May, 19 80

AIR AND WATER POLLUTION CONTROL PERMIT BOARD

Executive Director

Expires 1st day of May, 19 83.

DATA CODED

Permit No. 0800-00001

APC 3-78

PART I
GENERAL CONDITIONS

1. All emissions authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any air pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions or modifications which will result in new, different, or increased emission of air pollutants must be reported by submission of a new application.

2. The permittee shall at all times maintain in good working order and operate as efficiently as possible all air pollution control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

3. Solids removed in the course of control of air emissions shall be disposed of in a manner such as to prevent the solids from becoming windborne and to prevent the materials from entering state waters.

4. Any diversion from or bypass of collection and control facilites is prohibited except (i) where unavoidable to prevent loss of life or severe property damage or (ii) when approved by the Mississippi Air and Water Pollution Control Permit Board.

5. Whenever any emergency, accidental or excessive discharge of air contaminants occurs, the office of the Mississippi Air and Water Pollution Control Commission shall be notified immediately of all information concerning cause of the discharge, point of discharge, volume and characteristics, and whether discharge is continuing or stopped.

6. Should the Executive Director of the Mississippi Air and Water Pollution Control Commission declare an Air Pollution Emergency Episode, the permittee will be required to operate in accordance with the permittee's previously approved Emissions Reduction Schedule.

7. The permittee shall allow the Mississippi Air and Water Pollution Control Commission and the Mississippi Air and Water Pollution Control Permit Board and/or their authorized representatives, upon the presentation of credentials:
   a. To enter upon the permittee's premises where an air emission source is located or in which any records are required to be kept under the terms and conditions of this permit; and
   b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring method required in this permit; and to sample any air emission.

8. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to:
   a. Violation of any terms or conditions of this permit;
   b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or
   c. A change in any condition that required either a temporary or permanent reduction or elimination of authorized air emissions.

9. For renewal of this permit the applicant shall make application not less than one-hundred eighty (180) days prior to the expiration date of the permit substantiated with current emissions data, test results or reports or other data as deemed necessary by the Mississippi Air and Water Pollution Control Permit Board.

10. Except for data determined to be confidential under the Mississippi Air and Water Pollution Control Law, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Mississippi Air and Water Pollution Control Commission.

11. The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

12. Nothing herein contained shall be construed as releasing the permittee from any liability for damage to persons or property by reason of the installation, maintenance, or operation of the air cleaning facility, or from compliance with the applicable statutes of the State, or with local laws, regulations, or ordinances.

13. This permit is non-transferable.

14. This permit is for air pollution control purposed only.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from mill room, extractor house, refinery, still house, and pexite plant, Emission Point 001.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from the Herchlor Plant, Emission Point 002.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from the Delnav Plant, Emission Point 005.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from the Poly-Pale Plant, Emission Point 006.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from the Rosin Shed, Emission Point 008.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Woodwaste Boilers No. 1 & No. 2, Emission Point 009.

Such emissions shall be limited and monitored by the permittee as specified below:

EMISSION CHARACTERISTIC	EMISSION LIMITATIONS		
	lb/hr	lbs/day	Other units (specify)
Particulate Matter			0.3 grains/sdcf

EMISSION CHARACTERISTIC	MONITORING REQUIREMENTS		
	Measurement Frequency	Sample Type	Reporting Frequency

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Woodwaste Boilers No. 3 & No. 4, Emission Point 010.

Such emissions shall be limited and monitored by the permittee as specified below:

EMISSION CHARACTERISTIC	EMISSION LIMITATIONS		
	lb/hr	lbs/day	Other units (specify)
Particulate Matter			0.3 grains/sdcf

EMISSION CHARACTERISTIC	MONITORING REQUIREMENTS		
	Measurement Frequency	Sample Type	Reporting Frequency

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Package Boiler No. 5, Emission Point 011.

Such emissions shall be limited and monitored by the permittee as specified below:

EMISSION CHARACTERISTIC	EMISSION LIMITATIONS		
	lb/hr	lbs/day	Other units (specify)
SO_2			4.8 $lb/10^6$ BTU
Particulate Matter			59.2 lb/hr

EMISSION CHARACTERISTIC	MONITORING REQUIREMENTS		
	Measurement Frequency	Sample Type	Reporting Frequency

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from the pitch blowing facility, Emission Point 012.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Truline Flaking and Packaging Area, Emission Point 014.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Hard Resins Area, Emission Point 015.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Continuous Esterification Unit, Emission Point 016.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Flaking House, Emission Point 018.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Foral and Staybelite Plant, Emission Point 019.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Hydrogen Furnace, Emission Point 020.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Pilot Plant, Emission Point 021.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Resin 731 Area, Emission Point 022.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Stills and Dresinates Area, Emission Point 023.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Kymene Plant, Emission Point 024.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Defoamer Plant, Emission Point 025.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Rosin Amine D, Emission Point 026.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Resin PS687 Plant, Emission Point 027.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Polyrad and Polyol, Emission Point 028.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Para-Cymene Unit, Emission Point 029.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Para-Menthane Unit, Emission Point 030.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Para-Menthane Hydroperoxide Unit, Emission Point 031.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Sulfate Turpentine Refining Unit, Emission Point 032.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Synthetic Pine Oil Facility, Emission Point 033.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Paracol Plant, Emission Point 035.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART II
EMISSION LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning May 13, 1980, and lasting until May 1, 1983, the permittee is authorized to operate air emissions equipment and emit air contaminants from Carbon Regeneration Furnace with Scrubber, Emission Point 036.

Such air emissions equipment shall be operated as efficiently as possible to provide the maximum reduction of air contaminants.

PART III
OTHER REQUIREMENTS

1. For Emission Points 001, 006, 012, 014, 015, 016, 018, 019, 022, 023, 024, 026, 027, 028, 029, 030, 031, 032, 033, and 035, the following condition shall apply:

   If odors from this facility should ever result in justifiable and verifiable complaints being filed, this facility may be required to control emissions of odorous substances to a degree greater than is now being achieved.

2. For Emission Points 009, 010, and 011, the following condition shall apply:

   By this condition, the stated facility is allowed sulfur dioxide emissions exceeding those emitted by the facility in 1970. This condition is authorized by the Bureau for a period equal to the remaining term of the Permit to Operate, i.e., until May 1, 1983.

   Operation of this facility at higher sulfur dioxide emission levels than in 1970 after May 1, 1983, is not allowed unless and until subsequent and additional Bureau authorization is given.

   Attendant to the authorization stated above, this facility shall make written quarterly reports to the Bureau with the first report to be made ninety (90) days after the natural gas curtailment begins or at the time of reapplication for Permit to Operate, whichever occurs first. The reports shall state density, heating value, daily usage (pounds/day), date of use and sulfur content of any and all fuels which exceed 2.2 sulfur by weight.

   Failure to adhere to the reporting requirements shall render the above-stated authorization null and void.

3. For Emission Point 012, the following additional condition will also apply:

   Records of the operation of this facility must be kept and must show the duration of operation (time and dates) and amount of material processed. These records must be available to the Mississippi Bureau of Pollution Control upon request.

4. For Emission Point 018, the following additional condition will also apply:

   Good housekeeping should be maintained to prevent fugitive dust. Should fugitive dust become excessive, additional control measures may be required.

(over)

5. For Emission Point 021, the following condition shall apply:

Since this unit is used for experimental purposes and emissions may change depending on the conditions of the experiments, reports must be made to the Mississippi Bureau of Pollution Control semi-annually beginning July 1, 1980, explaining all work done including, as a minimum, the duration of tests, types of raw materials used and products produced and an assessment of emissions caused.

6. For Emission Point 036, the following condition shall apply:

If the scrubber should fail or its effectiveness be reduced, the Bureau should be notified immediately by phone and followed with a letter. The information should include nature of failure, time-off, estimated repair time, and action taken to preclude a re-occurrence.

Permit File
Forrest

Hercules
110-0800-00001
Forrest County

Don Watts
April 21, 1980

On April 16 & 17, 1980, I accompanied Larry Lloyd of ES on an EPA audit inspection. We met with Mr. Charles Jordan, Senior Chemical Engineer at Hercules. Hercules is being reviewed by me for renewal of their Permit to Operate.

Hercules brings in pine stumps, extracts rosin from the stumps, and then makes various derivatives. Also, there are Herchlor and Delnav plants which are not related to the pine rosin derivatives.

The different plant sections are shown on the attached plot plan. The different emission points will be covered in the appropriate plant section.

Milling

This section is where the pine stumps are received, washed off (using a recirculating water supply), and then fed to a hog where they are chipped up.

Primary

The stump chips go from the milling area to the extractor house, where the rosin is extracted from the stumps by use of a solvent. The solvent is recovered for reuse and the rosin is fed to the refinery. The rosin is fractionated in the refinery and sent to either the still house or the pexite plant for further refinement. From this point, the rosin is fed to different areas of the facility for preparation of derivatives.

All of the operations in the milling section and in the primary section are covered by Emission Point 001. The extractor house, the refinery, and the still house are all connected to one common vent, which is preceeded by a water scrubber and oil scrubber. The pexite plant also has a vent preceeded by a water scrubber and oil scrubber. There are no controls in the mill room.

No problems were noted in these areas, and the Permit to Operate will be reissued.

Power House

This area contains the four woodwaste boilers and a package boiler. Boilers #1 & 2 which vent to the south stack are permitted as Emission Point 009, boilers 3 & 4 which vent to the north stack are Emission Point 010, and the package boiler #5 is Emission Point 011.

The package boiler #5 is operated on either natural gas or No. 6 fuel oil. It is run only when necessary. No problems were noted or are anticipated with this unit, so a Permit to Operate will be reissued.

DATA CODED

Poly-Pale

The Poly-Pale Plant is Emission Point 006. Here rosin is polymerized using an acid catalyst. There are two Dowtherm boilers, but only one is in operation at any time. There are two vents in the unit which are preceeded by a water scrubber. There is also a spray chamber off of a hot toluene tank.

No problems were noted, and a Permit to Operate will be issued.

Rosin Shipping

In this area, which is permitted as the Rosin Shed, Emission Point 008, rosin is prepared for shipping by either drumming or flaking. In the drumming process liquid resin is piped into metal drums. The flaking process is just like the flaking process in the Hard Resin Area. There is a dust hood on the cold end and a vapor hood on the hot end, and both hoods are vented to water scrubbers. There were no visible emissions from either of the scrubbers. A Permit to Operate will be issued.

Vinsol

There are two operations conducted in this portion of the plant.

The first is the Pitch Blowing Facility, which is Emission Point 012. Here pitch, which is the heavy, dark rosin, is oxidized by heating it in a kettle utilizing a gas fired furnace. There are two kettles and two furnaces. The oxidized pitch is used in the manufacture of some types of insulation boards. The pitch is stored at the north end of the facility past the Delnav and Terpene Derivatives areas.

All exhausts from the pitch blowing kettles are vented to the woodwaste boiler fire box. This is primarily for control of odor.

No problems were encountered. A Permit to Operate will be issued.

The other unit is the Truline Flaking and Packaging, Emission Point 014. It is much like the other two flaking units. There is a vapor hood which vents to a spray chamber. There are two baghouses for control from the "cool end" and from the packaging. There were no visible emissions from either baghouse or from the spray chamber. A Permit to Operate will be issued.

Rubber Chemicals

There are two operations in this portion of the plant: the Stills and Dresinate Area, Emission Point 023, and the Resin 731 Area, Emission Point 022.

In the Resin 731 Area, rosin is dehydronated. There are two Dowtherm boilers. There is one vent on the product line.

In the Stills and Dresinate Area, rosin is distilled so that various cuts can be used in other products. There are two hot wells and two Dowtherm boilers. The application shows no emission point in the process; however, there is one vent on the resinate mixer. It is a no flow vent which would emit only steam or water vapor.

No problems were noted with either emission point, so a Permit to Operate will be issued for each.

The woodwaste boilers are fed a mixture of wood, natural gas, resin by-products, and water contaminated with organic impurities. The maximum output of each boiler is about 80,000 #/hr with normal output being about 50,000 #/hr of steam. There are opacity monitors and %O_2 analyzers in the breeching of each boiler. At the time of the inspection, visible emissions from both stacks were less than 10%. No problems were noted so a Permit to Operate will be issued for both emission points.

Pilot Plant (indicated as P.P.)

This area is where new products are produced for testing. There are two vents for the plant, which is Emission Point 021. There is also a Dowtherm boiler. No problems were noted. A Permit to Operate will be issued.

Staybelite

This area includes two emission points: the Foral and Staybelite Plant, Emission Point 019, and the Hydrogen Furnace, Emission Point 020.

This area takes rosin and hydrogenates it. The hydrogen is either produced in the Hydrogen Furnace or is received from another area of the facility where rosin is dehydrogenated. The Foral and Staybelite Plant contains a Dowtherm boiler and one vent from an oil separator. There were no problems. A Permit to Operate will be issued.

The Hydrogen Furnace is a cracking furnace. There is natural gas feed and natural gas heat which breaks the feed down into H_2 (gas). There is one vent from the furnace, but there are no pollutants emitted. A Permit to Operate will be issued.

Hard Resins

In this area rosin is modified to form many different resins. There are three emission points in this area.

Emission Point 015, the Hard Resins Area, has one Dowtherm boiler and a common vent which is preceeded by an oil scrubber and water scrubber.

The Continuous Esterification Unit, Emission Point 016, produces an esterified rosin. There are two Dowtherm boilers and one common vent which follows a total condenser.

There is also a Flaking House, Emission Point 018. Here liquid resin is fed onto a conveyor; as the conveyor moves, the resin is cooled and hardens. When the hardened resin reaches the end of the conveyor, it is broken up into small pieces. There is a vapor hood over the "hot end" (where the liquid resin is added) of the conveyor. The fumes from the vapor hood go to a spray chamber and then exhaust to the air. At the cold end there is a dust hood which carries particulate to a baghouse. There were no visible emissions from either the baghouse or the scrubber vent.

No problems were noted in this area, so a Permit to Operate will be issued for each emission point.

Water Treatment

Hercules uses carbon absorption in the treatment of their wastewater. They have a Carbon Regeneration Furnace, Emission Point 036. The furnace regeneration is controlled by analyzing the %O_2 and % combustibles and controlling each at zero percent. There is also an afterburner, a baffled spray chamber, a spray tower scrubber, and mist eliminators for control of emissions.

No problems were noted, so the Permit to Operate will be issued.

Kymene

In the Kymene Plant, Emission Point 024, a polymerization reaction occurs to produce a polyamide resin. There is a spray chamber controlling emissions from a kettle vent, and there is a simple filter for particulate control.

No problems were noted, and the Permit to Operate will be issued.

Defoamer

In the Defoamer Plant, Emission Point 025, rosin is mixed to form a defoamer. There is one vent which goes into a simple filter dust bag. The dust bag is surrounded by a tin shed. Any emissions from the bag would settle on the ground in the shed. There was no evidence of dusting from the bag. A Permit to Operate will be issued.

Paracol

The Paracol Plant, Emission Point 035, blends resin to form paracol. The Paracol Plant is a closed system with no vents to the atmosphere. A Permit to Operate will be issued.

Delnav

The Delnav Plant, Emission Point 005, makes a pesticide (trade name is Delnav). During the reaction , HCl and H_2S are formed. The H_2S is vented to a flare, which combusts the H_2S to SO_2 (about 155 tons/yr produced). The HCl acid waste stream is passed through one of two limestone tanks. The acid enters the tank at the bottom and bubbles to the top. Both tanks are open to the atmosphere. There is also a sump for digestion of wastewater before it goes to the carbon absorption system. The sump is covered and has one vent. The vent goes into a 55 gallon drum filled with water.

There was a noticeable odor within the Delnav plant. However, it was not evident outside the Delnav Plant itself. A Permit to Operate will be issued with appropriate conditions.

Terpene Derivatives

There are two emission points in this area: the Sulfate Turpentine Refining, Emission Point 032, and the Synthetic Pine Oil Facility, Emission Point 033.

The Synthetic Pine Oil Facility is a closed system with no vent to the atmosphere. It is basically a distillation process.

The Sulfate Turpentine Refining is also a distillation process. Part of the raw materials are sulfate wastes from paper mills which are received by the car load. There is a common vent which is preceeded by a packed tower scrubber.

No problems were seen with either of these units, so a Permit to Operate will be issued.

Rosin Amine

There are three emission points within this area.

The first is the Rosin Amine D Plant, Emission Point 026. Rosin is modified to form a rosin amine derivative. There is one Dowtherm boiler. There are two reactors. The ammoniation reactor exhaust goes through a packed tower absorber and then vents into a barrel of water. The amine reactor vents straight to a barrel of water. A 20 cfm H_2 purge accompanies the exhaust gas from the amine reactor.

The Resin PS687 Plant is Emission Point 027. This was formerly known as the Resin 1977 Plant. Hydrogenated resin is produced in this plant. One Dowtherm boiler is used in the process. There is one vent which emits a 30 cfm H_2 purge.

The Polyrad and Polyol unit is Emission Point 028. Rosin is modified to form rosin adducts. There is one no flow vent from the process.

No problems were noted with any of these points, so a Permit to Operate will be issued.

PMHP

Three emission points are in this area.

The Para Menthane Hydroperoxide Unit is Emission Point 031. An oxidation reaction occurs to produce the above product. There is one no flow vent for the process.

The Para Cymene unit is Emission Point 029. A dehydrogenation reaction occurs to produce dehydrogenated dipentene. This is a closed system. The liberated hydrogen is sent to the Staybelite Area.

The Para Menthane Unit is Emission Point 030. A hydrogenation reaction occurs to produce hydrogenated dipentene. This is also a closed system, with any exhaust gases going to the Staybelite Area.

Both the Para Cymene and the Para Menthane units are equipped with purge systems that can be used in case of emergency.

No problems were noted, so the Permit to Operate will be issued.

Tall Oil

In this area tall oil is fractionated to produce rosin and fatty acids. The fractionated rosin can then be further distilled. There are three emission points included in this area. They are the Tall Oil Plant, Emission Point 003; the Union Iron Works Boilers, Emission Point 004; and Column 5-Tall Oil Plant, Emission Point 034. These units have not operated since 1974. Therefore, no Permit to Operate can be issued. Before these units can be operated, construction permit applications must be filed. A letter has been sent to Mr. Heller so informing him.

Herclor

In this area a synthetic rubber is produced at the Herclor Plant, Emission Point 002. There is a caustic scrubber to remove phosgene from the exit stream. Everything else is vented to a flare. Hercules is in the process of expanding the Herclor Plant. They presently have a Construction Permit on this emission point.

No problems were noted, so the Permit to Operate will be issued.

Summary of Report

No problems were seen or are anticipated. The Permits to Operate will be reissued with appropriate conditions.

The inspection schedule as set up will continue to be followed, paying special attention to the woodwaste boilers.

HERCULES

Hercules Incorporated
613 West 7th Street
Hattiesburg, MS 39403
(601) 545-3450
Fax: (601) 584-3226
www.herc.com

May 30, 2000

JUN 2000
Received

Mr. Toby Cook
Chief – EPD Chemical/Agricultural/Metal Manufacturing Branch
Office of Pollution Control
Mississippi Department of Environmental Quality
2380 Highway 80 West
Jackson, MS 39204

Dear Mr. Cook:

Hercules Incorporated's Hattiesburg, MS facility is submitting a modification to the facility's Title V permit application (Permit No. 0800-00001) to include 40 CFR 63 Subpart PPP, the National Emission Standards for Hazardous Air Pollutants for Polyether Polyols Production. A letter from Ms. Audra Sandifer of the Mississippi Department of Environmental Quality's Air Toxics Branch dated December 15 ,1999, requested that the modification to the Title V permit application be submitted no later than May 31, 2000. The purpose of this submittal is to update the Title V permit application, specifically the sections pertaining to the facility's Rosin Amine Derivatives (RAD) process area to include Subpart PPP applicability. If you have any questions or concerns, please call Charles Jordan with Hercules at (601) 545-3450 or Valerie Kazlauskas with Trinity Consultants at (225) 292-2661.

Sincerely,

HERCULES INCORPORATED

Walter D. Langhans
Plant Manager

Attachments

cc: Mr. Charles Jordan – Hercules
Ms. Valerie Kazlauskas – Trinity
Ms. Audra Sandifer – MDEQ (w/out attachments)
Mr. Doug Neeley – US EPA Region IV

HERCULES, INC.

Hattiesburg Facility
Hattiesburg, Mississippi

Title V Operating Permit Application

May 2000

Trinity Consultants

TITLE V OPERATING PERMIT APPLICATION
HERCULES, INC. ▪ HATTIESBURG, MISSISSIPPI FACILITY

Prepared by:

Shishir Mohan ▪ Manager of Consulting Services
Valerie Kazlauskas ▪ Project Consultant
Charlynn White ▪ Project Assistant

TRINITY CONSULTANTS
4000 S. Sherwood Forest Blvd.
Suite 503
Baton Rouge, LA 70816
(225) 292-2661

May 2000

Project 001901.0040

Trinity Consultants

1. INTRODUCTION

1.1 FACILITY DESCRIPTION

Hercules, Incorporated (Hercules) currently operates a chemical specialties manufacturing facility in Hattiesburg, Forrest County, Mississippi. The Hattiesburg facility operates under Title V Operating Permit No. 0800-00001, which was issued on November 13, 1998. The facility is a major source of Hazardous Air Pollutants (HAPs) under Title III of the 1990 Clean Air Act Amendments (CAAA). National Emissions Standards for Hazardous Air Pollutants (NESHAPs) Subpart PPP – National Emission Standards for Hazardous Air Pollutants for Polyether Polyols Production (40 CFR 63.1420) which was promulgated on June 1, 1999 applies to the Rosin Amine Derivatives (RAD) process area. The purpose of this submittal is to include Subpart PPP applicability in the facility's Title V Operating Permit.

1.2 PROCESS DESCRIPTION

Rosin Amine Derivatives (RAD), including Amines and Amine Acetates, are manufactured in the RAD area. Ethylene Oxide Derivatives (EOD), including Polyrads and Surfactants, are also manufactured in the RAD area. The major use of Amine Acetates is a collector for silica and silicate minerals. Amine Acetate is used primarily in the benefication of non-metallic ores. The Polyrads are corrosion inhibitors that are used for hydrochloric acid and for petroleum refining equipment. Their detergent properties aid in loosening and dispersing scale. The facility routinely produces RAD and/or EOD finished products. Some raw materials are stored in bulk storage tanks which are not in the immediate process area. Ammonia is stored in tanks in the Metal Resinates area. Ethylene Oxide is stored in an isolated storage tank away from the immediate process area. Finished products are either packaged or stored in product storage tanks in the RAD area.

The manufacturing scheme for RAD is: 1) rosin ammoniation in the presence of a metal catalyst to produce crude Nitrile; 2) batch distillation of crude Nitrile to produce distilled Nitrile; 3) hydrogenation of distilled Nitrile in the presence of a metal catalyst to produce Amine; and 4) various blending operations to produce Amine Acetates.

The manufacturing scheme for EOD is: 1) reacting Ethylene Oxide with various feed resins; and 2) various blending operations.

Emissions associated with the RAD process area primarily include: 1) reactor losses; 2) tank losses from raw materials and product storage; 3) fugitive losses; and 4) accounting inventories and mass balances. The RAD ammoniation reactor vent is equipped with a water scrubber. The Nitrile still operates under vacuum and is equipped with a barometric condenser/hot well. The hydrogenation reactor's vent is equipped with a water scrubber bucket. The blending operations are associated with tank losses.

The EOD reactor vent is equipped with a weak Sulfuric Acid circulating media to convert Ethylene Oxide to Ethylene Glycol controlled blowdown.

A diagram of the RAD process area is found in Appendix C.

1.3 EMISSION SOURCES

The emission points for the RAD process area at the Hattiesburg facility are provided in this update to the Title V permit application. Based on the Mississippi Air Pollution Code, APC-S-6, Section VII.B, some of the emission sources at the Hattiesburg facility are insignificant sources and need to be identified in the Title V permit application. All insignificant activities are identified in Section C of the Title V permit application.

1.4 EMISSION CALCULATIONS

Detailed emission rate calculations for all sources are provided in Appendix A of the permit application. The emission rate calculations for all sources were performed using engineering estimates, design data, and SOCMI emission factors for fugitive components.

1.5 APPLICABLE REGULATIONS

All applicable state and federal regulations for the Hattiesburg facility are provided in Section N of the Title V permit application.

The Hattiesburg facility is subject to a number of federal and state air quality regulations including National Emission Standards for Hazardous Air Pollutants (NESHAPs) Subpart PPP – National Emission Standards for Hazardous Air Pollutants for Polyether Polyols Production (40 CFR 63.1420).

As noted in Section O, the Hattiesburg facility is currently in compliance with applicable state and federal regulations. The statement indicating current compliance status is provided in Section O of the Title V permit application.

1.6 CHEMICAL ACCIDENT PREVENTION REGULATION

The accidental release prevention program is mandated by section 112(r) of the Clean Air Act and is codified in 40 CFR 68. The program was finalized on June 20, 1996. The Hattiesburg facility is complying with all applicable provisions of the accidental release program.

1.7 STRATOSPHERIC OZONE PROTECTION

Title VI of the Clean Air Act Amendments requires phaseout of ozone-depleting chemicals. The stratospheric ozone protection provisions have been codified in 40 CFR 82. The Hattiesburg facility does not manufacture any ozone depleting substances as identified in 40 CFR 82.

1.8 National Ambient Air Quality Standards

The Hattiesburg facility is located in Forrest County, Mississippi, which is classified as attainment for all criteria pollutants. The Hattiesburg facility is in compliance with the state requirements in the State Implementation Plan (SIP). Therefore, it is in compliance with the state requirements designed to meet the National Ambient Air Quality Standards.

1.9 Summary

All the forms required to furnish a complete Title V permit application have been completed. In addition, detailed emission rate calculations are provided for reference in Appendix A. Confidential business information, including raw material input and product output data, is included in Appendix D. A map indicating the location of the facility is found in Appendix B, and a RAD process area diagram is provided in Appendix C.

JUN 2000
Received

FOR OFFICIAL USE ONLY	
APPLICATION RECEIPT DATE:	
APPLICATION NO.:	
FOR MODIFICATION: MINOR	

STATE OF MISSISSIPPI
DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF POLLUTION CONTROL
AIR DIVISION

P.O. BOX 10385
JACKSON, MS. 39289-0385
PHONE NO.: (601) 961 - 5171

APPLICATION FOR TITLE V AIR POLLUTION CONTROL PERMIT TO OPERATE AIR EMISSIONS EQUIPMENT

PERMITTING ACTIVITY:

____	INITIAL APPLICATION
X	MODIFICATION
____	RENEWAL OF OPERATING PERMIT

NAME:	Hercules, Inc.
CITY:	Hattiesburg
COUNTY:	Forrest
FACILITY No. (if known):	0800-00001

APPLICATION FOR TITLE V PERMIT TO OPERATE AIR EMISSIONS EQUIPMENT

CONTENTS

OPERATING PERMIT APPLICATION REQUIREMENTS

All applications must be submitted on the form supplied by the Permit Board. Trivial activities which are listed in Attachment A are presumed to emit less than 1 pound per hour of a pollutant that is not a hazardous air pollutant and less than 0.1 pound per hour of any hazardous air pollutant; these activities need not be reported in the application. Insignificant activities which are specified in Section VII.A. of Regulation APC-S-6 and listed herein also need not be included. For insignificant activities which are specified in Section VII.B. of Regulation APC-S-6, a list must be included in the application. An application may not omit information needed to determine the applicability of or to impose, any applicable requirement, or to evaluate the fee amount required under the schedule pursuant to Section VI. of Regulation APC-S-6. The forms and attachments shall include the elements specified as follows:

A. Identifying information, including company name and address (or plant name and address if different from the company name), owners name and agent, and telephone number and names of plant site manager/contact;

B. A description of the sources process and products by Standard Industrial Classification Code including any associated with any alternate scenario identified by the source;

C. Emission-related information as follows:

1. A qualitative description of all emissions units, including those not subject to applicable requirements but not those omitted under trivial or insignificant activities provisions;

2. A description of all emissions of pollutants for which the source is major and of all emissions of regulated air pollutants sufficient to determine or verify major source status, to determine or verify applicability of and compliancewith applicable requirements, and to assess and collect permit fees, if the emissions basis for fees has not been previously determined. Fugitive emissions from individual components within a facility may be determined collectively based on their relationship to the associated process unless individual emission rates are needed to determine the applicability of an applicable requirement such as NSPS, NESHAPS, a MACT standard, etc. or to determine air quality impacts. Similarly, where individual components or units with a facility may be classified into a generic group due to the commonality of applicable requirements and/or the nature of operation, stack emissions may be determined collectively for the group unless individual emission rates are needed to determine applicability of an applicable requirement or to determine air quality impacts;

3. For each pollutant and emissions unit which is regulated, emission rates in TPY and in such terms as are necessary to establish compliance consistent with the applicable standard reference test method, except that, for pollutants and units which have no applicable requirements expressed in emission rate terms, emission rate quantification may be omitted;

4. To the extent it is needed to determine or regulate emissions, the information that follows: fuels, fuel use, raw materials, production rates, and operating schedules;

5. Identification and description of air pollution control equipment and compliance monitoring devices or activities;

6. Limitations on source operation affecting emissions or any work practice standards, where applicable, for all regulated pollutants at the Title V source;

7. Other information required by any applicable requirement (including information related to stack height limitations developed pursuant to Section 123 of the Federal Act); and

8. Calculations on which the information requested in this section is based;

D. Air pollution control requirements as follows:

1. Citation and description of all applicable requirements, and

2. Description of or reference to any applicable test method for determining compliance with each applicable requirement;

E. Other specific information that may be necessary to implement and enforce other applicable requirements of the Federal Act or of these regulations or to determine the applicability of such requirements;

F. An explanation of any proposed exemptions from otherwise applicable requirements;

G. Additional information as determined to be necessary by the Permit Board to define alternative operating scenarios identified by the source pursuant to Section III.A.9. of Regulation APC-S-6 or to define permit terms and conditions implementing 40 CFR 70.4(b)(12) or Section III.A.10. of Regulation APC-S-6;

H. A compliance plan for all Title V sources that contains all of the following:

1. A description of the compliance status of the source with respect to all applicable requirements;

2. A description as follows:

a. For applicable requirements with which the source is in compliance, a statement that the source will continue to comply with such requirements;

b. For applicable requirements that will become effective during the permit term, a statement that the source will meet such requirements on a timely basis;

c. For requirements for which the source is not in compliance at the time of permit issuance, a narrative description of how the source will achieve compliance with such requirements;

3. A compliance schedule as follows:

a. For applicable requirements with which the source is in compliance, a statement that the source will continue to comply with such requirements;

b. For applicable requirements that will become effective during the permit term, a statement that the source will meet such requirements on a timely basis. A statement that the source will meet in a timely manner applicable requirements that become effective during the permit term shall satisfy this provision, unless a more detailed schedule is expressly required by the applicable requirements;

c. A schedule of compliance for sources that are not in compliance with all applicable requirements at the time of permit issuance. Such a schedule shall include a schedule or remedial measures, including an enforceable sequence of actions with milestones, leading to compliance with any applicable requirements for which the source will be in noncompliance at the time of permit issuance. This compliance schedule shall resemble and be at least as stringent as that contained in any judicial consent decree or administrative order to which the source is subject. Any such schedule of compliance shall be supplemental to, and shall not sanction noncompliance with, the applicable requirements on which it is based;

4. A schedule for submission of certified progress reports, to be submitted no less frequently than every 6 months for sources required to have a schedule of compliance to remedy a violation;

5. The compliance plan content requirements specified in this paragraph shall apply and be included in the acid rain portion of a compliance plan for an affected source, except as specifically superseded by regulations promulgated under Title IV of the Federal Act with regard to the schedule and method(s) the source will use to achieve compliance with the acid rain emissions limitations;

I. Requirements for compliance certification, including the following:

1. A certification of compliance with all applicable requirements by a responsible official consistent with Section II.E of Regulation APC-S-6 and Section 114(a)(3) of the Federal Act;

2. A statement of methods used for determining compliance, including a description of monitoring, recordkeeping, and reporting requirements and test methods;

3. A schedule for submission of compliance certifications during the permit term, to be submitted no less frequently than annually, or more frequently if specified by the underlying applicable requirement or by the Permit Board;

4. A statement indicating the sources compliance status with any applicable enhanced monitoring and compliance certification requirements of the Federal Act; and

J. The use of nationally-standardized forms for acid rain portions of permit applications and compliance plans, as required by regulations promulgated under Title IV of the Federal Act.

INSIGNIFICANT ACTIVITIES AND EMISSIONS

I. The following activities/emissions sources are not required to be included in a Title V permit application:

A. New or modified pilot plants, subject to temporary source regulations located in Section III.E. of regulation APC-S-6.

B. Maintenance and upkeep:

1. Maintenance, structural changes, or repairs which do not change the capacity of such process, fuel-burning, refuse-burning, or control equipment, and do not involve any change in quality, nature, or quantity of potential emissions of any regulated air pollutants; and

2. Housekeeping activities or building maintenance procedures;

C. Air conditioning or ventilation: comfort air conditioning or comfort ventilating systems which do not transport, remove, or exhaust regulated air pollutants to the atmosphere;

D. Laboratory equipment:

1. Laboratory equipment used exclusively for chemical or physical analysis for quality control or environmental monitoring purposes; or

2. Non-production laboratory equipment used at non-profit health or non-profit educational institutions for chemical or physical analyses, bench scale experimentation or training, or instruction;

E. Hot water heaters which are used for domestic purposes only and are not used to heat process water;

F. Fuel use related to food preparation by a restaurant, cafeteria, residential cooker or barbecue grill where the products are intended for human consumption;

G. Clerical activities such as operating copy machines and document printers, except operation of such units on a commercial basis;

H. Hand held equipment used for buffing, polishing, carving, cutting, drilling, machining, routing, sanding, sawing, surface grinding, or turning of ceramic art work, precision parts, leather, metals, plastics, fiber board, masonry, carbon, glass, or wood;

I. Equipment for washing or drying fabricated glass or metal products, if no VOCs are used in the process and no oil or solid fuel is burned;

J. Water cooling towers (except at nuclear power plants); water treatment systems for process cooling water or boiler feed water; and water tanks, reservoirs, or other water containers not used in direct contact with gaseous or liquid process streams containing carbon compounds, sulfur compounds, halogens or halogen compounds, cyanide compounds, inorganic acids, or acid gases;

K. Domestic sewage treatment facilities (excluding combustion or incineration equipment, land farms, storage silos for dry material, or grease trap waste handling or treatment facilities);

L. Stacks or vents to prevent escape of sewer gases through plumbing traps;

M. Vacuum cleaning systems for housekeeping, except at a source with hazardous air pollutants;

N. Alkaline/phosphate washers and associated cleaners and burners;

O. Mobile sources;

P. Livestock and poultry feedlots and associated fuel burning equipment other than incinerators;

Q. Outdoor kerosene heaters;

R. Equipment used for hydraulic or hydrostatic testing;

S. Safety devices, excluding those with continuous emissions; and

T. Brazing, soldering, or welding equipment that is used intermittently or in a non-continuous mode.

II. The following activities/emissions sources must be listed in the application but emissions from these activities do not have to be quantified.

A. All gas fired, #2 oil fired, infrared, electric ovens with no emissions other than products of fuel combustion;

B. Combustion units with rated input capacity less than 10 million Btu/hr that are fueled by:

1. Liquified petroleum gas or natural gas supplied by a public utility; or

2. Commercial fuel oil #2 or lighter;

C. Equipment used for inspection of metal products;

D. Equipment used exclusively for forging, pressing, drawing, spinning, or extruding metals;

E. Equipment used exclusively to mill or grind coatings and molding compounds where all materials charged are in paste form;

F. Mixers, blenders, roll mills, or calendars for rubber or plastics for which no materials in powder form are added and in which no organic solvents, diluents, or thinners are used;

G. All storage tanks used exclusively to store fuel oils, kerosene, diesel, jet fuel, crude oil, natural gas, or liquified petroleum gas (the application must list the size of the tank, date constructed and/or modified, type tank, and material stored);

H. Space heaters utilizing natural or LPG gas and used exclusively for space heating;

I. Back-up or emergency use generators, boilers or other fuel burning equipment which is of equal or smaller capacity than normal main operating equipment, cannot be used in conjunction with normal main operating equipment, and does not emit, have or cause the potential to emit of any regulated air pollutant to increase;

J. Blast cleaning equipment using a suspension of abrasives in water;

K. Die casting machines;

L. Foundry sand mold forming equipment to which no heat is applied and from which no organics are emitted.

M. Bark and wood - waste storage and handling;

N. Log wetting areas;

P. Log flumes;

Q. Sodium hydrosulfide storage tank;

R. Smelt dissolving tank view ports;

S. Spout cooling water storage;

T. Effluent drains;

U. White water chest;

V. Repupler vents;

W. Clay storage tank;

X. Alum storage tank;

Y. Starch storage tank;

Z. Steam vents and leaks;

AA. Deaerator vents;

AB. Mill air and instrument air system;

AC. Demineralizer water storage tank;

AD. Acid storage tank;

AE. Process water tank;

AF. Air purification system vents;

AG. Effluent neutralizing tank/system;

AH. Dregs washer;

AI. Lime silo;

AJ. Lime mud mix tank;

AK. H_2O_2 storage tank;

AL. Green liquor tank; and

AM. Tall oil storage tank.

III. Notwithstanding I. and II. above, the applicant shall include all emissions sources and quantify emissions if needed to determine major source status, to determine compliance with an applicable requirement and/or the applicability of any applicable requirement such as NSPS, NESHAP, MACT standard, etc. as such term is defined in Section I. of Regulation APC-S-6 or collect any permit fee owed under the approved fee scheduled.

IV. Notwithstanding I. and II. above, the applicant shall include all emission sources with a potential to emit:

1. greater than 1 pound per hour of any regulated pollutant that is not a hazardous air pollutant;

2. greater than 0.1 pound per hour of any hazardous air pollutant.

V. The permittee does not have to report the addition of any insignificant activity listed in Section I. above unless the addition is a Title I modification or requires a permit to construct. If a Title I permit or a Permit to Construct is required, then the modification procedures outlined in Section IV.E. of Regulation APC-S-6 shall be followed.

IV. The addition of any insignificant activity listed in Section II. above, shall be handled as an administrative amendment as defined in Section IV.D. of Regulation APC-S-6 unless the addition is a Title I modification or requires a Permit to Construct. If a Title I permit or Permit to Construct is required, then the modification procedures outlined in Section IV.E. of Regulation APC-S-6 shall be followed.

REGULATED AIR POLLUTANTS

Total suspended particulate matter
PM_{10}
Sulfur dioxide
Nitrogen oxides
Carbon monoxide
Volatile organic compounds(see note 1)
Lead
Dioxin/Furan
Fluorides
Hydrogen chloride
Hydrogen sulfide
Sulfuric acid mist
Total reduced sulfur
Reduced sulfur compounds
Arsenic
Asbestos
Beryllium
Benzene
Mercury
Radionuclides
Vinyl chloride
Carbon tetrachloride
Chlorofluorocarbon-11
Chlorofluorocarbon-12
Chlorofluorocarbon-13
Chlorofluorocarbon-111
Chlorofluorocarbon-112
Chlorofluorocarbon-113
Chlorofluorocarbon-114
Chlorofluorocarbon-115
Chlorofluorocarbon-211
Chlorofluorocarbon-212
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Hydrochlorofluorocarbon-21
Hydrochlorofluorocarbon-22
Hydrochlorofluorocarbon-31
Hydrochlorofluorocarbon-121
Hydrochlorofluorocarbon-122
Hydrochlorofluorocarbon-123
Hydrochlorofluorocarbon-124
Hydrochlorofluorocarbon-131
Hydrochlorofluorocarbon-132
Hydrochlorofluorocarbon-133
Hydrochlorofluorocarbon-141
Hydrochlorofluorocarbon-142
Hydrochlorofluorocarbon-221
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Hydrochlorofluorocarbon-243
Hydrochlorofluorocarbon-244
Hydrochlorofluorocarbon-251
Hydrochlorofluorocarbon-252
Hydrochlorofluorocarbon-253
Hydrochlorofluorocarbon-261
Hydrochlorofluorocarbon-262
Hydrochlorofluorocarbon-271
Halon-1211
Halon-1301
Halon-2402
Methyl chloroform

Note 1 - Volatile organic compounds (VOC) includes any compound of carbon, excluding carbon monoxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate, which participates in atmospheric photochemical reactions. This includes any such organic compound other than the following which have been determined to have negligible photochemical reactivity: Methane; ethane; methylene chloride; 1,1,1-trichloroethane; CFC-113; CFC-11;CFC-12; CFC-22; FC-23; CFC-114; CFC-115; HCFC-123; HFC-134a; HCFC-141b; HCFC-142b; HCFC-124; HFC-125; HFC-134; HFC-143a; HFC-153a; and perfluorocarbon compounds which fall into these classes: (i) Cyclic, branched, or linear, completely fluorinated alkanes; (ii) Cyclic, benched, or linear, completely fluorinated ethers with no unsaturations; (iii) Cyclic, branched, or linear completely fluorinated tertiary amines with no unsaturations; and (iv) Sulfur containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine. **For the purposes of this application hazardous air pollutants that are volatile organic compounds should be included as VOCs for reflection of total VOCs from the facility but need to be identified separately as well.**

HAZARDOUS AIR POLLUTANTS

CAS No.	CHEMICAL NAME
75070	Acetaldehyde
60355	Acetamide
75058	Acetonitrile
98862	Acetophenone
53963	Acetylaminofluorene(2)
107028	Acrolein
79061	Acrylamide
79107	Acrylic Acid
107131	Acrylonitrile
107051	Allyl Chloride
92671	Aminodipheyl(4)
62533	Aniline
90040	Anisidine(o)
7440360	Antimony Compounds
7440382	Arsenic Compounds (inorganic including arsine)
1332214	Asbestos
71432	Benzene
92875	Benzidine
98077	Benzotrichloride
100447	Benzyl Chloride
7440417	Beryllium Compounds
192524	Biphenyl
117817	Bis(2-ethhylhexyl)phthalate(DEHP) (Dioctyl Phthalate)
542881	Bis(chloromethyl)ether
75252	Bromoform
106990	Butadiene(1,3)
7440439	Cadmium Compounds
156627	Calcium Cyanamide
105602	Caprolactam
133062	Captan
63252	Carbaryl
75150	Carbon Disulfide
56235	Carbon Tetrachloride
463581	Carbonyl Sulfide
120809	Catechol
133904	Chloramben
57749	Chlordane
7782505	Chlorine
79118	Chloroacetic Acid
532274	Chloroacetophenone(2)
108907	Chlorobenzene
510156	Chlorobenzinate
67663	Chloroform
107302	Chloromethyl methyl ether
126998	Chloroprene (Neoprene; 2-Chloro-1,3-Butadiene)
7440473	Chromium Compounds (IV)
10210681	Cobalt Carbonyl (as Co)
7440484	Cobalt Compounds (metal, dust, and fumes as Co)
16842038	Cobalt Hydrocarbonyl (as Co)

HAZARDOUS AIR POLLUTANTS

CAS No.	CHEMICAL NAME
65996818A	Coke Oven Emissions
1319773	Cresols/Cresylic acid
108394	Cresol(m)
95487	Cresol(o)
106445	Cresol(p)
98828	Cumene (Isopropylbenzene)
---	Cyanide Compounds (NOTE # 1)
3547044	DDE
334883	Diazomethane
132649	Dibenzofurans
96128	Dibromo-3-chloropropane(1,2)
84742	Dibutylphthalate
106467	Dichlorobenzene(1,4)(p)
91941	Dichlorobenzidene(3,3)
111444	Dichloroethyl ether (Bis(2-chloroehtyl)ether)
542756	Dichloropropene(1,3)
62737	Dichlorvos
111422	Diethanolamine
121697	Diethyl aniline (N,N) (dimethylaniline (N,N))
64675	Diethyl Sulfate
119904	Dimethoxybenzidine(3,3')
60117	4 - Dimethyl aminoazobenzene
119937	Dimethyl benzidine (3,3')
79447	Dimethyl carbamoyl chloride
68122	Dimethyl formamide
57147	Dimethyl hydrazine(1,1)
131113	Dimethyl phthalate
77781	Dimethyl sulfate
534521	Dinitro-o-cresol(4,6), and salts
51285	Dinitrophenol(2,4)
121142	Dinitrotoluene(2,4)
123911	Dioxane(1,4) (1,4-diethyleneoxide)
122667	Diphenylhydrazine(1,2)
94757	d(2,4), salts and esters
106898	Epichlorohydrin (Chloro-2,3-epoxypropane(1))
106887	Epoxybutane(1,2) (1,2-Butylene oxide)
140885	Ethyl acrylate
100414	Ethyl benzene
51796	Ethyl carbamate (Urethane)
75003	Ethyl chloride (Chloroethane)
106934	Ethylene dibromide (1,2-Dibromoethane)
107062	Ethylene dichloride (1,2-Dichloroethane)
107211	Ethylene glycol
151564	Ethylene imine (Azridine)
75218	Ethylene oxide
96457	Ethylene thiourea
75343	Ethylidene dichloride (1,1-Dichloroethane)
50000	Formaldehyde
---	Glycol ethers (NOTE #2)
76448	Heptachlor

HAZARDOUS AIR POLLUTANTS

CAS No.	CHEMICAL NAME
118741	Hexachlorobenzene
87683	Hexachlorocyclopentadiene
67721	Hexachloroethane
822060	Hexamethylene-1,6-diisocyanate
680319	Hexamethylphosphoramide
110543	Hexane
302012	Hydrazine
7647010	Hydrochloric acid
7664393	Hydrogen Fluoride (Hydrofluoric acid)
123319	Hydroquinone
78591	Isophorone
7439921	Lead Compounds
58899	Lindane (all isomers)
108316	Maleic anhydride.
7439965	Manganese Compounds
7439976	Mercury Compounds
67561	Methanol
72435	Methoxychlor
74839	Methyl bromide (Bromomethane)
74873	Methyl chloride (Chloromethane)
71556	Methyl chloroform (1,1,1-Trichloroethane)
78933	Methyl ehtyl ketone (2-Butanone) (MEK)
60344	Methyl hydrazine
74884	Methyl iodide (Iodomethane)
108101	Methyl isobutyl ketone (Hexone)
624839	Methyl isocyanate
80626	Methyl methacrylate
1634044	Methyl tert butyl ether
101144	Methylene bis(2-chloroaniline)(4,4) (MOCA)
75092	Methylene chloride (Dichloromethane)
101688	Methylene diphenyl diisocynate (MDI)
101779	Methylenedianiline(4,4')
—	Mineral fibers (NOTE #3)
91203	Naphthalene
7440020	Nickel Compounds
7440020	Nickel, refinery dust
12035722	Nickel, subsulfide
98953	Nitrobenzene
92933	Nitrodiphenyl(4)
100027	Nitrophenol(4)
79469	Nitropropane(2)
62759	Nitrosodimethylamine(N) (Dimethylnitrosoamine)
59892	Nitrosomorpholine(N)
684935	Nitroso-N-methylurea(N)
56382	Parathion
82688	Pentachloronitrobenzene (Quintobenzene)
87865	Pentachlorophenol
108952	Phenol
106503	Phenylenediamine(p)
75445	Phosgene

HAZARDOUS AIR POLLUTANTS

CAS No.	CHEMICAL NAME
7803512	Phosphine
7723140	Phosphorus
85449	Phthalic anhydride
1336363	Polychlorinated biphenyls (Arochlors)
---	Polycylic Organic Matter (NOTE #5)
1120714	Propane sultone(1,3)
57578	Propiolactone(beta)
123386	Propionaldehyde
114261	Propoxur (Baygon)
78875	Propylene dichloride (1,2 dichloropropane)
75558	Propylene imine(1,2) (2-methyl aziridine)
75569	Propylene oxide
91225	Quinoline
106514	Quinone (1,4-Cyclohexadienedione)
---	Radionuclides (including radon) (NOTE #4)
7782492	Selenium Compounds
100425	Styrene
96093	Styrene oxide
1746016	Tetrachlorodibenzo-p-dioxin(2,3,7,8) (TCDD) (Dioxin)
79345	Tetrachloroethane(1,1,2,2)
127184	Tetrachloroethylene (Perchloroethylene)
7550450	Titanium Tetrachloride
108883	Toluene
95807	Toluene diamine(2,4) (2,4-diaminotoluene)
584849	Toluene diisocyanate(2,4)
95534	Toluidine(o)
8001352	Toxaphene (Chlorinated camphene)
120821	Trichlorobenzene(1,2,4)
79005	Trichloroethane(1,1,2)
79016	Trichloroethylene
95954	Trichlorophenol(2,4,5)
88062	Trichlorophenol(2,4,6)
121448	Triethylamine
1582098	Trifluralin
540841	Trimethylpentane(2,2,4)
75014	Vinyl Chloride
108054	Vinyl Acetate
593602	Vinyl Bromide
75354	Vinylidene chloride (1,1-Dichloroethylene)
1330207	Xylenes (mixed)
108383	Xylene(m)
95476	Xylene(o)
106423	Xylene(p)

NOTE # 1: X'CN where X = H' or any other group where a formal dissociation may occur, for example: KCN or $Ca(CN)_2$.

NOTE # 2: Includes mono- and di- ethers of ethylene glycol, dietheylene glycol and triethylene glycol $R-(OCH_2CH_2)n-OR'$ where:

n = 1,2,3
R = alkyl or arl groups
R' = R,H, or group which, when removed, yield glycols ethers with the structure: $R-(OCH_2CH_2)n-OH$. Polymers are excluded from the glycol category

NOTE # 3: Includes glass microfibers, glass wool fibers, rock wool fibers, and slag wool fibers, each characterized as "respirable" (fiber diameter less then 3.5 micrometers) and possessing an aspect ratio (fiber length divided by fiber diameter) greater than 3.

NOTE # 4: A type of atom which spontaneously undergoes radioactive decay.

NOTE # 5: Includes organic compounds with more than one benzene ring, and which have a boiling point greater than or equal to 100 Celsius.

Owners Information Section B

1. Name, Address & Contact for the Owner/Applicant

   A. Company Name: Hercules, Incorporated

   B. Mailing Address:

      1. Street Address or P. O. Box: 613 W. 7th Street
      2. City: Hattiesburg 3. State: MS
      4. Zip Code: 39401
      5. Telephone No.: (601) 545-3450

   C. Contact:

      1. Name: Charles Jordan
      2. Title: Environmental Coordinator

2. Name, Address, Location and Contact for the Facility:

   A. Name: Hercules, Incorporated

   B. Mailing Address:

      1. Street Address or P.O. Box: 613 W. 7th Street
      2. City: Hattiesburg 3. State: MS
      4. Zip Code: 39401
      5. Telephone No.: (601) 545-3450

   C. Site Location:

      1. Street: 613 West 7th Street
      2. City: Hattiesburg 3. State: MS
      4. County: Forrest 5. Zip Code: 39401
      6. Telephone No.: (601) 545-3450

   Note: If the facility is located outside of the City limits, please attach a sketch or description to this application showing the approximate location of the site.

   D. Contact:

      1. Name: Charles Jordan
      2. Title: Environmental Coordinator

3. SIC Code(s)(including any associated with alternate operating scenarios):
   2861, 2821, 2869, 2899

4.	Number of Employees	125
5.	Principal Product(s):	Rosin Derivatives and Paper Chemicals
6.	Principal Raw Materials:	Rosin and Paper Chemicals
7.	Principal Process(es):	Rosin Derivatives and Paper Chemicals Manufacturing

8. Maximum amount of principal product produced or raw material consumed per day: 3,103,720 lbs/day

9. Facility Operating Schedule:

A.	Specify maximum hours per day the operation will occur:	24
B.	Specify maximum days per week the operation will occur:	7
C.	Specify maximum weeks per year the operation will occur:	52
D.	Specify the months the operation will occur:	January-December

10. Is this facility a small business as defined by the Small Business Act? No

11. **EACH APPLICATION MUST BE SIGNED BY THE APPLICANT.**

The application must be signed by a responsible official as defined in Regulation APC-S-6, Section I.A.26.

I certify that to the best of my knowledge and belief formed after reasonable inquiry, the statements and information in this application are true, complete, and accurate, and that, as a responsible official, my signature shall constitute an agreement that the applicant assumes the responsibility for any alteration, additions, or changes in operation that may be necessary to achieve and maintain compliance with all applicable Rules and Regulations.

Walter Langhans	**Plant Manager**
Printed Name of Responsible Official	**Title**
5/31/00	
Date Application Signed	**Signature of Applicants Responsible Official**

EMISSIONS SUMMARY for the ENTIRE FACILITY

List below the total emissions for each pollutant from the entire facility in accordance with Operating Permit Application Requirements, pp. 3-5. For stack emissions, use the maximum annual allowable (potential) emissions. For fugitive emissions, use the annual emissions calculated using the maximum operating conditions.

POLLUTANT Footnote 1	ANNUAL EMISSION RATE	
	lb/hr	tons/yr
Particulate matter (PM/PM_{10}) (Footnote 2)	358.08	1,568.39
Sulfur dioxide (SO_2)	479.21	2,098.93
Nitrogen oxides (NOx)	127.58	558.79
Carbon monoxide (CO)	10.25	44.88
Volatile Organic Compounds (VOC)	253.77	1,111.48
Total Hazardous Air Pollutants (HAP)	83.29	364.83
Epichlorohydrin	1.70	7.46
Toluene	78.49	343.80
Xylene	0.12	0.51
Ethylbenzene	0.03	0.14
Ethylene oxide	2.32	10.17
Biphenyl	0.63	2.76

1. All regulated air pollutants,including hazardous air pollutants emitted from the entire facility should be listed. A list of regulated air pollutants has been provided in Section A.

2. All PM assumed to be PM_{10} for the purposes of this application as no data is available for PM_{10}.

With the exception of the emissions resulting from insignificant activities and emissions as defined in Regulation APC-S-6, Section VII, the pollutants listed above are all regulated air pollutants reasonably expected to be emitted from the facility.

SIGNATURE (must match signature on page 17)

SECTION C

For the sections listed below indicate the number that have been completed for each section as part of this application.

Section B	1	Section L1	0	Section M1	0
Section C	1	Section L2	0	Section M2	0
Section D	1	Section L3	0	Section M3	1
Section E	1	Section L4	0	Section M4	0
Section F	0	Section L5	1	Section M5	0
Section G	0	Section L6	0	Section M6	0
Section H	1	Section L7	0	Section M7	0
Section I	0			Section M8	0
Section J	0			Section N	1
Section K	0			Section O	3

As a minimum, sections B, C, M, N and O must be completed for the application to be considered complete.

Please list below all insignificant activities required by APC-S-6, Section VII.B that apply to your facility.

Effluent treatment (per Section VII.B.19 and 32)

Shops (Painting, Welding, Sandblasting, Maintenance, etc…) (per Section VII.A.2)

Portable, Fuel-powered, Air Compressors (per mobile source exemption)

The following activities are requested as insignificant based on their emissions which are less than 1 lb/hr of any criteria pollutant and less than 0.1 lb/hr of any HAP:

Nitrogen generation

Firehouses – including generators and pumps

Tanks (see attached list) (per Section VII.B.7) (Please note that this submittal only contains the insignificant tanks in the RAD process area. Insignificant tanks in other process areas are found in the Title V permit application which was submitted in November 1995 with an amended submittal in February 1998.)

Compressed Gas Cylinders

ROSIN AMINE DERIVATIVES PROCESS AREA

I.D.	PRODUCT STORED	TYPE OF TANK	CAPACITY (GALLONS)	DATE OF CONSTRUCTION
RA-1	Amine D	Steel	8,218	Pre-1977
RA-2	Amine D	Steel	4,512	Pre-1977
RA-3	Amine D	Steel	4,512	Pre-1977
RA-4	Ammonia Water (oil layer)	Steel	5,702	Pre-1977
RA-6	Amine D	Steel	5,207	Pre-1977
RA-7	Crude Nitrile	Steel	11,844	Pre-1977
RA-8	Empty	Steel	150	Pre-1977
RA-9	Distilled Nitrile	Steel	8,215	Pre-1977
RA-10	Distilled Nitrile	Steel	8,215	Pre-1977
RA-11	Crude Nitrile	Steel	14,100	Pre-1977
RA-12	Empty	Steel	25,380	Pre-1977
RA-13	Empty	Steel	4,464	Pre-1977
RA-15	Surfactant	Steel	10,400	Pre-1977
RA-16	Polyrad/Surfactant	Steel	2,406	Pre-1977
RA-17	Polyrad/Surfactant	Steel	3,065	Pre-1977
RA-18	Polyrad/Surfactant	Steel	3,065	Pre-1977
RA-19	Polyrad/Surfactant	Steel	488	Pre-1977
RA-20	Polyrad/Surfactant	Steel	488	Pre-1977
RA-23	Resin	Steel	4,510	Pre-1977
RA-24	Sodium Hydroxide (5%)	Steel	40	Pre-1977
RA-25	Pexoil (Nitrile)	Steel	4,464	Pre-1977
RA-26	Nitrile	Steel	2,840	Pre-1977
RA-27	Lime/Nitrile	Steel	225	Pre-1977
RA-28	Amine D Acetate	Steel	2,812	Pre-1977
RA-29	Empty	Steel	2,924	Pre-1977
RA-37	Rosin	Steel	1,990	Pre-1977
RA-40	Waste Water	Steel	25,350	Pre-1977
RA-41	Waste Water	Steel	25,350	Pre-1977
RA-44	Empty	Steel	9,877	Pre-1977
RA-49	Waste Oils	Steel	17,230	Pre-1977
RA-51	Isopropyl Alcohol	Steel	17,550	Pre-1977
RA-52	Acetic Acid	Steel	11,280	Pre-1977
RA-53	Dowtherm	Steel	1,176	Pre-1977
RA-54	Ammonia	Steel	12,113	Pre-1977
RA-55	Ammonia	Steel	12,113	Pre-1977

I.D.	PRODUCT STORED	TYPE OF TANK	CAPACITY (GALLONS)	DATE OF CONSTRUCTION
RA-56	Waste Water	Steel	12,750	Pre-1977
RA-57	Waste Water	Steel	12,750	Pre-1977
RA-58	Empty	Steel	10,570	Pre-1977
RA-63	Ammonia	Steel	25	1987
RA-101TC*	Material Unloading/Loading	Steel	20,000	Pre-1977

*TC-Railroad Tank Car (Mobile Source), TT – Tank Truck (Mobil Source)

RISK MANAGEMENT PLANS

If the source is required to develop and register a risk management plan pursuant to Section 112(r) of the Title III of the Clean Air Act, the permittee need only specify that it will comply with the requirement to register such a plan. The content of the risk management plan need not itself be incorporated as a permit term.

Please answer the following questions:

I. Are you required to develop and register a risk management plan pursuant to Section 112(r)?

__X__ Yes ________ No

Only if "yes", answer questions II., III., and/or IV.

II. Have you submitted the risk management plan to the appropriate agency (i.e. Mississippi Emergency Management Agency (MEMA), Federal Emergency Management Agency (FEMA), etc.)?

__X__ Yes ________ No

III. If yes, give agency name and date submitted. June 17, 1999
RMP Reporting Center – Merrifield, VA
EPA Facility I.D – 1000 0011 7018
FBI Notification – Washington D.C.

IV. If no, provide a schedule for developing and submitting the risk management plan to the appropriate agency and providing our agency with certification that this submittal was made.

1. Emission Point No. / Name: AF-001 (181)/ Dowtherm Boiler

2. Equipment Description: Struthers Wells (Dowtherm Boiler)

3. Was this unit constructed or modified after August 7, 1977? ____ Yes X No
If yes please give date and explain.

4. Rated Capacity: 8.3 MMBTU/hr 5. Type of burner: Multiple Port Gas

6. Usage Type (i.e. Space Heat, Process, etc.) : Process Heat

7. Complete the following table, identifying each type of fuel and the amount used. Specify the units for heat content, hourly usage, and yearly usage.

FUEL TYPE	HEAT CONTENT	% SULFUR	% ASH	MAXIMUM HOURLY USAGE	ACTUAL YEARLY USAGE
Natural Gas	1,000 Btu/cf	-	-	8,300 cf	18,737 mcf

8. Please list any fuel components that are hazardous air pollutants and the percentage in the fuel.

9. Operating Schedule: 24 hours/day 7 days/week 52 weeks/year

10. Stack Data:
   - A. Height: 55 ft
   - B. Inside diameter: 1.5 ft
   - C. Exit gas velocity: 14.3 fps
   - D. Exit gas temperature: 1,000 deg F

11. UTM Coordinates:
   A. Zone 16 B. North 3,469,600 m C. East 280,700 m

12. POLLUTANT EMISSIONS:

Example emission rate calculations, monitoring data, or stack test data must be attached in accordance with Operating Permit Application Requirements, pp. 3-5.

EMISSION POINT NO.	POLLUTANT (note 1)	CONTROL EQUIPMENT		ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)			PROPOSED ALLOWABLE EMISSION RATE (Optional)		
		yes/no*	effic.	note 2	lb/hr	tn/yr	Note 2	lb/hr	tn/yr
AF-001	PM	NO		0.004 lb/MMBtu	0.037	0.042	0.6 lb/MMBtu	None requested	
	PM_{10}	NO		N/A	0.062	0.070	N/A	None requested	
	SO_2	NO		0.0006 lb/MMBtu	0.005	0.006	4.8 MMBtu/hr	None requested	
	NOx	NO		N/A	0.830	0.937	N/A	None requested	
	CO	NO		N/A	0.174	0.197	N/A	None requested	
	VOC	NO		N/A	0.044	0.049	N/A	None requested	
	All Other Criteria Pollutants	NO		N/A	< 1	N/A	N/A	None requested	
	All Other HAPs	NO		N/A	< 0.1	N/A	N/A	None requested	

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed. A list of regulated air pollutants has been provided in Section A.

2. Provide emission rate in units of applicable emission standard, e.g. lb/MMbtu, gr/dscf, etc. This may not apply to every emission point or every pollutant from emission point.

* If yes, attach appropriate Air Pollution Control Data Sheet from Section L or manufacturers specifications of other.

MANUFACTURING PROCESSES (page 1 of 2) SECTION E

1. Emission Point No./ Name: AF-000 (180 & 190)/Rosin Amine Derivatives Process Area

2. Process Description: See attached process description found in Section 1.2 of the introduction.

3. Was this unit constructed or modified after August 7, 1977? ____ yes X no
   If yes please give date and explain. ____

4. Capacity (tons/hr): See attached Appendix D, Confidential Business Information

5. Raw Material Input:

MATERIAL	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
See attached Appendix D, Confidential Business Information			

6. Product Output:

PRODUCT or BY-PRODUCT	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
See attached Appendix D, Confidential Business Information			

7. Stack Data:

AF-002 (182)/Ammoniation Vent

A.	Height:	17.5 ft	C.	Exit gas velocity:	0-1 fps
B.	Inside diameter:	4 in	D.	Exit gas temperature:	Ambient

AF-003 (183)/Amine Reactor Vent

A.	Height:	1 ft	C.	Exit gas velocity:	0-1 fps
B.	Inside diameter:	2 ft	D.	Exit gas temperature:	Ambient

AF-004 (190)/Packed Bed Scrubber with Sulfuric Acid

A.	Height:	32 ft	C.	Exit gas velocity:	0-1 fps
B.	Inside diameter:	2 in	D.	Exit gas temperature:	Ambient

8. UTM Coordinates:

A. Zone 16 B. North 3,469,600 m C. East 280,700 m

MANUFACTURING PROCESSES (page 2 of 2) SECTION E

13. POLLUTANT EMISSIONS:

Example emission rate calculations, monitoring data, or stack test data must be attached in accordance with Operating Permit Application Requirements, pp. 3-5.

EMISSION POINT NO.	POLLUTANT (note 1)	CONTROL EQUIPMENT		ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)			PROPOSED ALLOWABLE EMISSION RATE (Optional)		
		Yes/no*	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AF-000 (180 &190)	VOC (fugitive)	NO	N/A		0.37	1.62		None requested	
	HAP (fugitive)	NO	N/A		0.37	1.62		None requested	
AF-004 (190)	VOC	YES	98 %		0.06	0.27		None requested	
	HAP	YES	98 %		0.06	0.27		None requested	
AF-002 (182)	All Other Criteria Pollutants	NO	N/A		< 1	N/A		None requested	
	All Other HAPs	NO	N/A		< 0.1	N/A		None requested	
AF-003 (183)	All Other Criteria Pollutants	NO	N/A		< 1	N/A		None requested	
	All Other HAPs	NO	N/A		< 0.1	N/A		None requested	

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed in accordance with Operating Permit Application Requirements, pp. 3-5. A list of regulated air pollutants has been provided in Section A.

2. Provide emission rate in units of applicable emission standard, e.g. lb/MMbtu, gr/dscf, etc. This may not apply to every emission point or every pollutant from an emission point.

* If yes, attach appropriate Air Pollution Control Data Sheet from Section L or manufacturers specifications if other.

TANK SUMMARY (page 1 of 2) SECTION H

1. Emission Point No./Name: RA-50 Ethylene Oxide Storage Tank (M0741)

2. Was this tank constructed or modified after August 7, 1977? ______ Yes __X__ no
   If yes please give date and explain. ____________

3. Product Stored: Ethylene oxide
   If more than one product is stored, provide the information in 4.A-E for each product.

4. Tank Data:
   - A. True Vapor Pressure at storage temperature: 21/68 psia/°F
   - B. Reid Vapor Pressure at storage temperature: ______ psia/°F
   - C. Density of product at storage temperature: 7.4 lb/gal
   - D. Molecular Weight of product vapor at storage temperature: 44 lb/lbmol
   - E. Throughput for most recent calendar year: 33,318 gal/yr
   - F. Tank Capacity: 18,550 gal
   - G. Tank Diameter: 9 feet
   - H. Tank Height / Length: 36 feet
   - I. Average Vapor Space Height: 4.5 feet
   - J. Tank Orientation: Horizontal Vertical or Horizontal
   - K. Type of Roof: Dome Dome or Cone
   - L. Is the Tank Equipped with a Vapor Recovery System? ______ yes __X__ no
     If Yes, describe on separate sheet of paper and attach. Indicate efficiency.
   - M. Check the Type of Tank:
     - ______ Fixed Roof
     - __X__ Pressure
     - ______ Variable Vapor Space
     - ______ External Floating Roof
     - ______ Internal Floating Roof
     - ______ Other, describe: ______
   - N. Check the Closest City:
     - __X__ Jackson, MS
     - ______ Memphis, TN
     - ______ New Orleans, LA
     - ______ Birmingham, AL
     - ______ Montgomery, AL
     - ______ Baton Rouge, LA
   - O. Check the Tank Paint Color:
     - ______ Aluminum Specular
     - __X__ Aluminum Diffuse
     - ______ Red
     - ______ Other, describe ______
     - ______ Gray Light
     - ______ Gray Medium
     - ______ White
   - P. Tank Paint Condition: Good Good or Poor
   - Q. Check Type of Tank Loading
     1. Trucks and Rail Cars
        - ______ Submerged Loading of clean cargo tank
        - __X__ Submerged Loading : Dedicated Normal Service
        - ______ Submerged Loading : Dedicated Vapor Balance Service
        - ______ Splash Loading of clean cargo tank
        - ______ Splash Loading : Dedicated Normal Service
        - ______ Splash Loading : Dedicated Vapor Balance Service
     2. Marine Vessels
        - ______ Submerged Loading: Ships
        - ______ Submerged Loading: Barges

R. For External Floating Roof Tanks

1. Check the Type of Tank Seal:

Mechanical Shoe

_____ Primary Seal Only
_____ With Shoe-Mounted Secondary Seal
_____ With Rim-Mounted Secondary Seal

Liquid Mounted Resilient Seal

_____ Primary Seal Only
_____ With Shoe-Mounted Secondary Seal
_____ With Rim-Mounted Secondary Seal

Vapor Mounted Resilient Seal

_____ Primary Seal Only
_____ With Shoe-Mounted Secondary Seal
_____ With Rim-Mounted Secondary Seal

2. Type of External Floating Roof: _____ Pontoon
_____ Double-Deck

S. For Internal Floating Roof Tanks

1. Check the Type of Tank Seal:

Liquid Mounted Resilient Seal

_____ Primary Seal Only
_____ With Rim-Mounted Secondary Seal

Vapor Mounted Resilient Seal

_____ Primary Seal Only
_____ With Rim-Mounted Secondary Seal

2. Number of Roof Columns: _____
3. Length of Deck Seam _____ feet
4. Area of Deck: _____ $feet^2$
5. Effective Column Diameter: _____ feet
6. Check the Type of Tank:

_____ Bolted with Column Supported Roof
_____ Welded with Column Supported Roof
_____ Bolted with Self-Supported Roof
_____ Welded with Self-Supported Roof

5. Emissions Summary

1.	Breathing Loss:	0	lb/hr	0	TPY
2.	Working Loss::	0	lb/hr	0	TPY
3.	Total Emissions:	0	lb/hr	0	TPY

6. UTM Coordinates:

A. Zone 16 B. North 6939 C. East 8062

* Tank is a pressurized storage vessel which is equipped with a pressure relief valve thart vents to the scrubber when loading. This results in negligible emissions to the atmosphere.

AIR POLLUTION CONTROL DEVICES — SECTION L

1. If the air pollution control device is different from the attached forms, then submit drawings, specifications, manufacturers data, etc.

2. Fill out one form for each air pollution control device and attach to the appropriate emission point description form.

SCRUBBERS (Page 1 of 2) SECTION L5

1. Emission Point No. / Name: AF-004

2. Manufacturers Name and Model No.: Anderson 2000 Inc. Serial No. S-4733-832

3. Date of construction for existing sources or date of anticipated start-up for new sources: 1988

4. Scrubber Data:

a) Scrubber type:

____	Venturi	____	Orifice
X	Packed Tower	____	Gravity Tower
____	Cyclonic	____	Condenser
____	Mist Eliminator	____	Impingement Plate
____	Other:	____	

b) Liquid injection rate:

1) Design maximum: 11.4 gpm @ 104.7 psia

2) Expected average: 11.4 gpm @ 104.7 psia

c) Pressure drop: 3 Inches H_2O

d) Scrubbing liquid:

1) Once-through ____ Recycled X

2) If recycled: ____ gpm make - up rate

3) If water, describe settling basin: N/A

4) Solution / Reactant systems:

a) Chemical make up: Weak Sulfuric Acid

b) How is discharge handled, treated? Effluent Treatment Plant

e) Gas flow: X Counter current ____ Concurrent

1) Flow rate: 107.6 acfm

2) Inlet Temperature: 392 °F

f) Venturi Data:

1) Inlet Area: ____ ft^2

2) Throat Area: ____ ft^2

3) Throat velocity: ____ ft / sec

4) ____ Fixed throat ____ Variable throat

g) Packed or Plate Tower Data:

1) Surface Area: ____ ft2

2) Packing depth: 10 ft

3) Type of packing: ____ Rings 5/8" Polypropylene Saddles

____ Other: ____

4) No. of plates: ____

5) Type of plates: ____

h) Demisting Data:

1) Mist eliminator filter area: ____ ft^2

2) Type: ____ Cyclone ____ Vanes ____ Pad

Other:

i) Efficiency: 98 %

j) Are extra nozzles readily available? ______ Yes __X__ No

How many? ________

k) Pressure measurement devices installed? ______ Yes __X__ No

5. Which process(es) does the scrubber control emissions from? Rosin Amine Derivatives Process (Ethylene Oxide)

COMPLIANCE DEMONSTRATION (page 1 of 2) SECTION M

Completion of Section M is not required for a complete application. It is presented to merely reflect what may be required by the Enhanced Monitoring and/or the Periodic Monitoring Regulations. Upon promulgation of those regulations, this section will be revised to reflect the actual requirements. Until then, the information in this section should be utilized for planning purposes.

Choose the type of monitoring that is suggested for your source in the "Enhanced Monitoring Guideline". Fill out the appropriate form and attach to the corresponding emission point description pages.

A. Compliance Demonstration by Continuous Emissions Monitoring (CEM).

Sulfur Dioxide(SO_2)	Nitrogen Oxides (NO_x)	Oxygen (O_2)
Carbon Dioxide (CO_2)	Total Reduced Sulfur (TRS)	Opacity
Hydrogen Chloride (Hcl)	Carbon Monoxide (CO)	Flow
Hydrogen Sulfide (H_2S)	Volatile Organic Compound (VOC)	

B. Compliance Demonstration by Periodic Emission Monitoring using Portable Monitors.

SO_2 NO_x O_2 CO_2 CO HCl H_2S VOC Flow Moisture
Combustibles Combustion Efficiency

C. Compliance Demonstration by Monitoring Control System Parameters or Operating Parameters of a Process.

Baghouse	Pressure drop across baghouse, Broken bag detector, Opacity.
Mechanical Collectors	Pressure drop across collector, Hopper full detector, Opacity.
Electrostatic Precipitators	Primary and secondary voltage,Primary and secondary currents, Spark Rate, Broken wire detector, Rap cycle frequency, Resistivity measurement, Inlet water flow, Total solids, Opacity.
Thermal Incinerator	Firebox temperature.
Catalytic Incinerator	Catalyst bed temperature.
Flare	Pilot light detector, Temperature after flame zone.
Particulate Scrubber	Pressure drop across scrubber and demister, Scrubber fluid recirculation rate, Pump discharge pressure, Pump motor current.
Absorber for Gases	pH of fluid, Fluid recirculation rate, Air flow, Pressure drop across absorber and demister, Fluid temperature.
Carbon Absorber	Steam mass flow rate per regeneration cycle, Carbon bed temperature.
Condenser	Condenser exit temperature, Amount of solvent recovered daily.Charging rate, Production rate, Hours of operation, Secondary chamber temperature, Kiln or dryer exit temperature, Burner combustion efficiency, Power consumption, Static pressure, Fuel usage rate, Water injection rate.

D. Compliance Demonstration by Monitoring Maintenance Procedures.

Water quality testing
Sludge solids testing
Electrostatic precipitator cleaning frequency
Blacklight inspection of baghouses
Sludge mercury testing
Periodic inspection of process operating parameters
VOC leak testing
Soot blowing frequency
Fugitive dust control measures
Control equipment inspection frequency
Reid vapor pressure testing

E. Compliance Demonstration by Stack Testing.

EPA Method 1 & 2 :	Flow (S-type pilot tubes, Hot-wire anemometer)
EPA Method 3 :	CO_2, O_2, CO (Orsat, Fyrite)
EPA Method 3A :	CO_2, O_2, (Analyzers)
EPA Method 4 :	Moisture (Wet bulb-Dry bulb, Impingers)
EPA Method 5 :	PM
EPA Method 6 :	SO_2 (Impingers)
EPA Method 6B :	SO_2 (24 hour average)
EPA Method 6C :	SO_2 (Analyzer)
EPA Method 7E :	NO_x (Analyzer)
EPA Method 9 :	Opacity (Visible emissions reader)
EPA Method 10 :	CO (Analyzer)
EPA Method 16 :	TRS (Gas Chromatograph)
EPA Method 16A :	TRS (Impingers)
EPA Method 16B:	TRS (Gas Chromatograph)
EPA Method 18 :	VOC (Gas Chromatograph)
EPA Method 21 :	VOC Leaks (Analyzer)
EPA Method 25A:	VOC (Analyzer with FID)
EPA Method 25B :	VOC (NDIR Analyzer)

F. Compliance Demonstration by Fuel Sampling and Analysis (FSA).

Coal Sampling
Waste oil sampling
Refuse derived fuel sampling
Coke sampling
Sewage sludge sampling
Landfill gas sampling
Tire derived fuel sampling
Paper sludge sampling

G. Compliance Demonstration by Recordkeeping.

Testing and monitoring records
Compliance schedule records
Process hours of operation records
Fuel usage records
As-applied coating & ink composition records
Records of malfunction
As-applied coating & ink records,
Transfer efficiency records
Production records

COMPLIANCE DEMONSTRATION BY MONITORING CONTROL SYSTEM PARAMETERS OR OPERATING PARAMETERS OF A PROCESS SECTION M3

The monitoring of a control system parameter or a process parameter may be acceptable provided that a correlation between the parameter value and the emission rate of a particular pollutant is established in the form of a curve of emission rate versus parameter values. At least three sets of stack test data, that bracket the emission limit if possible, shall be used to define the emission curve. This data shall constitute the certification of the system and must be attached for approval. If it is not attached, it shall be submitted within 60 days from the date of startup of the system or the date of application, which ever is later.

1. Emission Point No./Name : AF-004 (190) Packed Bed Scrubber with Sulfuric Acid

2. Method of monitoring description: Monitor the scrubbing liquid flow rate or pressure.
   Monitor the pH of the scrubber effluent with a continuous recorder.

   Facility shall certify monitoring control system parameters as specified
   in Subpart PPP. Shall follow performance test requirements and/or design
   design evaluation requirements as outlined in 40 CFR 63.1426.

   Attach separate sheets if needed.

3. Backup system (attach other compliance demonstration forms if needed):

4. The monitoring system shall be subject to appropriate performance specifications, calibration requirements, and quality assurance procedures.

5. If a quality assurance / quality control plan is not attached with the application for approval, it shall be submitted within 60 days from the date of startup of the monitoring program or the date of application, which ever is later.

Current Applicable Requirements and Status (page 1 of 17) — SECTION N

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Description of Regulation	Pollutant	Test Method	Limits	Action Required to Satisfy Regulation	Completion Date	Compliance Status IN / OUT
AF-000	APC-S-1 Sect. 3.1 (STATE ONLY)	Smoke - general			≤ 40% opacity			IN
AF-000	APC-S-1 Sect. 3.1 (STATE ONLY)	Smoke - startup			≤ 40% opacity, ≤ 15 min/startup, 3 startups/hrs			IN
AF-000	APC-S-1 Sect. 3.2 (STATE ONLY)	Opacity			≤ 40% opacity			IN
AF-000	APC-S-1 Sect. 3.3 (STATE ONLY)	Gen. nuisance			As specified in the regulations			IN
AF-000	APC-S-1 Sect. 9.2 (STATE ONLY)	Stack heights			As specified in the reguations			IN
AF-004	APC-S-1 Section 3.1 (STATE ONLY)	Smoke - general			≤ 40% opacity			IN

Current Applicable Requirements and Status (page 2 of 17) SECTION N

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Description of Regulation	Pollutant	Test Method	Limits	Action Required to Satisfy Regulation	Completion Date	Compliance Status IN / OUT
AF-004	APC-S-1 Section 3.1 (STATE ONLY)	Smoke – startup			≤ 40% opacity, ≤ 15 min/startup, 3 startups/hrs			IN
AF-004	APC-S-1 Sect. 3.2 (STATE ONLY)	Opacity			≤ 40% opacity			IN
AF-004	APC-S-1 Sect. 3.3 (STATE ONLY)	Gen. Nuisance			As specified in the regulations			IN
AF-004	APC-S-1 Sect. 9.2 (STATE ONLY)	Stack heights			As specified in the reguations			IN
AF-004	40 CFR 63 Subpart PPP (63.1425(a))	Applicability of process vent control requirements	EO			The facility must comply with the requirements for epoxide emissions.	June 1, 2002	

Current Applicable Requirements and Status (page 3 of 17) — SECTION N

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Description of Regulation	Pollutant	Test Method	Limits	Action Required to Satisfy Regulation	Completion Date	Compliance Status IN / OUT
AF-004	40 CFR 63 Subpart PPP (63.1425(b)(2)(ii))	Aggregated 98% reduction of total epoxide emissions	EO		98% total epoxide reduction	Conduct performance test to certify compliance	Within 150 days after the compliance date	
AF-004	40 CFR 63 Subpart PPP (63.1426(c))	Determination of epoxide reduction efficiency	EO			Performance test	Within 150 days after the compliance date	
AF-004	40 CFR 63 Subpart PPP (63.1426(c)(1))	Sampling site location	EO			Sampling sites located at the inlet and outlet of the combustion, recovery, or recapture device as specified in 40 CFR 63.1426(c)(1)(I)(B)(1).	Within 150 days after the compliance date	

Current Applicable Requirements and Status (page 4 of 17) — SECTION N

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Description of Regulation	Pollutant	Test Method	Limits	Action Required to Satisfy Regulation	Completion Date	Compliance Status IN / OUT
AF-004	40 CFR 63 Subpart PPP (63.1426(c)(3))	Testing conditions	EO			Testing of process vents as specified in 40 CFR 63.1426(c)(3)(i)(B)(1-5), 40 CFR 63.1426(c)(3)(ii), and 63.1426(c)(3)(iii).	Within 150 days after the compliance date	
AF-004	40 CFR 63 Subpart PPP (63.1426(c)(4)(i))	Test methods – sample and velocity traverses	EO	EPA Method 1 or 1A		Methods used for sample and velocity traverses shall be as specified in 40 CFR 63.1426(c)(4)(i).	Within 150 days after the compliance date	
AF-004	40 CFR 63 Subpart PPP (63.1426(c)(4)(ii))	Test methods – velocity and gas volumetric flow rate	EO	EPA Method 2, 2A, 2C, or 2 D		Methods used for velocity and gas volumetric flow rate shall be as specified in 40 CFR 63.1426(c)(4)(ii).	Within 150 days after the compliance date	

Current Applicable Requirements and Status (page 5 of 17) SECTION N

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Description of Regulation	Pollutant	Test Method	Limits	Action Required to Satisfy Regulation	Completion Date	Compliance Status IN / OUT
AF-004	40 CFR 63 Subpart PPP (63.1426(c)(4)(iii))	Test methods – concentration mesurements	EO	EPA Method 18		Methods used for determining concentration shall be as specified in 40 CFR 63.1426(c)(4)(iii).	Within 150 days after the compliance date	
AF-004	40 CFR 63 Subpart PPP (63.1426(c)(4)(iv))	Test methods – alternative methods	EO			Alternative methods must be validated as specified in 40 CFR 63.1426(c)(4)(iv).	Within 150 days after the compliance date	
AF-004	40 CFR 63 Subpart PPP (63.1426(c)(5))	Calculation of percent reduction efficiency	EO			Percent reduction efficiency shall be calculated as specified in 40 CFR 63.1426(c)(5) (i-iv).	Within 150 days after the compliance date	

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Description of Regulation	Pollutant	Test Method	Limits	Action Required to Satisfy Regulation	Completion Date	Compliance Status IN / OUT
AF-004	40 CFR 63 Subpart PPP (63.1426(e)(1))	Determination of organic HAP emission reduction	EO			Organic HAP reduction shall be calculated as specified in 40 CFR 63.1426(e)(1).	Within 150 days after the compliance date	
AF-004	40 CFR 63 Subpart PPP (63.1426(e)(2))	Determination of control efficiency	EO			Control efficiency for organic HAP reduction shall be calculated as specified in 40 CFR 63.1426(e)(2)(ii).	Within 150 days after the compliance date	
AF-004	40 CFR 63 Subpart PPP (63.1429(a))	Monitoring equipment requirements	EO			Monitor the scrubbing liquid flow rate or pressure. Monitor the pH as specified in 40 CFR 63.1429(a)(4).	June 1, 2002	

Current Applicable Requirements and Status (page 7 of 17) — SECTION N

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Description of Regulation	Pollutant	Test Method	Limits	Action Required to Satisfy Regulation	Completion Date	Compliance Status IN / OUT
AF-004	40 CFR 63 Subpart PPP (63.1429(d))	Establishing parameter monitoring levels	EO			Parameter monitoring levels shall be established as per 40 CFR 63.1429(d)(1-3).	Within 150 days after the compliance date	
AF-004	40 CFR 63 Subpart PPP (63.1430(b))	Records to demonstrate compliance	EO			Keep records of percent of organic HAP reduction as per 40 CFR 63.1430(b)(2)(i).	Ongoing after NCS submittal	
AF-004	40 CFR 63 Subpart PPP (63.1430(c))	Records establishing parameter monitoring levels	EO			Keep records which establish the parameter monitoring levels as per 40 CFR 63.1430(c).	Ongoing after NCS submittal	

Current Applicable Requirements and Status (page 8 of 17)

SECTION N

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Description of Regulation	Pollutant	Test Method	Limits	Action Required to Satisfy Regulation	Completion Date	Compliance Status IN / OUT
AF-004	40 CFR 63 Subpart PPP (63.1430(d)(1))	Records to demonstrate continuous compliance	EO			Keep continuous records of operating equipment parameters as specified in 40 CFR 63.1430(d)(1).	Ongoing after NCS submittal	
AF-004	40 CFR 63 Subpart PPP (63.1430(d)(2))	Records of daily average parameters	EO			Keep records of daily average parameters as specified in 40 CFR 63.1430(d)(2)(i-ii).	Ongoing after NCS submittal	

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Description of Regulation	Pollutant	Test Method	Limits	Action Required to Satisfy Regulation	Completion Date	Compliance Status IN / OUT
AF-004	40 CFR 63 Subpart PPP (63.1430(d)(5))	Records specifying monitoring system breakdowns, repairs, calibration checks, and zero and high level adjustments	EO			Keep records of monitoring system breakdowns, repairs, calibration checks, and level adjustments as specified in 40 CFR 63.1430(d)(5).	Ongoing after NCS submittal	
AF-004	40 CFR 63 Subpart PPP (63.1430(g))	Notification of Compliance Status	EO			Submit information as specified in 40 CFR 63.1430(g)(1).	Within 150 days after the compliance date	
AF-004	40 CFR 63 Subpart PPP (63.1430(h))	Periodic reports	EO			Submit information as specified in 40 CFR 63.1430(h)(1&2).	Due 8 months after NCS; covers a 6 month period	

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Description of Regulation	Pollutant	Test Method	Limits	Action Required to Satisfy Regulation	Completion Date	Compliance Status IN / OUT
AF-004	40 CFR 63 Subpart PPP (63.1437(a))	Performance tests – Conducting the performance test	EO			Performance test shall be conducted as specified in 40 CFR 63.1437(a)(1-4).	Within 150 days after the compliance date	
AF-004	40 CFR 63 Subpart PPP (63.1437(b))	Performance tests – Data reduction	EO			Data shall be reduced as specified in 40 CFR 63.1437(b).	Within 150 days after the compliance date	
AF-004	40 CFR 63 Subpart PPP (63.1438(a-d))	Establishing parameter monitoring levels	EO			Shall establish parameter monitoring levels as specified in 40 CFR 63.1438 (a-d).	Within 150 days after the compliance date	

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Description of Regulation	Pollutant	Test Method	Limits	Action Required to Satisfy Regulation	Completion Date	Compliance Status IN / OUT
AF-004	40 CFR 63 Subpart PPP (63.1438(a-d))	Establishing parameter monitoring levels	EO			Establish parameter monitoring levels based on performance test and/or engineering documents	Within 150 days after the compliance date	
AF-004	40 CFR 63 Subpart PPP (63.1438(f))	Parameter monitoring excursions – Process vents	EO			Record parameter monitoring excursions for process vents as specified in 40 CFR 63.1438(f)(3).	1st periodic report	
AF-004	40 CFR 63 Subpart PPP (63.1438(g))	Excused excursions – Process vents	EO			Record excused excursions for process vents as specified in 40 CFR 63.1438(g).	1st periodic report	

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Description of Regulation	Pollutant	Test Method	Limits	Action Required to Satisfy Regulation	Completion Date	Compliance Status IN / OUT
RA-50	40 CFR 63 Subpart PPP (63.1432(a))	Compliance with the HON storage vessel provisions	EO			Shall comply with the HON storage vessel requirements as specified in 40 CFR 63.1432(a).	June 1, 2002	
RA-50	40 CFR 63 Subpart PPP (63.1432(q))	Additional recordkeeping requirements	EO			Shall keep records of the times when the storage vessel is being filled as specified in 40 CFR 63.1432(q).	June 1, 2002	
RA-50	40 CFR 63 Subpart PPP (63.1438(f))	Parameter monitoring excursions – Storage vessels	EO			Record parameter monitoring excursions for storage vessels as specified in 40 CFR 63.1438(f)(1or 2).	June 1, 2002	

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Description of Regulation	Pollutant	Test Method	Limits	Action Required to Satisfy Regulation	Completion Date	Compliance Status IN / OUT
Wastewater	40 CFR 63 Subpart PPP (63.1433)	Wastewater provisions				Shall comply with the wastewater provisions as specified in 40 CFR 63.1433.	June 1, 2002	
RAD Process Area	40 CFR 63 Subpart PPP (63.1439(a))	General recordkeeping requirements – Data retention				Shall keep data as specified in 40 CFR 63.1439(a).	June 1, 2002	
RAD Process Area	40 CFR 63 Subpart PPP (63.1439(b)(1))	Startup, shutdown, malfunction plan				Shall develop and implement a SSM plan as specified in 40 CFR 63.1439(b)(1).	June 1, 2002	
RAD Process Area	40 CFR 63 Subpart PPP (63.1439(d))	Recordkeeping and documentation requirements				Shall keep records as specified in 40 CFR 63.1439(d)(1-8).	June 1, 2002	

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Description of Regulation	Pollutant	Test Method	Limits	Action Required to Satisfy Regulation	Completion Date	Compliance Status IN / OUT
RAD Process Area	40 CFR 63 Subpart PPP (63.1439(e)(1))	Violation of reporting requirements				Failing to submit information as specified in 40 CFR 63.1439(e)(1) shall not constitute a violation of the reporting requirements if some conditions are met.	Ongoing after NCS submittal	
RAD Process Area	40 CFR 63 Subpart PPP (63.1439(e)(2))	Submittal of reports				Submit all reports as specified in 40 CFR 63.1439(e)(2).	Ongoing after NCS submittal	
RAD Process Area	40 CFR 63 Subpart PPP (63.1439(e)(3))	Initial notification				Submit initial notification as specified in 40 CFR 63.1439(e)(3) by June 1, 2000.	June 1, 2000	IN

Current Applicable Requirements and Status (page 15 of 17) SECTION N

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Description of Regulation	Pollutant	Test Method	Limits	Action Required to Satisfy Regulation	Completion Date	Compliance Status IN / OUT
RAD Process Area	40 CFR 63 Subpart PPP (63.1439(e)(4))	Precompliance report				Shall submit a precompliance report as specified in 40 CFR 63.1439(e)(4), if needed.	June 1, 2001	
RAD Process Area	40 CFR 63 Subpart PPP (63.1439(e)(5))	Notification of Compliance Status				Shall submit an NCS as specified in 40 CFR 63.1439(e)(5).	Within 150 days after compliance date	
RAD Process Area	40 CFR 63 Subpart PPP (63.1439(e)(6))	Periodic reports				Shall submit periodic reports as specified in 40 CFR 63.1439(e)(6).	Due 8 months after NCS; covers a 6 month period	
RAD Process Area	40 CFR 63 Subpart PPP (63.1439(e)(8))	Operating permit application requirements				Update operating permit application as specified in 40 CFR 63.1439(e)(8).	June 1, 2000	IN

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Description of Regulation	Pollutant	Test Method	Limits	Action Required to Satisfy Regulation	Completion Date	Compliance Status IN / OUT
RAD Process Area	40 CFR 63 Subpart PPP (63.1439(f))	Alternative monitoring parameters				Report alternative monitoring parameters as specified in 40 CFR 63.1439(f).	Ongoing after NCS submittal	
RAD Process Area	40 CFR 63 Subpart PPP (63.1439(g))	Alternative continuous monitoring and recordkeeping				Request alternative continuous monitoring and recordkeeping as specified in 40 CFR 63.1439(g).	June 1, 2001	
RAD Process Area	40 CFR 63 Subpart PPP (63.1439(g))	Reduced recordkeeping program				Request a reduced recordkeeping program as per 40 CFR 63.1439(h).	As part of NCS submittal	

Current Applicable Requirements and Status (page 17 of 17) SECTION N

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Description of Regulation	Pollutant	Test Method	Limits	Action Required to Satisfy Regulation	Completion Date	Compliance Status IN / OUT
RAD Process Area	40 CFR 63 Subpart PPP (63.1434(a))	Compliance with the HON equipment leak provisions				Comply with the HON equipment leak provisions as specified in 40 CFR 63.1434(a).	December 1,1999	IN
RAD Process Area	40 CFR 63 Subpart PPP (63.1434(h))	Compliance with the HON equipment leak provisions				Comply with the HON equipment leak provisions as specified in 40 CFR 63.1434(h).	December 1,1999	IN
RAD Process Area	40 CFR 63 Subpart PPP (63.1439(b))	Compliance with 40 CFR 63 Subpart A general requirements				Comply with Subpart A requirements as specified in 40 CFR 63.1439(b).	June 1, 2002	

Future Applicable Requirements and Status (page 1 of 1) — SECTION N

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Pollutant	Test Method	Limits	Compliance Status IN / OUT

COMPLIANCE CERTIFICATION SECTION O

1. Emission Point No./Name : AF-000 (180 & 190) Rosin Amine Derivatives Process Area

2. Indicate the source compliance status:

A. ________ Where this source is currently in compliance, we will continue to operate and maintain this source to assure compliance for the duration of the permit.

B. ___X___ The Current Emissions Requirements and Status form (previous page) includes new requirements that apply or will apply to this source during the term of the permit. We will meet such requirements on a timely basis.

C. ________ This source is not in compliance. The following statement of corrective action is. submitted to describe action which we will take to achieve compliance.

1. ________ Attached is a brief description of the problem and the proposed solution.

2. ________ We will achieve compliance according to the following schedule.

Progress reports will be submitted:

Starting date: ________________ and every six (6) months thereafter

Problem	Action	Deadline

COMPLIANCE CERTIFICATION SECTION O

1. Emission Point No./Name : AF-004 (190) Packed Bed Scrubber with Sulfuric Acid

2. Indicate the source compliance status:

A. ________ Where this source is currently in compliance, we will continue to operate and maintain this source to assure compliance for the duration of the permit.

B. ___X___ The Current Emissions Requirements and Status form (previous page) includes new requirements that apply or will apply to this source during the term of the permit. We will meet such requirements on a timely basis.

C. ________ This source is not in compliance. The following statement of corrective action is. submitted to describe action which we will take to achieve compliance.

1. ________ Attached is a brief description of the problem and the proposed solution.

2. ________ We will achieve compliance according to the following schedule.

Progress reports will be submitted:
Starting date: ________________ and every six (6) months thereafter

Problem	Action	Deadline

COMPLIANCE CERTIFICATION SECTION O

1. Emission Point No./Name : RA-50 Ethylene Oxide Storage Tank

2. Indicate the source compliance status:

A. ______ Where this source is currently in compliance, we will continue to operate and maintain this source to assure compliance for the duration of the permit.

B. ___X___ The Current Emissions Requirements and Status form (previous page) includes new requirements that apply or will apply to this source during the term of the permit. We will meet such requirements on a timely basis.

C. ______ This source is not in compliance. The following statement of corrective action is submitted to describe action which we will take to achieve compliance.

1. ______ Attached is a brief description of the problem and the proposed solution.

2. ______ We will achieve compliance according to the following schedule.

Progress reports will be submitted:
Starting date: ______________ and every six (6) months thereafter

Problem	Action	Deadline

Attachment A

LIST OF ACTIVITIES THAT MAY BE TREATED AS "TRIVIAL"

The following types of activities and emissions units may be presumptively omitted from part 70 permit applications. Certain of these listed activities include qualifying statements intended to exclude many similar activities.

Combustion emissions from propulsion of mobile sources, except for vessel emissions from Outer Continental Shelf sources.

Air-conditioning units used for human comfort that do not have applicable requirements under title VI of the Act.

Ventilating units used for human comfort that do not exhaust air pollutants into the ambient air from any manufacturing/industrial or commercial process.

Non-commercial food preparation.

Consumer use of office equipment and products, not including printers or businesses primarily involved in photographic reproduction.

Janitorial services and consumer use of janitorial products.

Internal combustion engines used for landscaping purposes.

Laundry activities, except for dry-cleaning and steam boilers.

Bathroom/toilet vent emissions.

Emergency (backup) electrical generators at residential locations.

Tobacco smoking rooms and areas.

Blacksmith forges.

Plant maintenance and upkeep activities (e.g., grounds-keeping, general repairs, cleaning, painting, welding, plumbing, re-tarring roofs, installing insulation, and paving parking lots) provided these activities are not conducted as part of a manufacturing process, are not related to the source's primary business activity, and not otherwise triggering a permit modification.[1]

Repair or maintenance shop activities not related to the source's primary business activity, not including emissions from surface coating or de-greasing (solvent metal cleaning) activities, and not otherwise triggering a permit modification.
Portable electrical generators that can be moved by hand from one location to another.[2]

Hand-held equipment for buffing, polishing, cutting, drilling, sawing, grinding, turning or machining wood, metal or plastic.

Brazing, soldering and welding equipment, and cutting torches related to manufacturing and construction activities that do not result in emission of HAP metals.[3]

Air compressors and pneumatically operated equipment, including hand tools.

Batteries and battery charging stations, except at battery manufacturing plants.

Storage tanks, vessels, and containers holding or storing liquid substances that will not emit any VOC or HAP.[4]

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[1]Cleaning and painting activities qualify if they are not subject to VOC or HAP control requirements. Asphalt batch plant owners/operators must still get a permit if otherwise required.

[2]"Moved by hand" means that it can be moved without the assistance of any motorized or non-motorized vehicle, conveyance, or device.

[3]Brazing, soldering and welding equipment, and cutting torches related to manufacturing and construction activities that emit HAP metals are more appropriate for treatment as insignificant activities based on size or production level thresholds. Brazing, soldering, welding and cutting torches directly related to plant maintenance and upkeep and repair or maintenance shop activities that emit HAP metals are treated as trivial and listed separately in this appendix.

[4]Exemptions for storage tanks containing petroleum liquids or other volatile organic liquids should be based on size limits such as storage tank capacity and vapor pressure of liquids stored and are not appropriate for this list.

Storage tanks, reservoirs, and pumping and handling equipment of any size containing soaps, vegetable oil, grease, animal fat, and nonvolatile aqueous salt solutions, provided appropriate lids and covers are utilized.

Equipment used to mix and package, soaps, vegetable oil, grease, animal fat, and nonvolatile aqueous salt solutions, provided appropriate lids and covers are utilized.

Drop hammers or hydraulic presses for forging or metalworking.

Equipment used exclusively to slaughter animals, but not including other equipment at slaughterhouses, such as rendering cookers, boilers, heating plants, incinerators, and electrical power generating equipment.

Vents from continuous emissions monitors and other analyzers.

Natural gas pressure regulator vents, excluding venting at oil and gas production facilities.

Hand-held applicator equipment for hot melt adhesives with no VOC in the adhesive formulation.

Equipment used for surface coating, painting, dipping or spraying operations, except those that will emit VOC or HAP.

CO_2 lasers, used only on metals and other materials which do not emit HAP in the process.

Consumer use of paper trimmers/binders.

Electric or steam-heated drying ovens and autoclaves, but not the emissions from the articles or substances being processed in the ovens or autoclaves or the boilers delivering the steam.

Salt baths using nonvolatile salts that do not result in emissions of any regulated air pollutants.

Laser trimmers using dust collection to prevent fugitive emissions.

Bench-scale laboratory equipment used for physical or chemical analysis, but not lab fume hoods or vents.[5]

Routine calibration and maintenance of laboratory equipment or other analytical instruments.

Equipment used for quality control/assurance or inspection purposes, including sampling equipment used to withdraw materials for analysis.

Hydraulic and hydrostatic testing equipment.

Environmental chambers not using hazardous air pollutant (HAP) gasses.

Shock chambers.

Humidity chambers.

Solar simulators.

Fugitive emission related to movement of passenger vehicles, provided the emissions are not counted for applicability purposes and any required fugitive dust control plan or its equivalent is submitted.

Process water filtration systems and demineralizes.

Demineralized water tanks and demineralizer vents.

Boiler water treatment operations, not including cooling towers.

Oxygen scavenging (de-aeration) of water.

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[5]Many lab fume hoods or vents might qualify for treatment as insignificant (depending on the applicable SIP) or be grouped together for purposes of description.

Ozone generators.

Fire suppression systems.

Emergency road flares.

Steam vents and safety relief valves.

Steam leaks.

Steam cleaning operations.

Steam sterilizers.

EMISSION CALCULATIONS

Ethylene Oxide

Input	
Calendar Year	1994
E.O. Usage in POLYDAD	141,330 lbs
E.O. Usage in E.O.D.	115,701 lbs
Total E.O. Usage (Calc)	257,031 lbs
POLYRAD 0515	31,020 lbs
POLYRAD 0515A	43,000 lbs
POLYRAD 1110	79,900 lbs
POLYRAD 1110A	164,733 lbs
SURFACTANT AR150	46,240 lbs
SURFACTANT AR160	100,110 lbs
# Days operation (can use NA)	NA days
Output	
E.O. Losses (Usage theory)	30,138 lbs
Fugitive emissions	3,235 lbs
Point source emissions	538 lbs
E.O. to Ethylene Glycol	26,365 lbs
Ethylene Glycol produced	37,151 lbs

For Polyrads: Assume		
Rosin Amine Mol. Wt.	285	
Rosin Amine Purity	94 %	
Adjusted Mol. Wt.	303	

POLYRAD 0515	31,020 * 0.85 =	26,367
POLYRAD 0515A	43,000 * 0.7* 0.85 =	25,585
POLYRAD 0500 =		51,952
POLYRAD 1110	79,900 * 0.90 =	71,910
POLYRAD 1110A	164,733 * 0.7* 0.90 =	103,782
POLYRAD 1100 =		175,692

For 0500: 1 mol amine + 5 mol E.O. = 0500
303 + 5(44) = 523
E.O. = 5(44)/523 * lbs of 0500 = 21,854 lbs
E.O. = 5(44)/523 * 51,952 = 21,854 lbs

For 1100: 1 mol amine +11 mol E.O. = 1100
303 + 11(44) = 787
E.O. = 11(44)/787 * lbs of 1100 = 108,049 lbs
E.O. = 11(44)/787 * 175,692 = 108,049 lbs

For Surfactants: Assume		
Wood Rosin Mol. Wt.	302	
Wood Rosin Acid No.	160	
Theoretical Acid No.	186	
Wood Rosin Purity	86 %	
Adjusted Mol. Wt.	351	

SURFACTANT AR150	46,240 * 1.0 =	46,240
SURFACTANT AR160	100,110 * 1.0 =	100,110

For AR150: 1 mol rosin + 15 mol E.O. = AR150
351 + 15(44) = 1011
E.O. = 15(44)/1101 * lbs of AR150 = 30,186 lbs
E.O. = 15(44)/1101 * 46,240 = 30,186 lbs

For AR160: 1 mol rosin + 16 mol E.O. = AR160
351 + 16(44) = 1055
E.O. = 16(44)/1055 * lbs of AR160 = 66,803 lbs
E.O. = 16(44)/1055 * 100,110 = 66,803 lbs

Theoretical E.O.	226,892	lbs
E.O. "Losses" (Usage Theory)	30,138	lbs
E.O. Usage = Lbs of E.O./(8.34*0.85)	36,258	gallons

Days of operation, from log sheets	NA	days
Total E.O. Adducts	373,994	days
Typical Production = lbs % days		lbs/day
Base YR 1993 TYP Prod	5,470	lbs/day
Days Operation	68	days

	Component Count	Emission Factor	Emissions	
For P,V,F				
Pumps/liq. =	3	0.026	0.078	lbs/hr
Valves/liq. =	73	0.0038	0.2774	lbs/hr
Valves/vap. =	21	0.0011	0.0231	lbs/hr
Flg&con/liq. =	231	0.00013	0.03003	lbs/hr
Flg&con/vap. =	44	0.00013	0.00572	lbs/hr
Relief =	16	0.098	1.568	lbs/hr

Emission Factor Reference: Estimating Releases and Waste Treatment Efficiencies
for the Toxic Chemical Release Inventory Form
EPA 560/4-88-002 December 1987

	1.98225	lbs/hr
On a continuous basis =	17,365	lbs/yr

Since we blow the lines we only have E.O. in the P,V,F service
the actual days of operation = 68 days

Therefore P,V,F Fugitive Emissions	3,235	lbs/yr
	1.62	tpy
	0.37	lb/hr

Therefore E.O. to scrubber	26,903	lbs/yr
For scrubber assume 98% efficiency		
E.O. to Ethylene Glycol =	26,365	lbs/yr
E.O. vented from scrubber stack =	538	lbs/yr
	0.27	tpy
	0.06	lb/hr

Ethylene glycol produced
lbs E.O. * 62/44 = 37,151 lbs/yr

05/25/2000

Ethylene Oxide

Note: Capacity calculations based on 1994 product ratio/distribution
The 1994 production was for 68 days of operation
Capacity ratio will be 365 days % 68 days =

Input

Calendar Year	Capacity	
E.O. Usage in POLYDAD	758,610	lbs
E.O. Usage in E.O.D.	621,042	lbs
Total E.O. Usage (Calc)	1,379,652	lbs
POLYRAD 0515	166,504	lbs
POLYRAD 0515A	230,809	lbs
POLYRAD 1110	428,875	lbs
POLYRAD 1110A	884,229	lbs
SURFACTANT AR150	248,200	lbs
SURFACTANT AR160	537,355	lbs
# Days operation (can use NA)	NA	days

Output

E.O. Losses (Usage theory)	161,773	lbs
Fugitive emissions	17,460	lbs
Point source emissions	2,886	lbs
E.O. to Ethylene Glycol	141,427	lbs
Ethylene Glycol produced	199,284	lbs

05/25/2000

For Polyrads: Assume

Rosin Amine Mol. Wt.	285	
Rosin Amine Purity	94 %	
Adjusted Mol. Wt.	303	

POLYRAD 0515	166,504 * 0.85 =	141,528
POLYRAD 0515A	230,809 * 0.7* 0.85 =	137,331
POLYRAD 0500 =		278,860
POLYRAD 1110	428,875 * 0.90 =	385,988
POLYRAD 1110A	884,229 * 0.7* 0.90 =	557,064
POLYRAD 1100 =		943,052

For 0500: 1 mol amine + 5 mol E.O. = 0500
303 + 5(44) = 523
E.O. = 5(44)/523 * lbs of 0500 = 21,854 lbs
E.O. = 5(44)/523 * 278,860 = 117,302 lbs

For 1100: 1 mol amine +11 mol E.O. = 1100
303 + 11(44) = 787
E.O. = 11(44)/787 * lbs of 1100 = 108,049 lbs
E.O. = 11(44)/787 * 943,052 = 579,971 lbs

For Surfactants: Assume

Wood Rosin Mol. Wt.	302	
Wood Rosin Acid No.	160	
Theoretical Acid No.	186	
Wood Rosin Purity	86 %	
Adjusted Mol. Wt.	351	

SURFACTANT AR150	248,200 * 1.0 =	248,200
SURFACTANT AR160	537,355 * 1.0 =	537,355

For AR150: 1 mol rosin + 15 mol E.O. = AR150
351 + 15(44) = 1011
E.O. = 15(44)/1101 * lbs of AR150 = 30,186 lbs
E.O. = 15(44)/1101 * 248,200 = 162,030 lbs

For AR160: 1 mol rosin + 16 mol E.O. = AR160
351 + 16(44) = 1055
E.O. = 16(44)/1055 * lbs of AR160 = 66,803 lbs
E.O. = 16(44)/1055 * 537,355 = 358,576 lbs

Theoretical E.O.	1,217,879	lbs
E.O. "Losses" (Usage Theory)	161,773	lbs
E.O. Usage = Lbs of E.O./(8.34*0.85)	194,619	gallons

Days of operation, from log sheets	NA	days
Total E.O. Adducts	2,007,467	days
Typical Production = lbs % days		lbs/day
Base YR 1993 TYP Prod	5,470	lbs/day
Days Operation	367	days

For P,V,F	Component Count	Emission Factor	Emissions	
Pumps/liq. =	3	0.026	0.078	lbs/hr
Valves/liq. =	73	0.0038	0.2774	lbs/hr
Valves/vap. =	21	0.0011	0.0231	lbs/hr
Flg&con/liq. =	231	0.00013	0.03003	lbs/hr
Flg&con/vap. =	44	0.00013	0.00572	lbs/hr
Relief =	16	0.098	1.568	lbs/hr

Emission Factor Reference: Estimating Releases and Waste Treatment Efficiencies
for the Toxic Chemical Release Inventory Form
EPA 560/4-88-002 December 1987

	1.98225	lbs/hr
On a continuous basis =	17,365	lbs/yr

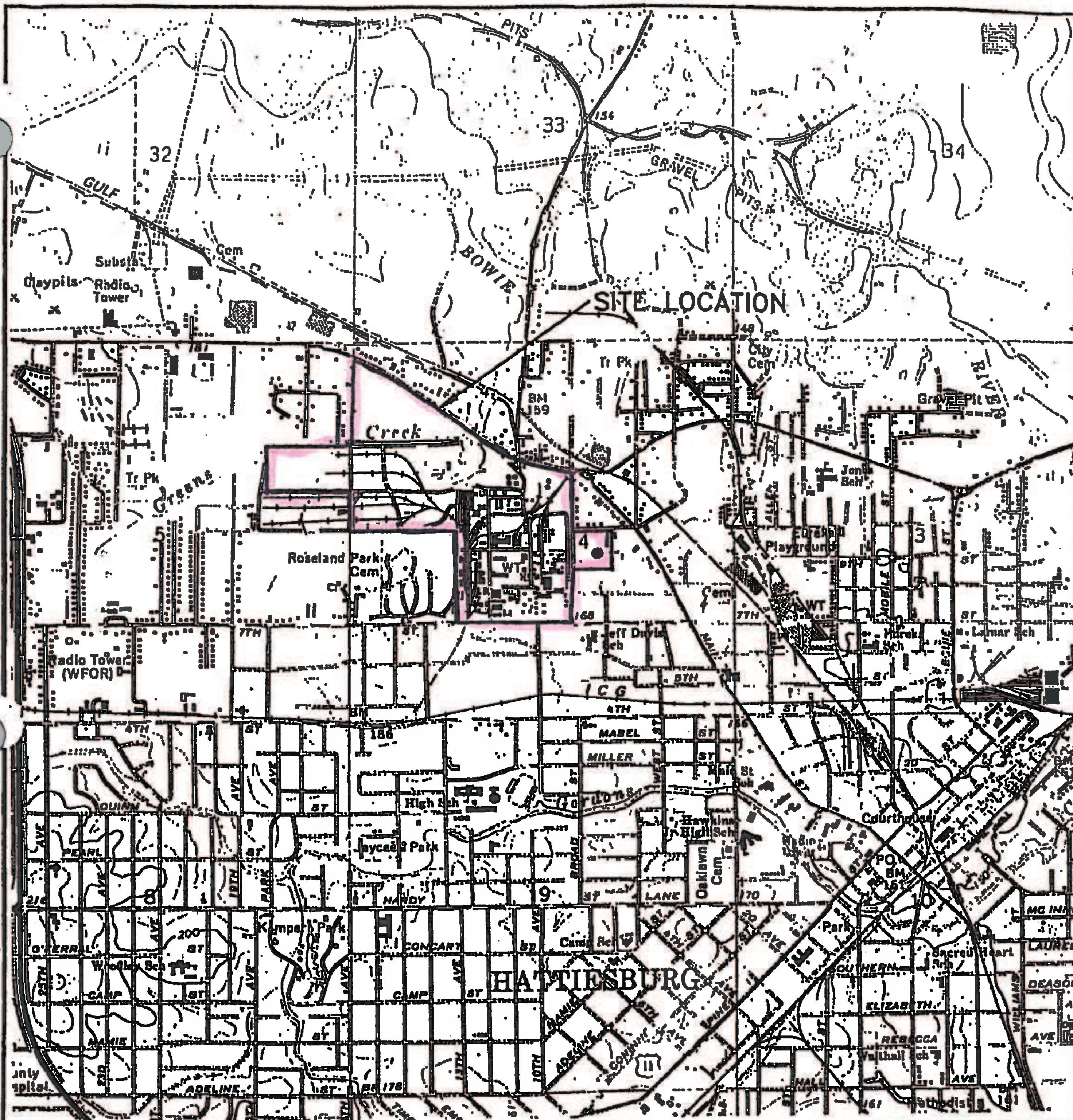
Since we blow the lines we only have E.O. in the P,V,F service
the actual days of operation = 367 days

Therefore P,V,F Fugitive Emissions	17,460	lbs/yr
	8.73	tpy
	1.99	lb/hr

Therefore E.O. to scrubber	144,313	lbs/yr
For scrubber assume 98% efficiency		
E.O. to Ethylene Glycol =	141,427	lbs/yr
E.O. vented from scrubber stack =	2,886	lbs/yr
	1.44	tpy
	0.33	lb/hr

Ethylene glycol produced
lbs E.O. * 62/44 = 199,284 lbs/yr

AREA MAP



QUADRANGLE LOCATION

SOURCE:
U.S.G.S. 7.5 MINUTE QUADRANGLE MAP,
HATTIESBURG, MISSISSIPPI 1964

HERCULES
CHEMICAL SPECIALTIES

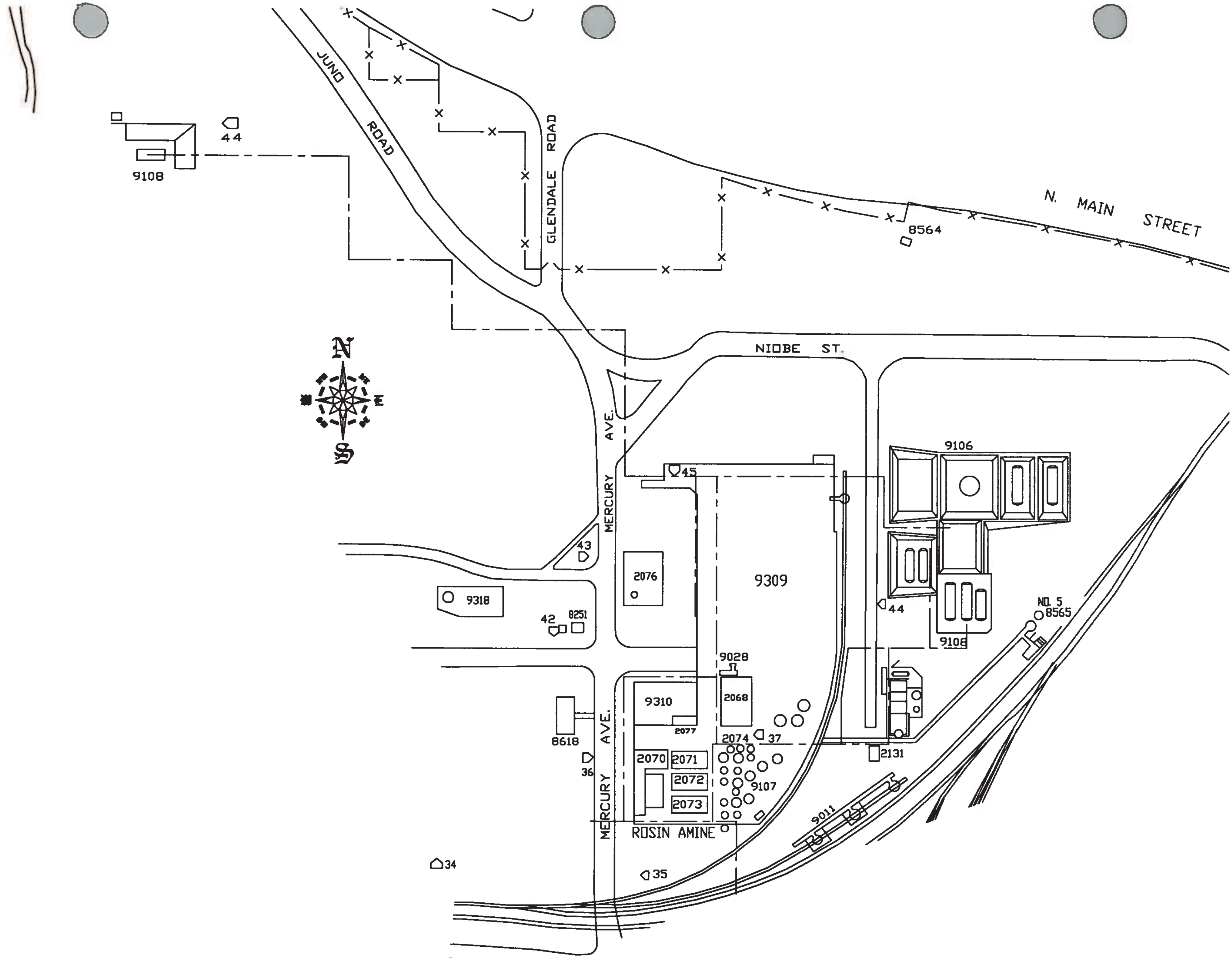
Eco-Systems, Inc.
Environmental Engineers and Scientists

SCALE: 1"=2000'	DRAWN BY: K. SELF	DATE: 12-29-95
	CHKD. BY:	DATE:
PROJECT NO. HER9502		CAD FILE GEOMAP.DWG

SITE LOCATION

APPENDIX C

RAD PROCESS AREA DIAGRAM


N. MAIN STREET
NIOBE ST.
MERCURY AVE.
GLENDALE ROAD
JUNO ROAD
ROSIN AMINE
N
S
NO. 5
8565
8564
9106
9108
9309
9310
9318
9107
9028
9011
2068
2070
2071
2072
2073
2074
2076
2077
2131
8251
8618
34
35
36
37
42
43
44
45

CONFIDENTAL PROCESS INFORMATION

MANUFACTURING PROCESSES (page 1 of 2) SECTION E

1. Emission Point No./ Name: AF-000 (180 & 190)/Rosin Amine Derivatives Process Area

2. Process Description: See attached process description

3. Was this unit constructed or modified after August 7, 1977? ______ yes X no
   If yes please give date and explain.

4. Capacity (tons/hr): Resin Nitrile 0.54, Distilled Nitrile and Nitrile Residue 0.54, Resin Amine 0.38, Resin Amine Acetates 0.05, Resin Amine Derivatives 0.11, Ethylene Oxide Derivatives 0.05

5. Raw Material Input:

MATERIAL	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
Resin Nitrile			
Resin	1,342 lbs	1,342 lbs	2,198,972 lbs
Ammonia*	119 lbs	119 lbs	195,096 lbs
Distilled Nitrile and Nitrile Residue			
Resin Nitrile	1,020 lbs	1,020 lbs	1,671,442 lbs
Resin Amine			
Distilled Nitrile	793 lbs	793 lbs	1,299,952 lbs
Hydrogen Gas	11 mcf	11 mcf	17,652 mcf
Resin Amine Acetates			
Resin Amine	8 lbs	8 lbs	12,998 lbs
Acetic Acid	6 lbs	6 lbs	9,386 lbs
Isopropyl Alcohol	3 lbs	3 lbs	4,930 lbs
Resin Amine Derivatives			
Resin Amine	76 lbs	76 lbs	124,430 lbs
Ethylene Oxide**	86 lbs	86 lbs	141,330 lbs
Isopropyl Alcohol	47 lbs	47 lbs	77,455 lbs

MATERIAL	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
Ethylene Oxide Derivatives			
Rosin	33 lbs	33 lbs	53,384 lbs
Ethylene Oxide**	71 lbs	71 lbs	115,701 lbs
Other***			

* Annual Ammonia consumption is approximately 101,926 lbs. Annual ammonia consumption at capacity is estimated at 277,634 lbs.

** Annual Ethylene Oxide consumption is approximately 30,138 lbs (27,448 lbs converted to Ethylene Glycol).
Annual Ethylene Oxide consumption at capacity is estimated at 161,773 lbs (147,332 lbs converted to Ethylene Glycol).

*** Emissions from these materials are deemed to be insignificant (< 1 lb/hr VOC, < 0.1 lb/hr HAP) based on process knowledge. Other refers to alternate raw materials (similar to the materials listed) that may be used instead of the raw materials listed.

6. Product Output:

PRODUCT or BY-PRODUCT	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
Resin Nitrile	1,020 lbs	1,020 lbs	1,671,442 lbs
Distilled Nitrile and Nitrile Residue	1,020 lbs	1,020 lbs	1,671,442 lbs
Resin Amine	732 lbs	732 lbs	1,119,653 lbs
Resin Amine Acetates	18 lbs	18 lbs	29,250 lbs
Resin Amine Derivatives	194 lbs	194 lbs	317,913 lbs
Ethylene Oxide Derivatives	89 lbs	89 lbs	146,350 lbs

APPLICATION FOR AN AIR EMISSIONS PERMIT TO OPERATE A TITLE V MAJOR SOURCE

Prepared for:

HERCULES

HERCULES INCORPORATED
HATTIESBURG PLANT
613 WEST SEVENTH STREET
HATTIESBURG, MISSISSIPPI 39401
FORREST COUNTY

Prepared by:

ECS
Environmental Compliance Services, Inc.

ENVIRONMENTAL COMPLIANCE SERVICES, INC.
P.O. BOX 891
TUPELO, MISSISSIPPI 38802
(662) 840-5945

April 29, 2003

APPLICATION FOR AN AIR EMISSIONS PERMIT TO OPERATE A TITLE V MAJOR SOURCE

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(662) 840-5945

April 29, 2003

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Appendix A:	Title V Operating Permit Application
Appendix B:	Emission Calculations (Capacity and Actuals)
Appendix C:	Supporting Data ▪ Stack Testing Results ▪ Mass Balance Spreadsheets (Capacity and Actuals)

1.0 INTRODUCTION

Hercules Incorporated – Hattiesburg Plant (Hercules) is located at 613 West 7th Street in Hattiesburg, Mississippi (see Figure 1 - Site Location Map). Hercules retained the services of Environmental Compliance Services, Inc. (ECS) to prepare the facility's Title V Operating Permit (TVOP) renewal application. The facility's TVOP expires November 1, 2003, and a renewal application is required to be submitted 180 days prior to the permit expiration.

Hercules is a specialty chemical manufacturing facility, which produces various Rosin Derivatives and Paper Chemicals. The facility is divided into two (2) fundamental processing areas – Rosin Derivatives and Paper Chemicals (see Figure 2 - Facility Diagram). The Rosin Derivatives Areas include the Poly-Pale Process Area (AC-000), the Rosin Amine Derivatives (AF-000) and Ethylene Oxide Derivatives (AF-000(EO)) Process Area, the Hard Resins Process Area (AG-000), the Rosin Shed Process Area (AH-000), and the Rosin Distillation Process Area. The Paper Chemicals Areas include the Kymene Process Area (AA-000), the Paracol/AKD Process Area (AB-000), and the Neuphor Process Area (AD-000). Facility process operations generate air pollutant emissions primarily in the form of particulate matter (PM), volatile organic compounds (VOC) and hazardous air pollutants (HAPs), while PM, sulfur dioxide (SO_2), nitrogen oxides (NO_X), carbon monoxide (CO), and VOC are emitted from the facility fuel burning equipment.

This report includes a facility description in Section 2.0; a State and Federal (air) environmental regulatory review in Section 3.0; and an air pollutant emissions inventory, including the methodology used to calculate the emissions in Section 4.0. The State of Mississippi TVOP renewal application and emissions calculations are attached in Appendix A and Appendix B, respectively. For information or inquiries regarding the attached application or supporting documentation, the technical contacts are provided below:

Brian Ketchum, P.E.
Environmental Compliance Services, Inc.
P.O. Box 891
Tupelo, Mississippi 38802
(662) 840-5945

Charlie Jordan
Hercules Incorporated
613 West 7th Street
Hattiesburg, Mississippi 39401
(601) 584-3360

2.0 FACILITY DESCRIPTION

Hercules manufactures various Resin and Paper specialty chemicals, and facility operations fall under the Standard Industrial Classification (SIC) codes 2861, 2821, 2869, and 2899. The facility's current maximum production capacity is approximately 3,108,960 pounds per day. As discussed in Section 1.0, the facility is divided into two (2) fundamental chemical processing areas – Paper Chemicals and Rosin Derivatives.

2.1 PAPER CHEMICAL PROCESSES

2.1.1 Kymene Process Area

Kymene products are specialty chemicals used primarily as internal sizing agents in the manufacturing of paper. They are used in consumer paper products, personal care products, paper towels, tissues, and writing and publication paper. Kymenes are water-soluble, low molecular weight, cross-lined polyamine resins. The Kymene Process Area (AA-000) typically produces a variety of Kymene products. The Kymene products are produced in two (2) batch reactors – a 3,000 gallon Polymer reactor and a 5,000 gallon Kymene reactor, which are both vented to a water scrubber (AA-001). Numerous process tanks (raw material tanks, scale tanks, work tanks, and product tanks) associated with the area processes are listed in Section C - Insignificant Activities of the TVOP renewal application. The raw material tanks, scale tanks, and work tanks are used to supply the Kymene reactors. The materials in the reactors are allowed to polymerize at controlled temperatures and concentrations to form water-soluble amine polymers. The finished products are then filtered and pumped to product storage tanks prior to shipping.

Emissions associated with the Kymene process primarily include reactor losses from displacement and thermal expansion; tank losses from raw material and product storage; and fugitive losses from the process equipment. A water scrubber (AA-001) controls VOC and HAP emissions from the reactors, and a dust collector (AA-002) controls PM emissions from the loading of powdered adipic acid to the Polymer reactor.

2.1.2 Paracol/AKD Process Area

Alkyl Ketene Dimer (AKD) dispersions and Wax dispersions are manufactured in the Paracol/AKD Process Area (AB-000). These specialty chemicals are used primarily as internal and surface sizing agents in the manufacturing of paper. AKD and Wax dispersions can be processed continuously. Materials used for the process include both liquid and dry raw materials, and the finished products are stored in product storage tanks and tote bins prior to shipping.

The manufacturing scheme is similar for the production of both AKD and Wax dispersions. A water (soluble) phase is produced, and an organic phase is melted and held at elevated temperatures above the AKD and Wax melting point(s). The two phases are brought together under controlled flows, temperature, and pressure. The emulsion produced is cooled to produce the dispersion and is then transferred to work tanks. The AKD or Wax dispersion is treated with biocide and stabilizing chemicals and corrected to the final solids percentage. The on-grade resin dispersion is either packaged in tote bins or stored in bulk storage for shipping.

Emissions associated with the Paracol/AKD process include tank losses from raw material and product storage; fugitive losses from the equipment; and losses from the AKD melter. The numerous process tanks (raw material tanks, work tanks, and product tanks) associated with the area processes are listed in Section C - Insignificant Activities of the TVOP renewal application. A common vent system water scrubber (AB-001) controls PM and VOC emissions from the dry material loading areas, the melter, and the water phase make-up units.

2.1.3 Neuphor Process Area

The Neuphor Process Area (AD-000) can produce a variety of resin dispersions. Some of the dispersions are used primarily as internal sizing agents in the manufacturing of paper. For example they are used in bleached, unbleached, and recycled boxboard grades and printing and writing paper. Other resin dispersions manufactured in the Neuphor Process Area are used as adhesives, coatings, and binders in diverse industrial applications. The resin dispersions can be continuously produced using both dry and liquid materials. A water phase is produced, and an organic phase is adducted in a reactor and held at elevated temperatures (above the resin melting point). The two phases are brought together under controlled flow(s), temperature, and pressure to produce an emulsion. The resin emulsion is cooled to produce a resin dispersion and transferred to work tanks to be treated with biocides, stabilizing chemicals, and corrected for final solids count. The on-grade product can be packaged in tote bins or stored in bulk storage tanks prior to shipping.

Emissions associated with the Neuphor Process Area include tank losses from raw material and product storage; fugitive losses from the process equipment; and losses from the Adduct Reactor. A water scrubber and activated carbon absorption system (formerly AD-001) is used to control odor and emissions from the Adduct Reactor. Using the Tanks 4.0 Program and the tank (or reactor) process conditions, pre-control VOC emissions are estimated at less than 1.0 pounds per hour. This information is detailed in a Title V permit modification request to the Mississippi Department of Environmental Quality dated January 22, 2001, which resulted in a TVOP modification on May 23, 2002.

2.2 ROSIN DERIVATIVE PROCESSES

2.2.1 Poly-Pale Process Area

Poly-Pale is manufactured in the Poly-Pale Process Area (AC-000). Poly-Pale can be produced continuously by the acid-catalyzed dimerization of blended resins in a solvent (Toluene) solution. By-products of the Poly-Pale process include Melhi, Pexoil (light ends), and weak acid (~40% H_2SO_4). The gum rosin is de-drummed, melted in the Rosin Melter (AC-004), and stored in a heated bulk storage tank. The gum rosin is blended with a higher grade resin, received by railcar, prior to being processed. The process consists of rosin-solvent mixing; polymerization; separation; hydrolysis; decomposition; washing (residual acidity removal); solvent evaporation; heat treatment (bleaching); and product storage and plant transfer. As a result of the evaporation process, the solvent is recaptured and reused in the process.

Emissions associated with the Poly-Pale Process Area include losses resulting from displacement and thermal expansion; tank losses from raw material and product storage; fugitive losses from the process equipment; and losses from the Rosin Melter. Two common vent systems with water scrubbers are used to control sulfur oxides (SO_X), VOC, and HAP (Toluene) emissions from the process equipment. Approximately one-half of the process equipment is vented to the West water scrubber (AC-002), while other process equipment vents to the East water scrubber (AC-003).

2.2.2 Rosin Amine Derivatives (RAD) Process Area

The Rosin Amine Derivatives Process Area (AF-000) produces Rosin Amine Derivatives (RAD) and the Ethylene Oxide Derivatives Process Area (AF-000(EO)) produces Ethylene Oxide Derivatives (EOD). RAD includes the production of specialty chemicals such as Amines and Amine Acetates, while EOD specialty chemical production includes Polyrads and Surfactants. These specialty chemicals are used primarily as corrosion inhibitors for various industrial applications such as hydrochloric acid and petroleum refining equipment. The detergent properties of these products aid in loosening and dispersing scale.

RAD products are produced using the following manufacturing processes: rosin ammoniation in the presence of a metal catalyst to produce crude Nitrile; batch distillation of crude Nitrile to produce distilled Nitrile; hydrogenation of distilled Nitrile in the presence of a metal catalyst to produce Amine; and various blending operations to produce Amine Acetates. EOD are produced by reacting Ethylene Oxide (EO) with various feed resins and various blending operations.

Emissions associated with the Rosin Amine Derivative Process Area include reactor losses; tank losses from raw material and product storage; and fugitive losses from process equipment. A water scrubber (AF-002) is used to control ammonia emissions from the RAD ammoniation reactor vent for reasons of personnel safety. The EO reactor vent, storage tank, and process lines vent to the EO scrubber (AF-004(EO)), which uses sulfuric acid as a circulating media to convert EO to Ethylene Glycol. The numerous process tanks (raw material tanks, work tanks, and product tanks) associated with the area processes are listed in Section C - Insignificant Activities of the TVOP renewal application.

2.2.3 Hard Resins Process Area

Several resin derivatives are produced in the Hard Resins Process Area (AG-000). The area produces products, primarily simple esters, in five (5) batch kettle reactors. Hard Resins products are used in many diverse and varied industrial and food-grade applications, such as adhesives and chewing gum. The esterification reaction is assisted by the use of a catalyst and the addition of antioxidants. The kettles allow feed resins and other essential materials, such as glycerine, to react under specified and controlled conditions to produce a variety of desired products. Feed resins and other raw materials are stored in bulk storage tanks, drums, or bags. The process tanks (raw material tanks, work tanks, and product tanks) associated with the area are listed in Section C - Insignificant Activities of the TVOP renewal application. The finished products are either shipped in bulk, drummed, or flaked and bagged on one of the three flaking belts. The flaking belts allow the molten product from the reactor to cool and harden prior to arriving at the flaking hopper and the bagging machines.

Emissions associated with the Hard Resins Process Area include kettle (reactor) losses from displacement and thermal expansion; tank losses from raw material and product storage; flaking and packaging; and fugitive losses from the process equipment. The kettles are vented to a water scrubber (AG-003) to control VOC emissions. The water scrubber is also used to control VOC emissions from the "hot" end of the flaking belts where the molten product is poured onto the belts. The "cold" end of the flaking belts, primarily the flaking hopper, is vented to a dust collector (AG-005) to control PM emissions.

2.2.4 Rosin Shed Process Area

The Rosin Shed Process Area (AH-000) is used to drum a variety of resins. The area contains a drumming station, bulk loading station, and bulk storage tanks (tanks listed in Section C – Insignificant Activities). The drumming occurs under a metal storage building. Raw material feed resins are stored in bulk for other facility process areas, and finished products can be drummed and bulk shipped from this process area.

Emissions associated with the Rosin Shed Process Area include tank losses from raw material and product storage and fugitive losses from the drumming and loading operations.

2.2.5 Rosin Distillation Process Area

The Rosin Distillation Process Area (AJ-000) contains a distillation column used to refine the feed resin into various grades of resin derivatives. The resin derivatives produced from the still can be distributed as final products or further processed in the Hard Resins Process Area. The still operates under vacuum with no direct stack emissions; however, the potential for fugitive emissions associated with the process do exist. Losses from raw material and product storage tanks (listed in Section C – Insignificant Activities) also occur in this process area.

2.3 POWER HOUSE AND EFFLUENT TREATMENT AREAS

The Power House produces steam, service water, air, and nitrogen for the entire facility. Steam is generated by two (2) package boilers. Boiler #5 (AM-001) has a rated capacity of 156 MMBTU/hr, and Boiler #6 (AM-002) has a rated capacity of 65 MMBTU/hr. The boilers currently combust natural gas; however, they have the potential to burn #2 fuel oil and #6 fuel oil. Emissions from the boilers include PM, SO_2, NO_X, CO, VOC, and HAP emissions associated with the combustion of natural gas and the potential combustion of fuel oil.

The facility's Effluent Treatment Area (AN-000) consists of wastewater equalization, solids removal, pH adjustment, and oils separation. Emissions associated with the area include fugitive VOC and HAP (e.g., toluene) losses from the facility's wastewater.

3.0 APPLICABLE AIR REGULATIONS

Hercules has the potential to emit criteria air pollutants (PM, SO_2, NO_X, CO, and VOC) in excess of 100 tons per year, any one HAP in excess of 10 tons per year, and total HAPs in excess of 25 tons per year. Therefore, the facility is subject to the Title V (Air) Major Source Program, and must submit an *Application for a Title V Air Pollution Control Permit to Operate Air Emissions Equipment* in accordance with the requirements of 40 CFR Part 70 and Mississippi Air Regulation APC-S-6.

Hercules was issued a Title V Operating Permit on November 13, 1998, and the permit expires on November 1, 2003. In accordance with Title V Operating Permit No. 0800-00001, Section 1.16, a renewal application must be submitted within 180 days prior to the permit expiration date. As a result of the above referenced information and in accordance with Mississippi Air Regulations, a complete TVOP Renewal Application is included in Appendix A.

3.1 Particulate Matter

No source is allowed to emit particulate matter (PM) such that the opacity exceeds forty percent (40%). However, during startup operations the source may exceed the 40% opacity requirement for up to 15 minutes per startup in any one hour, not to exceed three (3) per 24-hour period. (APC-S-1, Section 3.1 & 3.2).

Fuel burning equipment with a rated capacity less than 10 MMBTU/hr shall not exceed PM emissions of 0.6 lbs/10^6 BTU (Section 3.4(a)(1)). Fuel burning equipment with a rated capacity of 10 MMBTU/hr to 10,000 MMBTU/hr shall not exceed PM emissions as determined by the relationship $E = 0.8808*I^{-0.1667}$, where E is the emission rate in lbs/10^6 BTU and I is the heat input in MMBTU/hr (Section 3.4(a)(2)). The facility currently operates two (2) boilers, AM-001 and AM-002, with a rated capacity greater than 10 MMBTU/hr and six (6) units with a rated capacity less than 10 MMBTU/hr.

Manufacturing processes are subject to an hourly PM emission limitation equal to $E = 4.1*p^{0.67}$, where p is the process throughput weight in tons per hour and E is the allowable PM emission rate in pounds per hour (Section 3.6(a)). Manufacturing processes at the facility subject to the standard include Emission Points AA-002, AB-001, AC-004, and AG-005 (see TVOP Application, Section N).

3.2 Sulfur Dioxides

Fuel burning equipment shall not exceed an SO_2 emission rate of 4.8 lbs/10^6 BTU (APC-S-1, Section 4.1(a)). The facility operates eight (8) units, including AM-001 and AM-002, subject to the standard.

Manufacturing processes shall emit gases containing sulfur oxides (SO_X) at a rate in excess of 2000 parts per million (Section 4.2(a)). Manufacturing processes at the facility subject to the standard include Emission Points AC-002 and AC-003 (see TVOP Application, Section N).

3.3 Prevention of Significant Deterioration

In accordance with 40 CFR Part 52 and Mississippi Air Regulations APC-S-5, any facility with a potential to emit greater that or equal to 250 tons per year of any regulated air pollutant will be classified as a major air emissions source with respect to the Prevention of Significant Deterioration (PSD) regulations. The regulations also list 28 specific industrial categories where the PSD emission threshold is reduced to 100 tons per year for any regulated pollutant.

Hercules (Hattiesburg Plant) is a chemical processing plant and is listed as one of the 28 industrial categories. Since facility emissions are above the 100 tons per year threshold identified above, the facility is a major source with respect to PSD, and future "significant" facility modifications will require a more detailed permitting process known as New Source Review (NSR).

3.4 New Source Performance Standards

New Source Performance Standards (NSPS) were promulgated to govern the emissions of specific sources of air pollutants modified, constructed, or reconstructed after the applicability dates of the regulations. The NSPS regulations are documented in 40 CFR Part 60.

Volatile organic liquid storage vessels with a capacity greater than 10,560 gallons and installed or modified after July 23, 1984, are subject to the NSPS, 40 CFR 60, Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels. The storage vessels subject to Subpart Kb are identified in Section C – Insignificant Activities (Tanks List) of the Title V permit renewal application. In order to comply with Subpart Kb, the facility maintains records of the applicable tank dimensions and tank capacities on-site.

Industrial steam generating units with a rated capacity equal to or greater than 10 MMBTU/hr, but less than 100 MMBTU/hr, and installed, modified, or reconstructed after June 9, 1989, are subject to NSPS, 40 CFR 60, Subpart Dc – Standards of Performance for Small Industrial, Commercial, and Institutional Steam Generating Units. Industrial steam generating units with a rated capacity equal to or greater than 100 MMBTU/hr and installed, modified, or reconstructed after June 19, 1984, are subject to NSPS, 40 CFR 60, Subpart Db – Standards of Performance for Industrial, Commercial, and Institutional Steam Generating Units. Two (2) units at the facility meet the sizing criteria; however, the 156 MMBTU/hr package boiler (AM-001) was constructed prior to 1977, and the 56 MMBTU/hr package boiler (AM-002) was constructed in 1986. Therefore, the units do not meet the NSPS applicability requirements for Subpart Db or Dc.

3.5 National Emissions Standards for Hazardous Air Pollutants

National Emission Standards for Hazardous Air Pollutants (NESHAP) are being promulgated to govern the emissions of certain hazardous air pollutants. The NESHAP regulations are documented in 40 CFR Part 61 and 63.

Based on the facility's current operations, Hercules is subject to NESHAP, 40 CFR 63, Subpart W – Standards for Epoxy Resins Production and Non-Nylon Polyamides Production and Subpart PPP – Standards for Polyether Polyols Production. The Kymene Process Area (AA-000) is subject to Subpart W, and the HAP of concern is Epichlorohydrin. The area complies with the standard by developing and implementing a Startup, Shutdown, and Malfunction (SSM) Plan and utilizing Leak Detection and Repair (LDAR) methodology as detailed in 40 CFR 63, Subpart H. The LDAR monitoring method, monitoring schedule, and defined leak definition concentrations are specified in the applicable regulation(s) and listed in Section N of the TVOP renewal application.

The EOD Process Area (AF-000(EO)) is subject to Subpart PPP, and the HAP of concern is Ethylene Oxide. Again, area complies with the standard by developing and implementing a Startup, Shutdown, and Malfunction (SSM) Plan and utilizing Leak Detection and Repair (LDAR) methodology as detailed in 40 CFR 63, Subpart H. The LDAR monitoring method, monitoring schedule, and defined leak definition concentrations are specified in the applicable regulation(s) and listed in Section N of the TVOP renewal application. In accordance with Subpart PPP, the facility will also achieve an aggregated 98% reduction of EO emissions and comply with specific monitoring, recordkeeping, and reporting requirements. The facility uses a scrubber (with circulating sulfuric acid) to comply with the required EO reduction efficiency, and the scrubbing liquid flow rate and pH are monitored on a continuous basis to ensure compliance.

3.6 Nonattainment Provisions

Geographic areas determined to be non-compliant with the National Ambient Air Quality Standards (NAAQS) for any criteria air pollutant for which a standard has been set are classified as Nonattainment Areas. Hattiesburg, as well as Forrest County, are not currently located in an area identified as in nonattainment with any NAAQS. Therefore, the nonattainment provisions are not expected to have an impact on the Hattiesburg Plant.

4.0 EMISSION INVENTORY

An air emissions inventory has been compiled to quantify potential uncontrolled (and/or allowable) emissions and estimated actual emissions of regulated air pollutants at the Hercules facility. A summary of the facility emissions calculations are presented in Appendix B. The emissions calculations include a description of the pollutants emitted and the methodology used to quantify the emissions.

4.1 Fuel Burning Equipment

The facility operates eight (8) fuel burning units fired with natural gas, but some units have the capability to combust fuel oil. The fuel burning emission calculations are based on AP-42, Compilation of Air Pollutant Emission Factors (AP-42) in Section 1.3 and 1.4 to determine both potential uncontrolled and estimated actual emissions of PM, NO_X, SO_2, CO, VOC, and HAPs.

Fuel burning equipment is subject to Mississippi Air Regulations APC-S-1, Section 3.4(a)(1) & (2) for PM emissions and 4.1(a) for SO_2 emissions. Fuel burning equipment with a rated capacity of less than 10 MMBTU/hr shall not exceed PM emissions of 0.6 lbs/10^6 BTU, and equipment with a capacity of 10 MMBTU/hr to 10,000 MMBTU/hr shall not exceed PM emissions as determined by $E = 0.8808*I^{-0.1667}$. The maximum discharge of SO_2 emissions from fuel burning equipment is 4.8 lbs/10^6 BTU.

4.2 Manufacturing Processes

The facility manufacturing processes are detailed in Section 2.0 of this report, and the corresponding emissions calculations are attached in Appendix B. The emissions inventory addresses both point source and fugitive air emissions. The process area point source emissions were estimated using stack test performance data, mass balance spreadsheets developed by the Hattiesburg Plant, applicable regulatory requirements, and AP-42 emissions factors. The fugitive emissions from the various process areas were calculated using Synthetic Organic Chemical Manufacturing Industry (SOCMI) emission factors, mass balance spreadsheets, applicable regulatory requirements, and engineering estimates. The supporting information used to develop the emissions inventory is attached in Appendix C, and the manufacturing process areas applicable regulatory requirements are discussed in Section 3.0.

4.3 Volatile Organic Liquid Storage Vessel Emissions

The facility storage vessels are listed in Section C (Tanks List) of the TVOP renewal application. The tanks list identifies the tank identification number; the contents of the tank; the tank material of construction; the date the tank was constructed, modified, or reconstructed; and an NSPS Subpart Kb applicability determination. The EPA Tanks 4.0 Program was utilized to determine air pollutant emissions from the breathing and working losses associated with the "worst case" storage vessels. Based on the results, no vessel at the facility that vents directly to the atmosphere has the potential to emit more than 1.0 pounds per hour of VOC emissions or 0.1 pounds per hour of a HAP. The insignificant air pollutant emissions generated from the facility tanks are estimated using calculation spreadsheets developed by the Hattiesburg Plant and based on the equations used in the Tanks 4.0 Program. The data is provided in Appendix C and summarized in the emissions inventory presented in Appendix B.

4.4 Insignificant Activities

A list of fuel burning equipment, manufacturing process equipment, storage tanks, and other facility equipment or processes that meet the requirements of an insignificant activity (APC-S-6, Section VII.A-D) are listed in Section C of the TVOP renewal application.

4.5 Emissions Summary

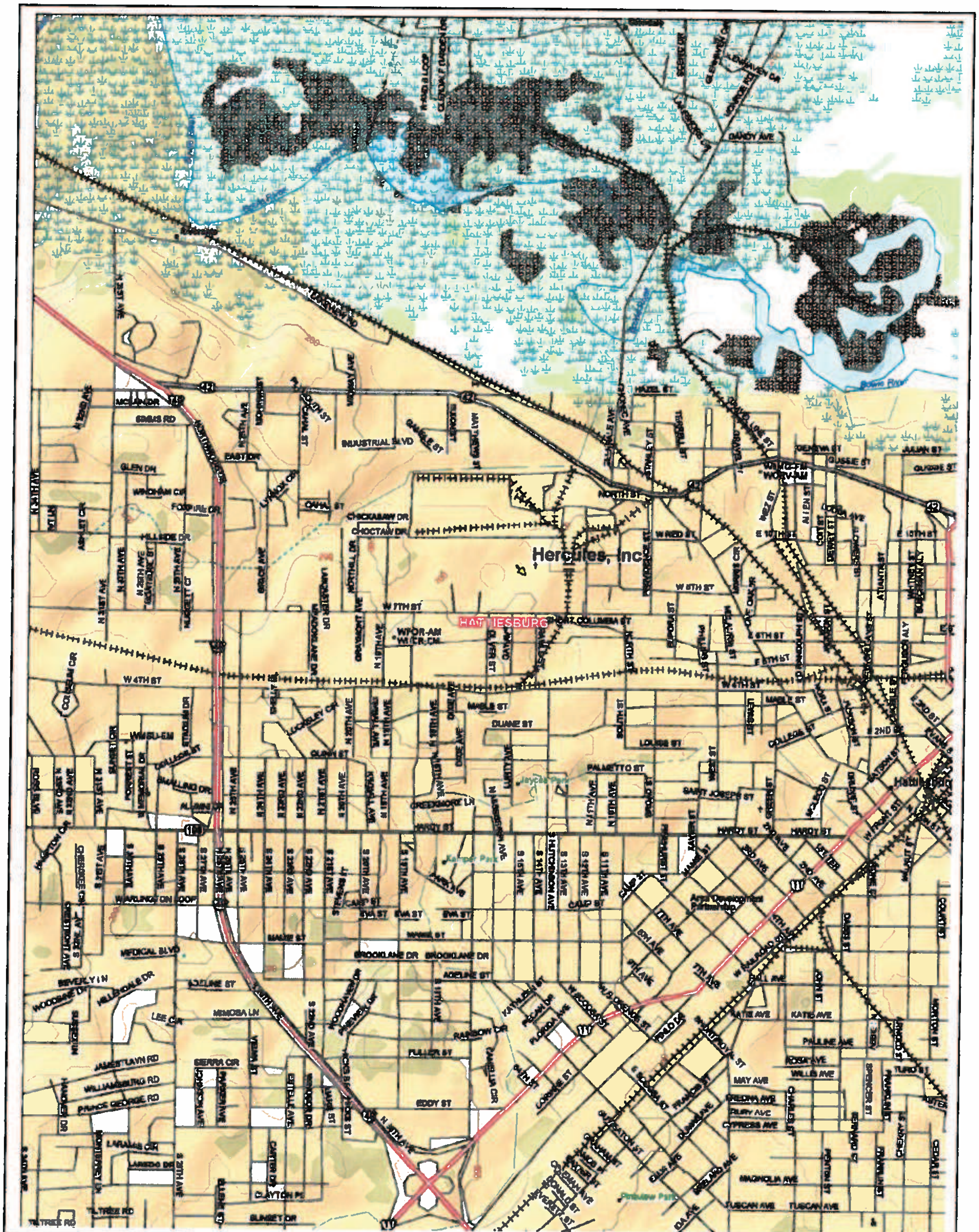
The Hattiesburg Plant's potential and/or regulatory allowable emissions and the estimated actual emissions are quantified below. The emissions inventory and supporting information is presented in Appendix B and C of this report, respectively.

Pollutant	Potential/Allowable Emissions (TPY)	Actual Emissions (TPY)
PM	266.90	12.68
SO_2	2033.78	0.21
NO_x	331.54	58.90
CO	90.24	19.56
VOC	587.76	252.68
Total HAPs	366.56	169.91
Toluene	342.10	167.02
Epichlorohydrin	12.62	1.91
Ethylene Oxide	9.48	0.59
Chloride*	2.38	0.00
Hexane	1.71	0.39
Nickel	0.58	0.00
Formaldehyde	0.07	0.00

*Chloride is a metal compound that is not a listed HAP.

FIGURES

FIGURE 1
SITE LOCATION MAP



7.5' Topographical Map - Hattiesburg (MS) Quadrangle - 1982

N	Legend:	Hercules Incorporated – Hattiesburg Plant 613 West 7th Street Hattiesburg, Mississippi 39401		ECS Environmental Compliance Services, Inc.
		Figure 1 – Site Location Map		
		Date: 04/10/03	Project No.: HER.001	

FIGURE 2
FACILITY DIAGRAM

APPENDICES

APPENDIX A
TITLE V OPERATING PERMIT APPLICATION

FOR OFFICIAL USE ONLY	
APPLICATION RECEIPT DATE:	
APPLICATION NO.:	
FOR MODIFICATION: MINOR	
SIGNIFICANT	

STATE OF MISSISSIPPI
DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF POLLUTION CONTROL
AIR DIVISION
P.O. BOX 10385
JACKSON, MS. 39289-0385
PHONE NO.: (601) 961 - 5171

APPLICATION FOR TITLE V AIR POLLUTION CONTROL PERMIT TO OPERATE AIR EMISSIONS EQUIPMENT

PERMITTING ACTIVITY:

_____ INITIAL APPLICATION

_____ MODIFICATION

__X__ RENEWAL OF OPERATING PERMIT

NAME: HERCULES, INC.

CITY: HATTIESBURG, MISSISSIPPI

COUNTY: FORREST

FACILITY No. (if known): 0800-00001

APPLICATION FOR TITLE V PERMIT TO OPERATE AIR EMISSIONS EQUIPMENT

CONTENTS

OPERATING PERMIT APPLICATION REQUIREMENTS

All applications must be submitted on the form supplied by the Permit Board. Trivial activities as listed in Attachment A are presumed to emit less than 1 pound per hour of a pollutant that is not a hazardous air pollutant and less than 0.1 pound per hour of any hazardous air pollutant; these activities need not be reported in the application. Insignificant activities which are specified in Section VII.A. of Regulation APC-S-6 and listed herein also need not be included . For insignificant activities which are specified in Section VII.B. of Regulation APC-S-6, a list must be included in the application. An application may not omit information needed to determine the applicability of, or to impose, any applicable requirement, or to evaluate the fee amount required under the schedule pursuant to Section VI. of Regulation APC-S-6. The forms and attachments shall include the elements specified as follows:

A. Identifying information, including company name and address (or plant name and address if different from the company name), owner's name and agent, and telephone number and names of plant site manager/contact;

B. A description of the source's process and products by Standard Industrial Classification Code including any associated with any alternate scenario identified by the source;

C. Emission-related information as follows:

1. A qualitative description of all emissions units, including those not subject to applicable requirements but not those omitted under trivial or insignificant activities provisions;

2. A description of all emissions of pollutants for which the source is major and of all emissions of regulated air pollutants sufficient to determine or verify major source status, to determine or verify applicability of and compliance with applicable requirements, and to assess and collect permit fees, if the emissions basis for fees has not been previously determined. Fugitive emissions from individual components within a facility may be determined collectively based on their relationship to the associated process unless individual emission rates are needed to determine the applicability of an applicable requirement such as NSPS, NESHAPS, a MACT standard, etc. or to determine air quality impacts. Similarly, where individual components or units with a facility may be classified into a generic group due to the commonality of applicable requirements and /or the nature of operation, stack emissions may be determined collectively for the group unless individual emission rates are needed to determine applicability of an applicable requirement or to determine air quality impacts;

3. For each pollutant and emissions unit which is regulated, emission rates in TPY and in such terms as are necessary to establish compliance consistent with the applicable standard reference test method, except that, for pollutants and units which have no applicable requirements expressed in emission rate terms, emission rate quantification may be omitted;

4. To the extent it is needed to determine or regulate emissions, the information that follows: fuels, fuel use, raw materials, production rates, and operating schedules;

5. Identification and description of air pollution control equipment and compliance monitoring devices or activities;

6. Limitations on source operation affecting emissions or any work practice standards, where applicable, for all regulated pollutants at the Title V source;

7. Other information required by any applicable requirement (including information related to stack height limitations developed pursuant to Section 123 of the Federal Act); and

8. Calculations on which the information requested in this section is based.

D. Air pollution control requirements as follows:

1. Citation and description of all applicable requirements, and

2. Description of or reference to any applicable test method for determining compliance with each applicable requirement;

E. Other specific information that may be necessary to implement and enforce other applicable requirements of the Federal Act or of these regulations or to determine the applicability of such requirements;

F. An explanation of any proposed exemptions from otherwise applicable requirements;

G. Additional information as determined to be necessary by the Permit Board to define alternative operating scenarios identified by the source pursuant to Section III.A.9. of Regulation APC-S-6 or to define permit terms and conditions implementing 40 CFR 70.4(b)(12) or Section III.A.10. of Regulation APC-S-6;

H. A compliance plan for all Title V sources that contains all of the following:

1. A description of the compliance status of the source with respect to all applicable requirements;

2. A description as follows:

a. For applicable requirements with which the source is in compliance, a statement that the source will continue to comply with such requirements;

b. For applicable requirements that will become effective during the permit term, a statement that the source will meet such requirements on a timely basis;

c. For requirements for which the source is not in compliance at the time of permit issuance, a narrative description of how the source will achieve compliance with such requirements;

3. A compliance schedule as follows:

a. For applicable requirements with which the source is in compliance, a statement that the source will continue to comply with such requirements;

b. For applicable requirements that will become effective during the permit term, a statement that the source will meet such requirements on a timely basis. A statement that the source will meet in a timely manner applicable requirements that become effective during the permit term shall satisfy this provision, unless a more detailed schedule is expressly required by the applicable requirements;

c. A schedule of compliance for sources that are not in compliance with all applicable requirements at the time of permit issuance. Such a schedule shall include a schedule or remedial measures, including an enforceable sequence of actions with milestones, leading to compliance with any applicable requirements for which the source will be in noncompliance at the time of permit issuance. This compliance schedule shall resemble and be at least as stringent as that contained in any judicial consent decree or administrative order to which the source is subject. Any such schedule of compliance shall be supplemental to, and shall not sanction noncompliance with, the applicable requirements on which it is based;

4. A schedule for submission of certified progress reports, to be submitted no less frequently than every 6 months for sources required to have a schedule of compliance to remedy a violation;

5. The compliance plan content requirements specified in this paragraph shall apply and be included in the acid rain portion of a compliance plan for an affected source, except as specifically superseded by regulations promulgated under Title IV of the Federal Act with regard to the schedule and method(s) the source will use to achieve compliance with the acid rain emissions limitations;

I. Requirements for compliance certification, including the following:

1. A certification of compliance with all applicable requirements by a responsible official consistent with Section II.E of Regulation APC-S-6 and Section 114(a)(3) of the Federal Act;

2. A statement of methods used for determining compliance, including a description of monitoring, recordkeeping, and reporting requirements and test methods;

3. A schedule for submission of compliance certifications during the permit term, to be submitted no less frequently than annually, or more frequently if specified by the underlying applicable requirement or by the Permit Board;

4. A statement indicating the sources compliance status with any applicable enhanced monitoring and compliance certification requirements of the Federal Act; and

J. The use of nationally-standardized forms for acid rain portions of permit applications and compliance plans, as required by regulations promulgated under Title IV of the Federal Act.

INSIGNIFICANT ACTIVITIES AND EMISSIONS

I. The following activities/emissions sources are not required to be included in a Title V permit application:

A. New or modified pilot plants, subject to temporary source regulations located in Section III.E. of regulation APC-S-6.

B. Maintenance and upkeep:

1. Maintenance, structural changes, or repairs which do not change the capacity of such process, fuel-burning, refuse-burning, or control equipment, and do not involve any change in quality, nature, or quantity of potential emissions of any regulated air pollutants; and

2. Housekeeping activities or building maintenance procedures;

C. Air conditioning or ventilation: comfort air conditioning or comfort ventilating systems which do not transport, remove, or exhaust regulated air pollutants to the atmosphere;

D. Laboratory equipment:

1. Laboratory equipment used exclusively for chemical or physical analysis for quality control or environmental monitoring purposes; or

2. Non-production laboratory equipment used at non-profit health or non-profit educational institutions for chemical or physical analyses, bench scale experimentation or training, or instruction;

E. Hot water heaters which are used for domestic purposes only and are not used to heat process water;

F. Fuel use related to food preparation by a restaurant, cafeteria, residential cooker or barbecue grill where the products are intended for human consumption;

G. Clerical activities such as operating copy machines and document printers, except operation of such units on a commercial basis;

H. Hand held equipment used for buffing, polishing, carving, cutting, drilling, machining, routing, sanding, sawing, surface grinding, or turning of ceramic art work, precision parts, leather, metals, plastics, fiber board, masonry, carbon, glass, or wood;

I. Equipment for washing or drying fabricated glass or metal products, if no VOCs are used in the process and no oil or solid fuel is burned;

J. Water cooling towers (except at nuclear power plants); water treatment systems for process cooling water or boiler feed water; and water tanks, reservoirs, or other water containers not used in direct contact with gaseous or liquid process streams containing carbon compounds, sulfur compounds, halogens or halogen compounds, cyanide compounds, inorganic acids, or acid gases;

K. Domestic sewage treatment facilities (excluding combustion or incineration equipment, land farms, storage silos for dry material, or grease trap waste handling or treatment facilities);

L. Stacks or vents to prevent escape of sewer gases through plumbing traps;

M. Vacuum cleaning systems for housekeeping, except at a source with hazardous air pollutants;

N. Alkaline/phosphate washers and associated cleaners and burners;

O. Mobile sources;

P. Livestock and poultry feedlots and associated fuel burning equipment other than incinerators;

Q. Outdoor kerosene heaters;

R. Equipment used for hydraulic or hydrostatic testing;

S. Safety devices, excluding those with continuous emissions; and

T. Brazing, soldering, or welding equipment that is used intermittently or in a non-continuous mode.

II. The following activities/emissions sources must be listed in the application but emissions from these activities do not have to be quantified.

A. All gas fired, #2 oil fired, infrared, electric ovens with no emissions other than products of fuel combustion;

B. Combustion units with rated input capacity less than 10 million Btu/hr that are fueled by:

1. Liquified petroleum gas or natural gas supplied by a public utility; or

2. Commercial fuel oil #2 or lighter;

C. Equipment used for inspection of metal products;

D. Equipment used exclusively for forging, pressing, drawing, spinning, or extruding metals;

E. Equipment used exclusively to mill or grind coatings and molding compounds where all materials charged are in paste form;

F. Mixers, blenders, roll mills, or calendars for rubber or plastics for which no materials in powder form are added and in which no organic solvents, diluents, or thinners are used;

G. All storage tanks used exclusively to store fuel oils, kerosene, diesel, jet fuel, crude oil, natural gas, or liquified petroleum gas (the application must list the size of the tank, date constructed and/or modified, type tank, and material stored);

H. Space heaters utilizing natural or LPG gas and used exclusively for space heating;

I. Back-up or emergency use generators, boilers or other fuel burning equipment which is of equal or smaller capacity than normal main operating equipment, cannot be used in conjunction with normal main operating equipment, and does not emit, have or cause the potential to emit of any regulated air pollutant to increase;

J. Blast cleaning equipment using a suspension of abrasives in water;

K. Die casting machines;

L. Foundry sand mold forming equipment to which no heat is applied and from which no organics are emitted.

M. Bark and wood - waste storage and handling;

N. Log wetting areas;

P. Log flumes;

Q. Sodium hydrosulfide storage tank;

R. Smelt dissolving tank view ports;

S. Spout cooling water storage;

T. Effluent drains;

U. White water chest;

V. Repupler vents;

W. Clay storage tank;

X. Alum storage tank;

Y. Starch storage tank;

Z. Steam vents and leaks;

AA. Deaerator vents;

AB. Mill air and instrument air system;

AC. Demineralizer water storage tank;

AD. Acid storage tank;

AE. Process water tank;

AF. Air purification system vents;

AG. Effluent neutralizing tank/system;

AH. Dregs washer;

AI. Lime silo;

AJ. Lime mud mix tank;

AK. H_2O_2 storage tank;

AL. Green liquor tank; and

AM. Tall oil storage tank.

III. Notwithstanding I. and II. above, the applicant shall include all emissions sources and quantify emissions if needed to determine major source status, to determine compliance with an applicable requirement and/or the applicability of any applicable requirement such as NSPS, NESHAP, MACT standard, etc. as such term is defined in Section I. of Regulation APC-S-6 or collect any permit fee owed under the approved fee scheduled.

IV. Notwithstanding I. and II. above, the applicant shall include all emission sources with a potential to emit:

1. greater than 1 pound per hour of any regulated pollutant that is not a hazardous air pollutant;

2. greater than 0.1 pound per hour of any hazardous air pollutant.

V. The permittee does not have to report the addition of any insignificant activity listed in Section I. above unless the addition is a Title I modification or requires a permit to construct. If a Title I permit or a Permit to Construct is required, then the modification procedures outlined in Section IV.E. of Regulation APC-S-6 shall be followed.

VI. The addition of any insignificant activity listed in Section II. above, shall be handled as an administrative amendment as defined in Section IV.D. of Regulation APC-S-6 unless the addition is a Title I modification or requires a Permit to Construct. If a Title I permit or Permit to Construct is required, then the modification procedures outlined in Section IV.E. of Regulation APC-S-6 shall be followed.

REGULATED AIR POLLUTANTS

Total suspended particulate matter
PM_{10}
Sulfur dioxide
Nitrogen oxides
Carbon monoxide
Volatile organic compounds(see note 1)
Lead
Dioxin/Furan
Fluorides
Hydrogen chloride
Hydrogen sulfide
Sulfuric acid mist
Total reduced sulfur
Reduced sulfur compounds
Arsenic
Asbestos
Beryllium
Benzene
Mercury
Radionuclides
Vinyl chloride
Carbon tetrachloride
Chlorofluorocarbon-11
Chlorofluorocarbon-12
Chlorofluorocarbon-13
Chlorofluorocarbon-111
Chlorofluorocarbon-112
Chlorofluorocarbon-113
Chlorofluorocarbon-114
Chlorofluorocarbon-115
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Hydrochlorofluorocarbon-252
Hydrochlorofluorocarbon-253
Hydrochlorofluorocarbon-261
Hydrochlorofluorocarbon-262
Hydrochlorofluorocarbon-271
Halon-1211
Halon-1301
Halon-2402
Methyl chloroform

Note 1 - Volatile organic compounds (VOC) includes any compound of carbon, excluding carbon monoxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate, which participates in atmospheric photochemical reactions. This includes any such organic compound other than the following which have been determined to have negligible photochemical reactivity: Methane; ethane; methylene chloride; 1,1,1-trichloroethane; CFC-113; CFC-11;CFC-12; CFC-22; FC-23; CFC-114; CFC-115; HCFC-123; HFC-134a; HCFC-141b; HCFC-142b; HCFC-124; HFC-125; HFC-134; HFC-143a; HFC-153a; and perfluorocarbon compounds which fall into these classes: (i) Cyclic, branched, or linear, completely fluorinated alkanes; (ii) Cyclic, benched, or linear, completely fluorinated ethers with no unsaturations; (iii) Cyclic, branched, or linear completely fluorinated tertiary amines with no unsaturations; and (iv) Sulfur containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine. **For the purposes of this application hazardous air pollutants that are volatile organic compounds should be included as VOCs for reflection of total VOCs from the facility but need to be identified separately as well.**

HAZARDOUS AIR POLLUTANTS

CAS No.	CHEMICAL NAME
75070	Acetaldehyde
60355	Acetamide
75058	Acetonitrile
98862	Acetophenone
53963	Acetylaminofluorene(2)
107028	Acrolein
79061	Acrylamide
79107	Acrylic Acid
107131	Acrylonitrile
107051	Allyl Chloride
92671	Aminodipheyl(4)
62533	Aniline
90040	Anisidine(o)
7440360	Antimony Compounds
7440382	Arsenic Compounds (inorganic including arsine)
1332214	Asbestos
71432	Benzene
92875	Benzidine
98077	Benzotrichloride
100447	Benzyl Chloride
7440417	Beryllium Compounds
192524	Biphenyl
117817	Bis(2-ethhylhexyl)phthalate(DEHP) (Dioctyl Phthalate)
542881	Bis(chloromethyl)ether
75252	Bromoform
106990	Butadiene(1,3)
7440439	Cadmium Compounds
156627	Calcium Cyanamide
105602	Caprolactam
133062	Captan
63252	Carbaryl
75150	Carbon Disulfide
56235	Carbon Tetrachloride
463581	Carbonyl Sulfide
120809	Catechol
133904	Chloramben
57749	Chlordane
7782505	Chlorine
79118	Chloroacetic Acid
532274	Chloroacetophenone(2)
108907	Chlorobenzene
510156	Chlorobenzinate
67663	Chloroform
107302	Chloromethyl methyl ether
126998	Chloroprene (Neoprene; 2-Chloro-1,3-Butadiene)
7440473	Chromium Compounds (IV)
10210681	Cobalt Carbonyl (as Co)
7440484	Cobalt Compounds (metal, dust, and fumes as Co)
16842038	Cobalt Hydrocarbonyl (as Co)

HAZARDOUS AIR POLLUTANTS

CAS No.	CHEMICAL NAME
65996818A	Coke Oven Emissions
1319773	Cresols/Cresylic acid
108394	Cresol(m)
95487	Cresol(o)
106445	Cresol(p)
98828	Cumene (Isopropylbenzene)
---	Cyanide Compounds (NOTE # 1)
3547044	DDE
334883	Diazomethane
132649	Dibenzofurans
96128	Dibromo-3-chloropropane(1,2)
84742	Dibutylphthalate
106467	Dichlorobenzene(1,4)(p)
91941	Dichlorobenzidene(3,3)
111444	Dichloroethyl ether (Bis(2-chloroehtyl)ether)
542756	Dichloropropene(1,3)
62737	Dichlorvos
111422	Diethanolamine
121697	Diethyl aniline (N,N) (dimethylaniline (N,N))
64675	Diethyl Sulfate
119904	Dimethoxybenzidine(3,3')
60117	4 - Dimethyl aminoazobenzene
119937	Dimethyl benzidine (3,3')
79447	Dimethyl carbamoyl chloride
68122	Dimethyl formamide
57147	Dimethyl hydrazine(1,1)
131113	Dimethyl phthalate
77781	Dimethyl sulfate
534521	Dinitro-o-cresol(4,6), and salts
51285	Dinitrophenol(2,4)
121142	Dinitrotoluene(2,4)
123911	Dioxane(1,4) (1,4-diethyleneoxide)
122667	Diphenylhydrazine(1,2)
94757	d(2,4), salts and esters
106898	Epichlorohydrin (Chloro-2,3-epoxypropane(1))
106887	Epoxybutane(1,2) (1,2-Butylene oxide)
140885	Ethyl acrylate
100414	Ethyl benzene
51796	Ethyl carbamate (Urethane)
75003	Ethyl chloride (Chloroethane)
106934	Ethylene dibromide (1,2-Dibromoethane)
107062	Ethylene dichloride (1,2-Dichloroethane)
107211	Ethylene glycol
151564	Ethylene imine (Azridine)
75218	Ethylene oxide
96457	Ethylene thiourea
75343	Ethylidene dichloride (1,1-Dichloroethane)
50000	Formaldehyde
---	Glycol ethers (NOTE #2)
76448	Heptachlor

HAZARDOUS AIR POLLUTANTS

CAS No.	CHEMICAL NAME
118741	Hexachlorobenzene
87683	Hexachlorocyclopentadiene
67721	Hexachloroethane
822060	Hexamethylene-1,6-diisocyanate
680319	Hexamethylphosphoramide
110543	Hexane
302012	Hydrazine
7647010	Hydrochloric acid
7664393	Hydrogen Fluoride (Hydrofluoric acid)
123319	Hydroquinone
78591	Isophorone
7439921	Lead Compounds
58899	Lindane (all isomers)
108316	Maleic anhydride
7439965	Manganese Compounds
7439976	Mercury Compounds
67561	Methanol
72435	Methoxychlor
74839	Methyl bromide (Bromomethane)
74873	Methyl chloride (Chloromethane)
71556	Methyl chloroform (1,1,1-Trichloroethane)
78933	Methyl ehtyl ketone (2-Butanone) (MEK)
60344	Methyl hydrazine
74884	Methyl iodide (Iodomethane)
108101	Methyl isobutyl ketone (Hexone)
624839	Methyl isocyanate
80626	Methyl methacrylate
1634044	Methyl tert butyl ether
101144	Methylene bis(2-chloroaniline)(4,4) (MOCA)
75092	Methylene chloride (Dichloromethane)
101688	Methylene diphenyl diisocynate (MDI)
101779	Methylenedianiline(4,4')
---	Mineral fibers (NOTE #3)
91203	Naphthalene
7440020	Nickel Compounds
7440020	Nickel, refinery dust
12035722	Nickel, subsulfide
98953	Nitrobenzene
92933	Nitrodiphenyl(4)
100027	Nitrophenol(4)
79469	Nitropropane(2)
62759	Nitrosodimethylamine(N) (Dimethylnitrosoamine)
59892	Nitrosomorpholine(N)
684935	Nitroso-N-methylurea(N)
56382	Parathion
82688	Pentachloronitrobenzene (Quintobenzene)
87865	Pentachlorophenol
108952	Phenol
106503	Phenylenediamine(p)
75445	Phosgene

HAZARDOUS AIR POLLUTANTS

CAS No.	CHEMICAL NAME
7803512	Phosphine
7723140	Phosphorus
85449	Phthalic anhydride
1336363	Polychlorinated biphenyls (Arochlors)
---	Polycylic Organic Matter (NOTE #5)
1120714	Propane sultone(1,3)
57578	Propiolactone(beta)
123386	Propionaldehyde
114261	Propoxur (Baygon)
78875	Propylene dichloride (1,2 dichloropropane)
75558	Propylene imine(1,2) (2-methyl aziridine)
75569	Propylene oxide
91225	Quinoline
106514	Quinone (1,4-Cyclohexadienedione)
---	Radionuclides (including radon) (NOTE #4)
7782492	Selenium Compounds
100425	Styrene
96093	Styrene oxide
1746016	Tetrachlorodibenzo-p-dioxin(2,3,7,8) (TCDD) (Dioxin)
79345	Tetrachloroethane(1,1,2,2)
127184	Tetrachloroethylene (Perchloroethylene)
7550450	Titanium Tetrachloride
108883	Toluene
95807	Toluene diamine(2,4) (2,4-diaminotoluene)
584849	Toluene diisocyanate(2,4)
95534	Toluidine(o)
8001352	Toxaphene (Chlorinated camphene)
120821	Trichlorobenzene(1,2,4)
79005	Trichloroethane(1,1,2)
79016	Trichloroethylene
95954	Trichlorophenol(2,4,5)
88062	Trichlorophenol(2,4,6)
121448	Triethylamine
1582098	Trifluralin
540841	Trimethylpentane(2,2,4)
75014	Vinyl Chloride
108054	Vinyl Acetate
593602	Vinyl Bromide
75354	Vinylidene chloride (1,1-Dichloroethylene)
1330207	Xylenes (mixed)
108383	Xylene(m)
95476	Xylene(o)
106423	Xylene(p)

NOTE # 1: X'CN where X = H' or any other group where a formal dissociation may occur, for example: KCN or $Ca(CN)_2$.

NOTE # 2: Includes mono- and di- ethers of ethylene glycol, dietheylene glycol and triethylene glycol $R\text{-}(OCH_2CH_2)n\text{-}OR'$ where:

n = 1,2,3
R = lkyl or arl groups
R' = R,H, or group which, when removed, yield glycol ethers with the structure: $R\text{-}(OCH_2CH_2)n\text{-}OH$. Polymers are excluded from the glycol category

NOTE # 3: Includes glass microfibers, glass wool fibers, rock wool fibers, and slag wool fibers, each characterized as "respirable" (fiber diameter less then 3.5 micrometers) and possessing an aspect ratio (fiber length divided by fiber diameter) greater than 3.

NOTE # 4: A type of atom which spontaneously undergoes radioactive decay.

NOTE # 5: Includes organic compounds with more than one benzene ring, and which have a boiling point greater than or equal to 100 Celsius.

Owners Information

1. Name, Address & Contact for the Owner/Applicant

    A. Company Name: **Hercules, Inc.**

    B. Mailing Address:

    1. Street Address or P.O. Box: **613 West 7th Street**
    2. City: **Hattiesburg** 3. State: **Mississippi**
    4. Zip Code: **39401**
    5. Telephone No.: **(601) 545-3450**

    C. Contact:

    1. Name: **Walter D. Langhans**
    2. Title: **Plant Manager**

2. Name, Address, Location and Contact for the Facility:

    A. Name: **Hercules, Inc.**

    B. Mailing Address:
    1. Street Address or P.O. Box: **613 West 7th Street**
    2. City: **Hattiesburg** 3. State: **Mississippi**
    4. Zip Code: **39401**
    5. Telephone No.: **(601) 545-3450**

    C. Site Location:
    1. Street: **613 West 7th Street**
    2. City: **Hattiesburg** 3. State: **Mississippi**
    4. County: **Forrest** 5. Zip Code: **39401**
    6. Telephone No.: **(601) 545-3450**

    Note: **If the facility is located outside of the City limits, please attach a sketch or description to this application showing the approximate location of the site.**

    D. Contact:

    1. Name: **Charlie Jordan**
    2. Title: **Environmental Coordinator**

3. SIC Code(s)(including any associated with alternate operating scenarios): **2861, 2821, 2869, & 2899**

4. Number of Employees: **84**

5. Principal Product(s): **Rosin Derivatives and Paper Chemicals**

6. Principal Raw Materials: **Rosin and Paper Chemicals**

7. Principal Process(es): **Rosin Derivatives and Paper Chemicals Manufacturing**

8. Maximum amount of principal product produced or raw material consumed per day: **3,108,960 pounds per day**

9. Facility Operating Schedule (Optional):

   A. Specify maximum hours per day the operation will occur: **24**

   B. Specify maximum days per week the operation will occur: **7**

   C. Specify maximum weeks per year the operation will occur: **52**

   D. Specify the months the operation will occur: **January - December**

10. Is this facility a small business as defined by the Small Business Act? (Optional) ______

11. **EACH APPLICATION MUST BE SIGNED BY THE APPLICANT.**

The application must be signed by a responsible official as defined in Regulation APC-S-6, Section I.A.26.

I certify that to the best of my knowledge and belief formed after reasonable inquiry, the statements and information in this application are true, complete, and accurate, and that, as a responsible official, my signature shall constitute an agreement that the applicant assumes the responsibility for any alteration, additions, or changes in operation that may be necessary to achieve and maintain compliance with all applicable Rules and Regulations.

Walter D. Langhans
Printed Name of Responsible Official

Plant Manager
Title

4/29/03
Date Application Signed

Signature of Applicants Responsible Official

EMISSIONS SUMMARY for the ENTIRE FACILITY

List below the total emissions for each pollutant from the entire facility in accordance with Operating Permit Application Requirements, pp. 3-5. For stack emissions, use the maximum annual allowable (potential) emissions. For fugitive emissions, use the annual emissions calculated using the maximum operating conditions.

POLLUTANT Footnote 1	ANNUAL EMISSION RATE	
	lb/hr	tons/yr
PM/PM_{10}		**266.90**
SO_2		**2033.78**
NO_X		**331.54**
CO		**90.24**
VOC		**587.76**
Total HAPs		**366.56**
Toluene		**342.10**
Epichlorohydrin		**12.62**
Ethylene Oxide		**9.48**
Chloride[2]		**2.38**
Hexane[2]		**1.71**
Nickel[2]		**0.58**

1. All regulated air pollutants, including hazardous air pollutants emitted from the entire facility should be listed. A list of regulated air pollutants has been provided in Section A.
2. HAP emissions (Chloride is not a listed HAP) associated with fuel combustion of natural gas and fuel oil with calculated emissions greater than 0.1 lb/hr.

With the exception of the emissions resulting from insignificant activities and emissions as defined in Regulation APC-S-6, Section VII, the pollutants listed above are all regulated air pollutants reasonably expected to be emitted from the facility.

SIGNATURE (must match signature on page 17)

SECTION C

For the sections listed below indicate the number that have been completed for each section as part of this application.

Section B	1	Section L1	2	Section M1	
Section C	1	Section L2		Section M2	
Section D	2	Section L3		Section M3	
Section E	10	Section L4		Section M4	
Section F		Section L5	7	Section M5	
Section G		Section L6		Section M6	
Section H		Section L7		Section M7	12
Section I				Section M8	
Section J				Section N	1
Section K				Section O	3

As a minimum, sections B, C, M, N and O must be completed for the application to be considered complete.

Please list below all insignificant activities required by APC-S-6, Section VII.B that apply to your facility.

1. Maintenance Areas (painting, welding, general maintenance, sandblasting) per Section VII.A.2, 8, 20 and B.4.
2. Laboratory Equipment and Analyses per Section VII.A.4.
3. Water Cooling (Refrigeration) Systems per Section VII.A.10.
4. Mobile Sources (trucks, cars, forklifts, portable air compressors) per Section VII.A.15.
5. Combustion Units with a rated capacity less than 10 MMBTUH per Section VII.B.2:
   - Three - 3.3 MMBTUH Dowtherm Boilers (formerly AC-001, AG-002, and AJ-001)
   - Two - 8.3 MMBTUH Dowtherm Boilers (formerly AG-001 and AF-001)
   - 2.2 MMBTUH Catalyst Regeneration Unit
6. Storage Vessels per Section VII.B.7 (see attached list).
7. Back-up or Emergency Generators and Pumps (firehouse) per Section VII.B.9.
8. Sandblasting Equipment per Section VII.B.10.
9. Effluent Treatment per Section VII.B.19 and 32.
10. Steam Vents and Leaks per Section VII.B.25.
11. Instrument Air System per Section VII.B.27.
12. Plant Nitrogen per Section VII.D.
13. Plant Hydrogen per Section VII.D.
14. Compressed Gas Cylinders per Section VII.D.
15. Adduct Reactor Process Vent (formerly AD-001).

KYMENE PROCESS AREA					
Emission Point No.	**Material/Product Stored**	**Tank Material**	**Capacity (gallons)**	**Construction Date**	**NSPS - Subpart Kb**
K-101	Water	Steel	2,100	Pre-1977	No
K-110	Epichlorohydrin (EPI)	Steel	17,000	1979	No
K-111	Epichlorohydrin (EPI)	Steel	324	Pre-1977	No
K-120	Hexamethylene diamine	Steel	6,000	Pre-1977	No
K-121	Diethylene triamine (DETA)	Steel	1,481	Pre-1977	No
K-122	Diethylene triamine (DETA)	Steel	12,300	Pre-1977	No
K-123	Diethylene triamine (DETA)	Steel	12,338	2003	Yes
K-130	Polymer	Steel	14,900	Pre-1977	No
K-150	93% Sulfuric Acid	Steel	110	Pre-1977	No
K-151	93% Sulfuric Acid	Steel	5,000	1993	No
K-160	Kymene Wet Strength Resin	Steel	16,900	Pre-1977	No
K-161	Kymene Wet Strength Resin	Fiberglass Reinforced Plastic (FRP)	16,900	2000	Yes
K-162	Kymene Wet Strength Resin	FRP	16,900	1999	Yes
K-163	Kymene Wet Strength Resin	FRP	16,300	1979	No
K-164	Kymene Wet Strength Resin	FRP	16,300	1979	No
K-210	Polymer	Steel	16,900	Pre-1977	No
K-211	Water	Steel	2,660	Pre-1977	No
K-260	Kymene Wet Strength Resin	FRP	16,900	2001	Yes
K-261	Kymene Wet Strength Resin	FRP	16,900	1998	Yes
K-262	Kymene Wet Strength Resin	FRP	16,900	1998	Yes
K-268	Kymene Wet Strength Resin	FRP	8,500	1981	No
K-269	Kymene Wet Strength Resin	FRP	16,300	1981	No
K-409	40% Glycol/Water	FRP	1,500	2003	No
K-411	Kymene Wet Strength Resin	FRP	16,300	1991	Yes
K-412	Kymene Wet Strength Resin	FRP	16,300	1991	Yes
K-501TC*	Material Loading/Unloading	Steel	20,000	Pre-1977	No
K-502TT*	Material Loading/Unloading	Stainless Steel	6,000	Pre-1977	No

* TC – Railroad Tank Car TT – Tank Truck

PARACOL/AKD PROCESS AREA					
Emission Point No.	Material/Product Stored	Tank Material	Capacity (gallons)	Construction Date	NSPS - Subpart Kb
DP-6	Lignosol	Steel	5,230	Pre-1977	No
DP-9	Starch/Water	Steel	330	1992	No
DP-10	Starch Paste	Steel	180	1992	No
DP-11	AKD and Wax Dispersions	Steel	5,460	Pre-1977	No
DP-12	Water/Aquapel/Lignosol	Steel	5,300	Pre-1977	No
DP-13	Lignosol	Steel	5,300	Pre-1977	No
DP-14	AKD and Wax Dispersions	Steel	21	Pre-1977	No
DP-15	Alum/Water	Steel	240	Pre-1977	No
DP-23	Empty/To Be Removed	S. Steel	16,900	Pre-1977	No
DP-24	AKD and Wax Dispersions	Steel	16,900	Pre-1977	No
DP-25	AKD and Wax Dispersions	Steel	16,900	Pre-1977	No
DP-26	Wax	Steel	16,900	Pre-1977	No
DP-27	Wax/Empty	Steel	16,900	Pre-1977	No
DP-28	Wax/Empty	Steel	16,900	Pre-1977	No
DP-29	Wax/Empty	Steel	16,900	Pre-1977	No
DP-35	AKD and Wax Dispersions	Steel	51,800	Pre-1977	No
DP-36	50% Alum	Steel	5,880	Pre-1977	No
DP-37	AKD and Wax Dispersions	Steel	51,800	Pre-1977	No
DP-41	AKD and Wax Dispersions	Steel	12,260	Pre-1977	No
DP-42	AKD and Wax Dispersions	Steel	12,260	Pre-1977	No
DP-44	AKD and Wax Dispersions	Steel	11,840	Pre-1977	No
DP-45	AKD/Wax Dispersions/Empty	Steel	15,220	Pre-1977	No
DP-46	AKD and Wax Dispersions	Steel	11,840	1983	No
DP-47	AKD/Wax Dispersions/Empty	Steel	15,220	Pre-1977	No
DP-48	Empty	Steel	12,260	1979	No
DP-49	Chromoset/MgCl	FRP	13,500	2002	No
DP-50	Age Floc	FRP	8,000	Pre-1977	No
DP-51	AKD/Wax Dispersions/Empty	FRP	12,260	1979	No
DP-52	AKD/Wax Dispersions/Empty	Steel	5,260	Pre-1977	No
DP-53	AKD/Wax Dispersions/Empty	Steel	11,890	Pre-1977	No
DP-54	AKD and Wax Dispersions	Steel	11,890	1981	No
DP-56	Release Agent	Steel	19,940	Pre-1977	No
DP-58	Naphthenic Oil	Steel	19,940	1981	No
DP-60	Glycol Ester	Steel	6,010	Pre-1977	No
DP-62	Propylene Glycol/Water	Steel	810	Pre-1977	No
DP-63	Propylene Glycol/Water	Steel	810	1984	No
DP-66	AKD and Wax Dispersions	Steel	11,890	1981	No
DP-68	AKD and Wax Dispersions	Steel	11,890	1981	No
DP-69	AKD and Wax Dispersions	Steel	3,120	1990	No
DP-70	Empty/To Be Removed	Steel	300	Pre-1977	No
DP-101TC*	Material Loading/Unloading	Steel	20,000	Pre-1977	No
DP-102TT*	Material Loading/Unloading	S. Steel	6,000	Pre-1977	No

* TC – Railroad Tank Car TT – Tank Truck

NEUPHOR PROCESS AREA					
Emission Point No.	**Material/Product Stored**	**Tank Material**	**Capacity (gallons)**	**Construction Date**	**NSPS - Subpart Kb**
NT-104	Rosin/Empty	Aluminum	158,500	Pre-1977	No
NT-105A	Rosin/Empty	Aluminum	110,500	Pre-1977	No
NT-105B	Rosin/Empty	Aluminum	110,500	Pre-1977	No
NT-R-106	Rosin Adduct	Aluminum	11,400	Pre-1977	No
NT-107	Rosin Adduct	S. Steel	37,500	Pre-1977	No
NT-108	Rosin Adduct	Aluminum	11,400	Pre-1977	No
NT-109	Rosin Adduct	Aluminum	13,500	Pre-1977	No
NT-113	Maleic Anhydride	S. Steel	6,200	Pre-1977	No
NT-123B	Resin Dispersions	Aluminum	158,500	Pre-1977	No
NT-131	Empty	Steel	110,500	Pre-1977	No
NT-141	Rosin	S. Steel	4,100	Pre-1977	No
NT-202	Caustic	Steel	110	Pre-1977	No
NT-205A	Water Phase	Fiberglass	700	Pre-1977	No
NT-205B	Water Phase	Fiberglass	700	Pre-1977	No
NT-206-1	Water	Steel	610	Pre-1977	No
NT-208A	Resin Dispersions	Aluminum	19,900	Pre-1977	No
NT-208B	Resin Dispersions	Aluminum	19,900	Pre-1977	No
NT-208C	Resin Dispersions/Empty	Aluminum	11,400	Pre-1977	No
NT-209	Resin Dispersions	Aluminum	158,500	Pre-1977	No
NT-210	Caustic and Water	Steel	900	Pre-1977	No
NT-300	Wet Strength Resin	S. Steel	20,300	Pre-1977	No
NT-302A	Water Phase	Fiberglass	10,600	Pre-1977	No
NT-302B	Water Phase	Fiberglass	10,600	Pre-1977	No
NT-309A	Resin Dispersions	Aluminum	27,100	Pre-1977	No
NT-309B	Resin Dispersions	Aluminum	27,100	Pre-1977	No
NT-310A	Resin Dispersions	Aluminum	158,500	Pre-1977	No
NT-310B	Resin Dispersions/Empty	Aluminum	147,300	Pre-1977	No
NT-311	Alum	Steel	10,100	Pre-1977	No
NT-312	Lignin Sulfonate	Steel	10,700	1997	No
NT-313	Age Floc	Steel	10,700	1997	No
NT-314	Empty/To Be Removed	Steel	10,700	Pre-1977	No
NT-315	25% Caustic	Steel	11,400	2003	No
NT-400	Empty	Steel	30,100	Pre-1977	No
NT-501TC*	Material Loading/Unloading	Steel	20,000	Pre-1977	No
NT-502TT*	Material Loading/Unloading	S. Steel	6,000	Pre-1977	No

* TC – Railroad Tank Car   TT – Tank Truck

PASTE SIZE TANK AREA					
Emission Point No.	Material/Product Stored	Tank Material	Capacity (gallons)	Construction Date	NSPS - Subpart Kb
PS-2	Empty	Steel	12,400	Pre-1977	No
PS-3	Empty	Steel	11,750	Pre-1977	No
PS-4	Empty	Steel	11,750	Pre-1977	No
PS-5	Empty	Steel	11,750	Pre-1977	No
PS-6	Empty	Steel	13,536	Pre-1977	No
PS-7	Empty	Steel	13,536	Pre-1977	No
PS-11	Empty	Steel	12,269	Pre-1977	No
PS-21	Empty	Steel	12,269	Pre-1977	No
PS-22	Empty	Steel	12,269	Pre-1977	No
PS-23	Empty	Steel	12,269	Pre-1977	No
PS-24	Empty	Steel	12,269	Pre-1977	No
PS-29	Empty	Steel	11,750	Pre-1977	No
PS-30	Empty	Steel	11,750	Pre-1977	No
PS-33	Empty	Steel	5,182	Pre-1977	No
PS-34	Empty	Steel	5,182	Pre-1977	No
PS-35	Empty	Steel	25,831	Pre-1977	No
PS-43	Empty	Steel	51,819	Pre-1977	No
PS-45	Caustic	Steel	51,790	Pre-1977	No
PS-52	AKD/Wax Dispersions/Empty	Steel	51,819	Pre-1977	No
PS-55	Resin/Empty	Steel	51,819	Pre-1977	No
PS-56	Wastewater/Empty	Steel	51,819	Pre-1977	No
PS-58	Empty	Steel	51,819	Pre-1977	No
PS-61	Empty	Steel	51,819	Pre-1977	No
PS-62	Empty	Steel	51,819	Pre-1977	No
PS-63	Empty	Steel	926	Pre-1977	No
PS-65	50% Sodium Hydroxide	Steel	251,270	Pre-1977	No
PS-66	Empty	Steel	14,218	Pre-1977	No
PS-101TC*	Material Loading/Unloading	Steel	20,000	Pre-1977	No
PS-102TT*	Material Loading/Unloading	S. Steel	6,000	Pre-1977	No

* TC – Railroad Tank Car TT – Tank Truck

POLY-PALE PROCESS AREA					
Emission Point No.	**Material/Product Stored**	**Tank Material**	**Capacity (gallons)**	**Construction Date**	**NSPS - Subpart Kb**
P-59	Rosin/Resin	Steel	10,278	Pre-1977	No
T-20	Rosin	Steel	17,167	Pre-1977	No
T-22	Toluene/Rosin/Acid	Steel	400	Pre-1977	No
T-71	Toluene/Rosin	Steel	2,700	Pre-1977	No
T-77	98% Sulfuric Acid	Steel	10,170	Pre-1977	No
T-78	98% Sulfuric Acid	Steel	12,750	Pre-1977	No
T-85	Fresh Toluene	Steel	13,600	Pre-1977	No
T-96	25% Caustic	Steel	9,395	1993	No
T-100	98% Sulfuric Acid	Steel	8,300	Pre-1977	No
T-101	Toluene/Rosin	Steel	1,050	Pre-1977	No
T-106	Rosin	Steel	10,310	Pre-1977	No
T-119	Rosin	Steel	21,000	Pre-1977	No
T-120	Resin	Steel	125,000	Pre-1977	No
T-130	Resin	Steel	32,200	Pre-1977	No
T-132	Resin	Steel	82,000	Pre-1977	No
T-133	Resin	Steel	31,200	Pre-1977	No
T-134	Heat Transfer Fluid	Steel	75	1989	No
T-135	Heat Transfer Fluid	Steel	350	1990	No
T-136	Heat Transfer Fluid	Steel	1,100	1990	No
T-137	Cooling Water	Steel	4,000	Pre-1977	No
T-138	Heat Transfer Fluid	Steel	1,100	1992	No
T-301TC*	Material Loading/Unloading	Steel	20,000	Pre-1977	No
T-302TT*	Material Loading/Unloading	Steel	6,000	Pre-1977	No

* TC – Railroad Tank Car   TT – Tank Truck

ROSIN SHED AREA					
Emission Point No.	**Material/Product Stored**	**Tank Material**	**Capacity (gallons)**	**Construction Date**	**NSPS - Subpart Kb**
B-18	Resin	Steel	18,613	Pre-1977	No
B-19	Resin	Steel	12,796	Pre-1977	No
B-20	Resin	Steel	6,662	Pre-1977	No
B-21	Resin	Steel	5,264	Pre-1977	No
B-101TC*	Material Loading/Unloading	Steel	20,000	Pre-1977	No
B-102TT*	Material Loading/Unloading	Steel	6,000	Pre-1977	No

* TC – Railroad Tank Car   TT – Tank Truck

ROSIN AMINE DERIVATIVES PROCESS AREA					
Emission Point No.	**Material/Product Stored**	**Tank Material**	**Capacity (gallons)**	**Construction Date**	**NSPS - Subpart Kb**
RA-1	Amine D	Steel	8,218	Pre-1977	No
RA-2	Amine D	Steel	4,512	Pre-1977	No
RA-3	Amine D	Steel	4,512	Pre-1977	No
RA-4	Ammonia Water (oil layer)	Steel	5,702	Pre-1977	No
RA-5	Distilled Nitrile	Steel	10,000	Pre-1977	No
RA-6	Amine D	Steel	5,207	Pre-1977	No
RA-7	Crude Nitrile/Empty	Steel	11,844	Pre-1977	No
RA-8	Empty	Steel	150	Pre-1977	No
RA-9	Distilled Nitrile	Steel	8,215	Pre-1977	No
RA-10	Distilled Nitrile	Steel	8,215	Pre-1977	No
RA-11	Crude Nitrile/Empty	Steel	14,100	Pre-1977	No
RA-12	731D/Resin	Steel	25,380	Pre-1977	No
RA-13	Empty	Steel	4,464	Pre-1977	No
RA-15	5% Caustic	Steel	10,400	Pre-1977	No
RA-16	PolyRad/Surfactant	Steel	2,406	Pre-1977	No
RA-17	PolyRad/Surfactant	Steel	3,065	Pre-1977	No
RA-18	PolyRad/Surfactant	Steel	3,065	Pre-1977	No
RA-19	PolyRad/Surfactant	Steel	488	Pre-1977	No
RA-20	PolyRad/Surfactant	Steel	488	Pre-1977	No
RA-23	Resin	Steel	4,510	Pre-1977	No
RA-24	5% Sodium Hydroxide	Steel	40	Pre-1977	No
RA-25	Pexoil (light ends)	Steel	4,464	Pre-1977	No
RA-26	Nitrile	Steel	2,840	Pre-1977	No
RA-27	Lime/Nitrile	Steel	225	Pre-1977	No
RA-28	Amine D Acetate	Aluminum	2,812	Pre-1977	No
RA-29	Amine D Acetate/Empty	Aluminum	2,924	Pre-1977	No
RA-30	Glacial Acetic Acid	Steel	1,902	Pre-1977	No
RA-37	Rosin	Steel	1,990	Pre-1977	No
RA-40	Wastewater	Steel	25,350	Pre-1977	No
RA-41	Wastewater	Steel	25,350	Pre-1977	No
RA-44	Wastewater/Empty	Steel	9,877	Pre-1977	No
RA-49	Waste Oils	Steel	17,230	Pre-1977	No
RA-50	Ethylene Oxide	Steel	17,550	Pre-1977	No
RA-51	Isopropyl Alcohol	Steel	17,550	Pre-1977	No
RA-52	Acetic Acid	Steel	11,280	Pre-1977	No
RA-53	Heat Transfer Fluid	Steel	1,176	Pre-1977	No
RA-54	Ammonia	Steel	12,113	Pre-1977	No
RA-55	Ammonia	Steel	12,113	Pre-1977	No
RA-56	Wastewater	Steel	12,750	Pre-1977	No
RA-57	Wastewater	Steel	12,750	Pre-1977	No
RA-63	Ammonia	Steel	25	1987	No
HP-40	Wastewater	Steel	20,000	Pre-1977	No
HP-43	Wastewater	Steel	10,000	Pre-1977	No
HP-44	Wastewater	Steel	10,000	Pre-1977	No
RA-101TC*	Material Loading/Unloading	Steel	20,000	Pre-1977	No

* TC – Railroad Tank Car

HARD RESINS PROCESS AREA					
Emission Point No.	**Material/Product Stored**	**Tank Material**	**Capacity (gallons)**	**Construction Date**	**NSPS - Subpart Kb**
H-23	Heat Transfer Fluid	Steel	8,812	Pre-1977	No
P-1	Rosin	Steel	27,970	Pre-1977	No
S-23	Resin	Steel	6,187	Pre-1977	No
S-40	Glycerine	Steel	18,320	Pre-1977	No
S-74	Resin	Steel	2,135	Pre-1977	No
S-75	Resin	Steel	8,804	Pre-1977	No
S-80	Heat Transfer Fluid	Steel	2,203	Pre-1977	No
S-84	Resin	Steel	8,000	Pre-1977	No
S-85	Resin	Steel	8,000	Pre-1977	No
S-86	Resin	Steel	8,000	Pre-1977	No
S-89	Pexoil (light ends)	Steel	11,840	Pre-1977	No
S-91	Resin	Steel	13,151	Pre-1977	No
S-94	Resin	Steel	8,804	Pre-1977	No
S-95	Resin	Steel	8,804	Pre-1977	No
S-97	Olefin	Aluminum	8,220	Pre-1977	No
S-98	Empty	Aluminum	8,220	Pre-1977	No
S-110	Resin – South Utility Tank	Steel	3,933	Pre-1977	No
S-111	Resin – North Utility Tank	Steel	3,933	Pre-1977	No
S-115	Pexoil (light ends)	Steel	2,730	Pre-1977	No
S-116	Pexoil (light ends)	Steel	1,222	Pre-1977	No
S-118	Heat Transfer Fluid	Steel	43	Pre-1977	No
S-119	Heat Transfer Fluid	Steel	43	Pre-1977	No
S-120	Heat Transfer Fluid	Steel	43	Pre-1977	No
S-122	Heat Transfer Fluid	Steel	43	Pre-1977	No
S-123	Rosin/Empty	Aluminum	16,061	Pre-1977	No
S-124	Resin	Aluminum	19,036	Pre-1977	No
S-125	Empty	Steel	19,000	Pre-1977	No
S-401TC*	Material Loading/Unloading	Steel	20,000	Pre-1977	No
S-402TT*	Material Loading/Unloading	Steel	6,000	Pre-1977	No

* TC – Railroad Tank Car TT – Tank Truck

ROSIN DISTILLATION PROCESS AREA					
Emission Point No.	**Material/Product Stored**	**Tank Material**	**Capacity (gallons)**	**Construction Date**	**NSPS - Subpart Kb**
FL-1	Light Ends	Steel	881	Pre-1977	No
FL-3	Empty	Steel	1,903	Pre-1977	No
FL-4	Pexoil (light ends)	Steel	71	Pre-1977	No
FL-10	Resin	Steel	14,210	Pre-1977	No
FL-11	Resin	Steel	14,210	Pre-1977	No
H-4	Empty	Steel	220	Pre-1977	No
H-6	Water	Steel	1,775	Pre-1977	No
H-9	Water	Steel	1,535	Pre-1977	No
H-10	Water	Steel	1,535	Pre-1977	No
H-11	Heat Transfer Fluid	Steel	660	Pre-1977	No
H-12	Heat Transfer Fluid	Steel	33	Pre-1977	No
H-16	Heat Transfer Fluid	Steel	188	Pre-1977	No
H-27	Empty	Steel	421	Pre-1977	No
H-28	Resin	Steel	31,724	Pre-1977	No
H-29	16% Sodium Hydroxide	Steel	734	Pre-1977	No
H-30	25% Sodium Hydroxide	Steel	734	Pre-1977	No
Spare	Empty	Steel	19,000	Pre-1977	No
Spare	Empty	Steel	19,000	Pre-1977	No
Spare	Empty	Steel	19,000	Pre-1977	No
Spare	Empty	Steel	2,000	Pre-1977	No
Spare	Empty	Steel	2,000	Pre-1977	No
Spare	Empty	Steel	6,000	Pre-1977	No
Spare	Empty	Steel	10,200	Pre-1977	No
SA-605	Hydrogen	Steel	6,925	Pre-1977	No
H-101TC*	Material Loading/Unloading	Steel	20,000	Pre-1977	No
H-102TT*	Material Loading/Unloading	Steel	6,000	Pre-1977	No

* TC – Railroad Tank Car TT – Tank Truck

EFFLUENT TREATMENT AREA					
Emission Point No.	**Material/Product Stored**	**Tank Material**	**Capacity (gallons)**	**Construction Date**	**NSPS - Subpart Kb**
ET-1	40% Sulfuric Acid/Toluene	FRP	3,300	Pre-1977	No
ET-2	40% Sulfuric Acid/Toluene	FRP	4,300	Pre-1977	No
ET-5	98% Sulfuric Acid/Empty	Steel	4,900	1978	No
ET-6	93% Sulfuric Acid/Empty	Steel	8,800	1978	No
ET-7	Out of Service	Steel	7,600	Pre-1977	No
ET-8	Out of Service	Steel	169,600	1978	No
ET-9	Out of Service	Steel	3,300	1978	No
ET-10	Wastewater	Steel	5,111,100	1982	No
ET-11	Out of Service	Steel	17,100	1981	No
ET-12	Out of Service	Steel	9,300	1985	No
ET-14	Out of Service	Steel	169,600	Pre-1977	No
ET-15	Out of Service	Steel	3,300	Pre-1977	No
ET-16	Out of Service	Steel	280	1978	No
ET-17	Out of Service	Steel	1,210	1978	No
V-1	Out of Service	Steel	46,900	1979	No
V-2	Out of Service	Steel	46,900	1979	No
V-3	Out of Service	Steel	46,900	1979	No
V-4	Out of Service	Steel	4,300	Pre-1977	No
V-5	Out of Service	Steel	4,300	Pre-1977	No
V-6	Out of Service	Steel	4,300	Pre-1977	No
V-7	Out of Service	Steel	2,200	Pre-1977	No
V-8	Out of Service	Steel	8,500	Pre-1977	No
V-10	Out of Service	Steel	160	Pre-1977	No
V-11	Out of Service	Steel	15,200	Pre-1977	No
V-12	Out of Service	Steel	4,300	Pre-1977	No
ET-101TC*	Material Loading/Unloading	Steel	20,000	Pre-1977	No

* TC – Railroad Tank Car

FACILITY FIRE WATER PROTECTION					
Emission Point No.	**Material/Product Stored**	**Tank Material**	**Capacity (gallons)**	**Construction Date**	**NSPS - Subpart Kb**
FP-1	Water	Steel	444,500	Pre-1977	No
FP-2	Gasoline	Steel	280	Pre-1977	No
FP-3	Diesel	Steel	350	Pre-1977	No

LOADING SHED AREA					
Emission Point No.	Material/Product Stored	Tank Material	Capacity (gallons)	Construction Date	NSPS - Subpart Kb
L-7	Pine Oil/Empty	Steel	5,600	Pre-1977	No
L-8	Pine Oil/Empty	Steel	2,900	Pre-1977	No
L-9	Pine Oil/Empty	Steel	2,900	Pre-1977	No
L-101TC*	Material Loading/Unloading	Steel	20,000	Pre-1977	No
L-102TT*	Material Loading/Unloading	Steel	6,000	Pre-1977	No

* TC – Railroad Tank Car   TT – Tank Truck

YARD TANKS					
Emission Point No.	Material/Product Stored	Tank Material	Capacity (gallons)	Construction Date	NSPS - Subpart Kb
Y-25	Empty	Steel	317	Pre-1977	No
Y-37	Gasoline	Steel	17,615	Pre-1977	No
Y-45	Diesel	Steel	5,640	Pre-1977	No

SYNTHETIC RESINS TANKS					
Emission Point No.	Material/Product Stored	Tank Material	Capacity (gallons)	Construction Date	NSPS - Subpart Kb
VN-1	Empty	Steel	47,049	Pre-1977	No
VN-3	Pamak TP	Steel	21,149	Pre-1977	No
TP-2	Empty	Steel	10,260	Pre-1977	No
TP-3	Empty	Steel	5,640	Pre-1977	No
TP-101TC*	Material Loading/Unloading	Steel	20,000	Pre-1977	No

* TC – Railroad Tank Car

RISK MANAGEMENT PLANS

If a risk management plan is required pursuant to the Mississippi Air Toxics Regulations, APC-S-8, and Section 112(r) of Title III of the Clean Air Act, the permit applicant need only clarify intentions to comply with the requirement to register such a plan. It will not be necessary to incorporate the content of the risk management plan as a permit term.

Please answer the following questions:

I. Are you required to develop and register a risk management plan pursuant to Section 112(r)?

X Yes ______ No

Only if "yes", answer questions II., III., and/or IV.

II. Have you developed and submitted the risk management plan to EPA's RMP Reporting Center?

X Yes ______ No

III. If yes, date submitted: **June 16, 1999**

IV. If no, provide a schedule below for the development and submittal of the risk management plan to the Reporting Center. Please notify the MDEQ's Air Division once the risk management plan has been submitted to the Reporting Center.

KYMENE PROCESS AREA

MANUFACTURING PROCESSES (page 1 of 2) SECTION E

1. Emission Point No./ Name: **AA-000, Kymene Process Area**

2. Process Description: **The Kymene Process Area produces specialty chemicals used primarily as wet strength additives in the manufacture of paper. Components in Epichlorohydrin service are subject to NESHAP 40 CFR 63, Subpart W for controlling HAP emissions. Equipment in the process area includes reactors, tanks, vents, piping, etc. Emissions occur from associated equipment and from fugitive losses.**

3. Was this unit constructed or modified after August 7, 1977? **X** yes ____ no
   If yes please give date and explain. **Modified in February 2003.**

4. Capacity (in tons/hr): **Wet Strength Resin- 6.96 tons/hr** **Polymer - 1.15 tons/hr**

5. Raw Material Input:

MATERIAL	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR MAXIMUM*,**
Wet Strength Resins			
Epichlorohydrin	625 lbs	625 lbs	5,475,000 lbs
Pre-Polymer	2309 lbs	2309 lbs	20,226,840 lbs
Sulfuric Acid	68 lbs	68 lbs	595,680 lbs
Antifoam	1 lb	1 lb	8760 lbs
Potassium Sorbate	1 lb	1 lb	8760 lbs
Hexamethylenediamine	565 lbs	565 lbs	4,949,400 lbs
Water	10,917 lbs	10,917 lbs	95,632,920 lbs
Pre-Polymer			
Adipic Acid	804 lbs	804 lbs	7,043,040 lbs
Diethylenetriamine	565 lbs	565 lbs	4,949,400 lbs
Water	940 lbs	940 lbs	8,234,400 lbs

* Actual 2002 Kymene production (73,462,683 lbs).
** Maximum quantity per year is based on maximum quantity per hour for 24 hrs/day and 365 days/yr.

6. Product Output:

PRODUCT or BY-PRODUCT	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
Wet Strength Resins	13,920 lbs	13,920 lbs	121,939,200 lbs
Pre-Polymer	2309 lbs	2309 lbs	20,226,840 lbs

7. Stack Data:

AA-001 Kymene Process Vent equipped with a packed bed scrubber.

A. Height: **30 ft** C. Exit gas velocity: **Variable**
B. Inside diameter: **0.5 ft** D. Exit gas temperature: **Ambient**

AA-002 Kymene Adipic Acid Handling System equipped with a dust collector.

A. Height: **40 ft** C. Exit gas velocity: **27.6 ft/s**
B. Inside diameter: **0.67 ft** D. Exit gas temperature: **Ambient**

8. UTM Coordinates:
A. Zone **16** B. North **3469.40** C. East **280.60**

MANUFACTURING PROCESSES (page 2 of 2) SECTION E

13. POLLUTANT EMISSIONS:

Example emission rate calculations, monitoring data, or stack test data must be attached in accordance with Operating Permit Application Requirements, pp. 3-5.

EMISSION POINT NO.	POLLUTANT (note 1)	CONTROL EQUIPMENT		ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)			PROPOSED ALLOWABLE EMISSION RATE (Optional)		
		yes/no *	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AA-000**	VOC	No				1.50			1.50
	Epichlorohydrin					1.50			1.50
AA-001	VOC	Yes	98%			0.41			11.12
	Epichlorohydrin					0.41			11.12
AA-002	PM/PM_{10}	Yes	99%		0.212	0.93		21.20	92.86

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed in accordance with Operating Permit Application Requirements, pp. 3-5. A list of regulated air pollutants has been provided in Section A.
2. Provide emission rate in units of applicable emission standard, e.g. lb/MMbtu, gr/dscf, etc. This may not apply to every emission point or every pollutant from an emission point.

* If yes, attach appropriate Air Pollution Control Data Sheet from Section L or manufacturers specifications if other.
** Fugitive emissions and insignificant sources associated with the Kymene Process Area.

1. Emission Point No. / Name: **AA-001**

2. Manufacturers Name and Model No.: **Croll Reynolds 18T-15H**

3. Date of construction for existing sources or date of anticipated start-up for new sources: **April 1991**

4. Scrubber Data:

a) Scrubber type:

____	Venturi	____	Orifice
X	Packed Tower	____	Gravity Tower
____	Cyclonic	____	Condenser
X	Mist Eliminator	____	Impingement Plate
____	Other: ____		

b) Liquid injection rate:

1) Design maximum: **15** gpm @ **15** psia
2) Expected average: **15** gpm @ **10** pisa

c) Pressure drop: **6** inches H_2O

d) Scrubbing liquid: **Water**

1) **X** Once - through ____ Recycled
2) If recycled: ____ gpm make - up rate
3) If water, describe settling basin: **NA**
4) Solution / Reactant systems:
   a) Chemical make - up: **NA**
   b) How is discharge handled, treated? **Impoundment Basin to POTW**

e) Gas flow: **X** Counter current ____ Concurrent

1) Flow rate: **512** acfm
2) Inlet Temperature: **100** °F

f) Venturi Data: **NA**

1) Inlet Area: ____ ft^2
2) Throat Area: ____ ft^2
3) Throat velocity: ____ ft / sec
4) ____ Fixed throat ____ Variable throat

g) Packed or Plate Tower Data:

1) Surface Area: **1.5** ft diameter
2) Packing depth: **15** ft
3) Type of packing: **X** Rings ____ Saddles
   ____ Other: ____
4) No. of plates: **NA**
5) Type of plates: ____

h) Demisting Data:

1) Mist eliminator filter area: **1.5** ft diameter
2) Type: ____ Cyclone ____ Vanes ____ Pad
   X Other:

i) Efficiency: **98** %

j) Are extra nozzles readily available? ________ Yes ___X___ No

How many? ________________

k) Pressure measurement devices installed? ________ Yes ___X___ No

5. Which process(es) does the scrubber control emissions from? **Wet Strength Resin and Pre-Polymer Batch Reactors**

BAGHOUSES SECTION L1

1. Emission Point No. / Name : **AA-002**

2. Manufacturers Name & Model No.: **Unknown**

3. Date of construction for existing sources or date of anticipated start-up for new sources: **Pre-1977**

4. Baghouse Data:
   - a) Cloth area: **47** ft^2
   - b) Air to cloth ratio: **Unknown** $acfm/ft^2$
   - c) Type of bag: ____ Woven ____ Felted ____ Membrane **X** Other: **Nylon**
   - d) Bag material: **Nylon**
   - e) No. of bags: **24**
   - f) No. of compartments: **1**
   - g) Bag length: **3** ft
   - h) Bag diameter: **0.21** ft
   - i) Pressure drop: **Unknown** inches H_2O
   - j) Pressure measurement device installed: ____ Yes **X** No
   - k) Air flow: **Unknown** acfm @ **72** °F
   - l) Efficiency: **99** %
   - m) Dirty air on: ____ inside **X** outside of bag
   - n) Time between bag cleaning: **Continuous** during batch operation
   - o) Method of bag cleaning: **X** Shaking ____ Reverse Air ____ Pulse Jet ____ Other: ____
   - p) Are extra bags readily available: **X** Yes ____ No How Many? **30 (re-order minimum)**
   - q) How is the collected dust stored, handled, disposed of? **Reused or disposed of properly**

5. Which process(es) does the baghouse control emissions from? **Loading of Adipic Acid (powder) into Pre-Polymer Batch Reactor.**

COMPLIANCE DEMONSTRATION BY RECORDKEEPING

SECTION M7

1. Emission Point No./Name: **AA-000**

2. Pollutant: **VOC and HAP (Epichlorohydrin)**

3. Material or parameter being monitored or recorded: **Leak Detection and Repair (LDAR)**

4. Method of monitoring and recordkeeping: **The Kymene Process Area equipment (reactor, tanks, agitator, valves, relief valves, pumps, and connectors) that directly contacts epichlorohydrin are monitored for leaks and the data is recorded on a schedule determined by 40 CFR 63, Subpart H and Subpart W.**

5. List any EPA methods used: **EPA Reference Method 21**

6. Compliance shall be demonstrated:

____ Daily ____ Weekly **X** Monthly **X** Quarterly **X** Yearly

COMPLIANCE DEMONSTRATION BY RECORDKEEPING

SECTION M7

1. Emission Point No./Name: **AA-001**

2. Pollutant: **VOC and HAPs**

3. Material or parameter being monitored or recorded: **Scrubber water flow rate**

4. Method of monitoring and recordkeeping: **The scrubber water flowrate (gal/min) is monitored and recorded on a weekly basis to ensure the scrubber operates at the designed efficiency.**

5. List any EPA methods used: **NA**

6. Compliance shall be demonstrated:

____ Daily **X** Weekly ____ Monthly ____ Quarterly

COMPLIANCE DEMONSTRATION BY RECORDKEEPING

SECTION M7

1. Emission Point No./Name: **AA-002**

2. Pollutant: **PM**

3. Material or parameter being monitored or recorded: **Blower (on/off) and visual inspection of baghouse**

4. Method of monitoring and recordkeeping: **The dust collector is monitored on a weekly basis during the loading of Adipic Acid to ensure the baghouse blower is on and the control equipment is operating as intended. Also, a visual inspection of the baghouse is conducted as part of a preventative maintenance program and comments are logged on a weekly basis.**

5. List any EPA methods used: **NA**

6. Compliance shall be demonstrated:

   ____ Daily **X** Weekly ____ Monthly ____ Quarterly

PARACOL/AKD PROCESS AREA

MANUFACTURING PROCESSES (page 1 of 2) SECTION E

1. Emission Point No./ Name: **AB-000, Paracol/AKD Process Area**

2. Process Description: **The Paracol/AKD Process Area produces AKD and Wax Dispersions (specialty chemicals) used primarily as internal and surface sizing agents in the manufacture of paper. Equipment in the process area includes reactors, tanks, vents, piping, etc. Emissions occur from associated equipment and from fugitive losses.**

3. Was this unit constructed or modified after August 7, 1977? **X** yes ____ no
If yes please give date and explain. **Installed scrubber in 1987.**

4. Capacity (in tons/hr): **6.20 tons/hr**

5. Raw Material Input:

MATERIAL	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR MAXIMUM*, **
Kymene	503 lbs	503 lbs	4,406,280 lbs
Aquapel	1302 lbs	1302 lbs	11,405,520 lbs
Sulfonates	182 lbs	182 lbs	1,594,320 lbs
Starch	283 lbs	283 lbs	2,479,080 lbs
Water	9305 lbs	9305 lbs	81,511,800 lbs
Wax	673 lbs	673 lbs	5,895,480 lbs
Age Floc	61 lbs	61 lbs	534,360 lbs
Gum Ghatti	3 lbs	3 lbs	26,280 lbs
Triethanolamine	3 lbs	3 lbs	26,280 lbs
Stearic Acid	5 lbs	5 lbs	43,800 lbs
Sulfuric Acid	<1 lb	<1 lb	<8760 lbs
Biocide	6 lbs	6 lbs	52,560 lbs
Alum	75 lbs	75 lbs	657,000 lbs

* Actual 2002 Paracol production (29,614,451 lbs).
** Maximum quantity per year is based on maximum quantity per hour for 24 hrs/day and 365 days/yr.

6. Product Output:

PRODUCT or BY-PRODUCT	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
AKD and Wax Dispersions	12,400 lbs	12,400 lbs	108,624,000 lbs

7. Stack Data:

AB-001 Paracol/AKD Processes are vented through a water scrubber.

A. Height: **15 ft**
B. Inside diameter: **0.83 ft**
C. Exit gas velocity: **50.9 ft/s**
D. Exit gas temperature: **Ambient**

8. UTM Coordinates:
A. Zone **16** B. North **3469.40** C. East **280.70**

MANUFACTURING PROCESSES (page 2 of 2) — SECTION E

13. POLLUTANT EMISSIONS:

Example emission rate calculations, monitoring data, or stack test data must be attached in accordance with Operating Permit Application Requirements, pp. 3-5.

EMISSION POINT NO.	POLLUTANT (note 1)	CONTROL EQUIPMENT		ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)			PROPOSED ALLOWABLE EMISSION RATE (Optional)		
		* yes/no	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AB-001	PM/PM_{10}	Yes	75%		0.66	2.87		2.63	11.50

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed in accordance with Operating Permit Application Requirements, pp. 3-5. A list of regulated air pollutants has been provided in Section A.
2. Provide emission rate in units of applicable emission standard, e.g. lb/MMbtu, gr/dscf, etc. This may not apply to every emission point or every pollutant from an emission point.

* If yes, attach appropriate Air Pollution Control Data Sheet from Section L or manufacturers specifications if other.

1. Emission Point No. / Name: **AB-001**

2. Manufacturers Name and Model No.: **Hercules, Inc.**

3. Date of construction for existing sources or date of anticipated start-up for new sources: **1987**

4. Scrubber Data:

a) Scrubber type:

____	Venturi	____	Orifice
____	Packed Tower	X	Gravity Tower
____	Cyclonic	____	Condenser
____	Mist Eliminator	____	Impingement Plate
____	Other: ____		

b) Liquid injection rate:

1) Design maximum: **6.1** gpm @ **40** psia
2) Expected average: **6.1** gpm @ **40** pisa

c) Pressure drop: **6** inches H_2O (estimated)

d) Scrubbing liquid: **Water**

1) **X** Once - through ____ Recycled
2) If recycled: ____ gpm make - up rate
3) If water, describe settling basin: **NA**
4) Solution / Reactant systems:
   a) Chemical make - up: **NA**
   b) How is discharge handled, treated? **Impoundment Basin to POTW**

e) Gas flow: **X** Counter current ____ Concurrent

1) Flow rate: **500** acfm
2) Inlet Temperature: **Ambient** °F

f) Venturi Data: **NA**

1) Inlet Area: ____ ft^2
2) Throat Area: ____ ft^2
3) Throat velocity: ____ ft / sec
4) ____ Fixed throat ____ Variable throat

g) Packed or Plate Tower Data: **NA**

1) Surface Area: ____ ft diameter
2) Packing depth: ____ ft
3) Type of packing: ____ Rings ____ Saddles
   ____ Other: ____
4) No. of plates: ____
5) Type of plates: ____

h) Demisting Data: **NA**

1) Mist eliminator filter area: ____ ft diameter
2) Type: ____ Cyclone ____ Vanes ____ Pad
   ____ Other:

i) Efficiency: **75** % (estimated)

j) Are extra nozzles readily available? ______ Yes __X__ No

How many? ______________

k) Pressure measurement devices installed? ______ Yes __X__ No

5. Which process(es) does the scrubber control emissions from? **Paracol/AKD Process Area Vents and Melter.**

COMPLIANCE DEMONSTRATION BY RECORDKEEPING

SECTION M7

1. Emission Point No./Name: **AB-001**

2. Pollutant: **PM**

3. Material or parameter being monitored or recorded: **Scrubber water flow rate**

4. Method of monitoring and recordkeeping: **The scrubber water flow rate (gal/min) is monitored and recorded on a weekly basis to ensure the scrubber operates at the designed efficiency.**

5. List any EPA methods used: **NA**

6. Compliance shall be demonstrated:

   ____ Daily **X** Weekly ____ Monthly ____ Quarterly

NEUPHOR PROCESS AREA

1. Emission Point No./ Name: **AD-000, Neuphor Process Area**

2. Process Description: **The Neuphor Process Area produces various resin dispersions (specialty chemicals) used as internal sizing agents in the manufacture of paper and as adhesives, coatings, and binders in diverse industrial applications. Equipment in the process area includes reactors, tanks, vents, piping, etc. Emissions occur from associated equipment and fugitive losses.**

3. Was this unit constructed or modified after August 7, 1977? **X** yes ____ no
   If yes please give date and explain. **Neuphor Process was initiated in 1987.**

4. Capacity (in tons/hr): **Resin Dispersions – 11.1 tons/hr** **Rosin Adduct – 4.96 tons/hr**

5. Raw Material Input:

MATERIAL	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR MAXIMUM*,**
Resin Dispersions			
Resin	6751 lbs	6751 lbs	59,138,760 lbs
Casein	64 lbs	64 lbs	560,640 lbs
Kymene	1389 lbs	1389 lbs	12,167,640 lbs
Water	12,637 lbs	12,637 lbs	110,700,120 lbs
Aqueous Ammonia	14 lbs	14 lbs	122,640 lbs
Biocide	9 lbs	9 lbs	78,840 lbs
Caustic	36 lbs	36 lbs	315,360 lbs
Alum	1299 lbs	1299 lbs	11,379,240 lbs
Rosin Adduct			
Rosin	9450 lbs	9450 lbs	82,782,000 lbs
Fumaric Acid	640 lbs	640 lbs	5,606,400 lbs
Maleic Anhydride	640 lbs	640 lbs	5,606,400 lbs

* Actual 2002 Neuphor production (49,020,813 lbs).
** Maximum quantity per year is based on maximum quantity per hour for 24 hrs/day and 365 days/yr.

6. Product Output:

PRODUCT or BY-PRODUCT	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
Resin Dispersions	22,200 lbs	22,200 lbs	194,472,000 lbs
Rosin Adduct	9920 lbs	9920 lbs	86,899,200 lbs

7. Stack Data:

AD-001 Adduct Reactor is vented through an activated carbon bed with scrubber (see insignificant activities, Section C).

A. Height: **20 ft** C. Exit gas velocity: **0.39 ft/s**
B. Inside diameter: **0.5 ft** D. Exit gas temperature: **Ambient**

8. UTM Coordinates:
A. Zone **16** B. North **3469.50** C. East **280.00**

MANUFACTURING PROCESSES (page 2 of 2) — SECTION E

13. POLLUTANT EMISSIONS:

Example emission rate calculations, monitoring data, or stack test data must be attached in accordance with Operating Permit Application Requirements, pp. 3-5.

EMISSION POINT NO.	POLLUTANT (note 1)	CONTROL EQUIPMENT		ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)			PROPOSED ALLOWABLE EMISSION RATE (Optional)		
		* yes/no	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AD-001**	VOC								

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed in accordance with Operating Permit Application Requirements, pp. 3-5. A list of regulated air pollutants has been provided in Section A.
2. Provide emission rate in units of applicable emission standard, e.g. lb/MMbtu, gr/dscf, etc. This may not apply to every emission point or every pollutant from an emission point.

* If yes, attach appropriate Air Pollution Control Data Sheet from Section L or manufacturers specifications if other.
** Insignificant activities - Section C, per MDEQ submittal on January 22, 2002.

POLY-PALE PROCESS AREA

1. Emission Point No./ Name: **AC-000, Poly-Pale Process Area**

2. Process Description: **The Poly-Pale Process Area produces polymerized resin used in adhesives and other resin derivatives. Equipment in the process area includes reactors, tanks, vents, piping, etc. Emissions occur from associated equipment and fugitive losses.**

3. Was this unit constructed or modified after August 7, 1977? ______ yes __X__ no
If yes please give date and explain. ______

4. Capacity (in tons/hr): **3.60 tons/hr**

5. Raw Material Input:

MATERIAL	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR MAXIMUM*,**
Rosin	7227 lbs	7227 lbs	63,308,520 lbs
Toluene***	7227 lbs	7227 lbs	63,308,520 lbs
Sulfuric Acid (catalyst)	760 lbs	760 lbs	6,657,600 lbs
Caustic	297 lbs	297 lbs	2,601,720 lbs

* Actual 2002 Poly-Pale production (Poly-Pale – 10,754,657 lbs and Melhi – 706,745 lbs).
** Maximum quantity per year is based on maximum quantity per hour for 24 hrs/day and 365 days/yr.
*** Toluene is stripped from the Toluene/Rosin solution and recycled into the process; therefore, the quantity used to produce product is not equal to the quantity consumed.

6. Product Output:

PRODUCT or BY-PRODUCT	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
Poly-Pale	6898 lbs	6898 lbs	60,426,480 lbs
Melhi	302 lbs	302 lbs	2,645,520 lbs

7. Stack Data:

AC-002 Poly-Pale Process is vented to one of two water scrubbers (Water Scrubber #1).

A.	Height:	**35 ft**	C.	Exit gas velocity:	**1.7 ft/s**
B.	Inside diameter:	**0.25 ft**	D.	Exit gas temperature:	**96°F**

AC-003 Poly-Pale Process is vented to one of two water scrubbers (Water Scrubber #2).

A.	Height:	**35 ft**	C.	Exit gas velocity:	**1.8 ft/s**
B.	Inside diameter:	**0.25 ft**	D.	Exit gas temperature:	**92°F**

8. UTM Coordinates:

A. Zone **16** B. North **3469.40** C. East **280.40**

MANUFACTURING PROCESSES (page 2 of 2) SECTION E

13. POLLUTANT EMISSIONS:

Example emission rate calculations, monitoring data, or stack test data must be attached in accordance with Operating Permit Application Requirements, pp. 3-5.

EMISSION POINT NO.	POLLUTANT (note 1)	CONTROL EQUIPMENT		ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)			PROPOSED ALLOWABLE EMISSION RATE (Optional)		
		yes/no *	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AC-000**	**VOC**	**No**				**163.89**			**321.17**
	Toluene					**163.89**			**321.17**
AC-002	**VOC**	**Yes**	**~90%**		**0.44**	**1.93**		**4.40**	**19.27**
	SO_2				**0.003**	**0.01**		**0.031**	**0.14**
	H_2SO_4				**0.00**	**0.00**		**0.00**	**0.00**
	Toluene				**0.17**	**0.74**		**1.71**	**7.49**
AC-003	**VOC**	**Yes**	**~90%**		**0.11**	**0.48**		**1.10**	**4.82**
	SO_2				**0.013**	**0.06**		**0.13**	**0.57**
	H_2SO_4				**0.002**	**0.01**		**0.02**	**0.11**
	Toluene				**0.013**	**0.06**		**0.13**	**0.57**

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed in accordance with Operating Permit Application Requirements, pp. 3-5. A list of regulated air pollutants has been provided in Section A.
2. Provide emission rate in units of applicable emission standard, e.g. lb/MMbtu, gr/dscf, etc. This may not apply to every emission point or every pollutant from an emission point.

* If yes, attach appropriate Air Pollution Control Data Sheet from Section L or manufacturers specifications if other.

** Fugitive emissions and insignificant sources associated with the Poly-Pale Process Area.

MANUFACTURING PROCESSES (page 1 of 2) SECTION E

1. Emission Point No./ Name: **AC-004, Poly-Pale Process Rosin Melter**

2. Process Description: **The Rosin Melter is used to melt rosin for Poly-Pale Process operations. The open top melter melts rosin, which arrives at the process area in drums.**

3. Was this unit constructed or modified after August 7, 1977? ______ yes **X** no
   If yes please give date and explain.

4. Capacity (in tons/hr): **2.5 tons/hr**

5. Raw Material Input:

MATERIAL	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR MAXIMUM*,**
Rosin	5000 lbs	5000 lbs	43,800,000 lbs

* Actual 2002 rosin melted (4,313,790 lbs).
** Maximum quantity per year is based on maximum quantity per hour for 24 hrs/day and 365 days/yr.

6. Product Output:

PRODUCT or BY-PRODUCT	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
Rosin	5000 lbs	5000 lbs	43,800,000 lbs

7. Stack Data:

AC-004 Poly-Pale Process Rosin Melter

A. Height: **NA** C. Exit gas velocity: **NA**
B. Inside diameter: **NA** D. Exit gas temperature: **NA**

8. UTM Coordinates:
   A. Zone **16** B. North **3469.40** C. East **280.40**

13. POLLUTANT EMISSIONS:

Example emission rate calculations, monitoring data, or stack test data must be attached in accordance with Operating Permit Application Requirements, pp. 3-5.

EMISSION POINT NO.	POLLUTANT (note 1)	CONTROL EQUIPMENT		ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)			PROPOSED ALLOWABLE EMISSION RATE (Optional)		
		yes/no *	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AC-004	**PM/PM_{10}**	**No**				**3.94**			**12.52**
	VOC					**0.49**			**1.57**

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed in accordance with Operating Permit Application Requirements, pp. 3-5. A list of regulated air pollutants has been provided in Section A.
2. Provide emission rate in units of applicable emission standard, e.g. lb/MMbtu, gr/dscf, etc. This may not apply to every emission point or every pollutant from an emission point.

* If yes, attach appropriate Air Pollution Control Data Sheet from Section L or manufacturers specifications if other.

1. Emission Point No. / Name: **AC-002**

2. Manufacturers Name and Model No.: **Hercules, Inc.**

3. Date of construction for existing sources or date of anticipated start-up for new sources: **Pre-1977**

4. Scrubber Data:

a) Scrubber type:

____	Venturi	____	Orifice
____	Packed Tower	X	Gravity Tower
____	Cyclonic	____	Condenser
____	Mist Eliminator	____	Impingement Plate
____	Other: ____		

b) Liquid injection rate:
1) Design maximum: **6.1** gpm @ **40** psia
2) Expected average: **6.1** gpm @ **40** pisa

c) Pressure drop: **6** inches H_2O (estimated)

d) Scrubbing liquid: **Water**
1) **X** Once - through ____ Recycled
2) If recycled: ____ gpm make - up rate
3) If water, describe settling basin: **NA**
4) Solution / Reactant systems:
a) Chemical make - up: **NA**
b) How is discharge handled, treated? **Impoundment Basin to POTW**

e) Gas flow: **X** Counter current ____ Concurrent
1) Flow rate: **Variable** acfm
2) Inlet Temperature: **Ambient** °F

f) Venturi Data: **NA**
1) Inlet Area: ____ ft^2
2) Throat Area: ____ ft^2
3) Throat velocity: ____ ft / sec
4) ____ Fixed throat ____ Variable throat

g) Packed or Plate Tower Data: **NA**
1) Surface Area: ____ ft diameter
2) Packing depth: ____ ft
3) Type of packing: ____ Rings ____ Saddles
____ Other: ____
4) No. of plates: ____
5) Type of plates: ____

h) Demisting Data: **NA**
1) Mist eliminator filter area: ____ ft diameter
2) Type: ____ Cyclone ____ Vanes ____ Pad
____ Other:

i) Efficiency: **90** % (estimated)

j) Are extra nozzles readily available? _______ Yes ___X___ No

How many? ______________

k) Pressure measurement devices installed? _______ Yes ___X___ No

5. Which process(es) does the scrubber control emissions from? **Approximately half (1/2) the Poly-Pale Process equipment is controlled by this scrubber.**

1. Emission Point No. / Name: **AC-003**

2. Manufacturers Name and Model No.: **Hercules, Inc.**

3. Date of construction for existing sources or date of anticipated start-up for new sources: **Pre-1977**

4. Scrubber Data:

a) Scrubber type:
- ____ Venturi
- ____ Orifice
- ____ Packed Tower
- **X** Gravity Tower
- ____ Cyclonic
- ____ Condenser
- ____ Mist Eliminator
- ____ Impingement Plate
- ____ Other: ____

b) Liquid injection rate:
1) Design maximum: **6.1** gpm @ **40** psia
2) Expected average: **6.1** gpm @ **40** pisa

c) Pressure drop: **6** inches H_2O (estimated)

d) Scrubbing liquid: **Water**
1) **X** Once - through ____ Recycled
2) If recycled: ____ gpm make - up rate
3) If water, describe settling basin: **NA**
4) Solution / Reactant systems:
   a) Chemical make - up: **NA**
   b) How is discharge handled, treated? **Impoundment Basin to POTW**

e) Gas flow: **X** Counter current ____ Concurrent
1) Flow rate: **Variable** acfm
2) Inlet Temperature: **Ambient** °F

f) Venturi Data: **NA**
1) Inlet Area: ____ ft^2
2) Throat Area: ____ ft^2
3) Throat velocity: ____ ft / sec
4) ____ Fixed throat ____ Variable throat

g) Packed or Plate Tower Data: **NA**
1) Surface Area: ____ ft diameter
2) Packing depth: ____ ft
3) Type of packing: ____ Rings ____ Saddles
   ____ Other: ____
4) No. of plates: ____
5) Type of plates: ____

h) Demisting Data: **NA**
1) Mist eliminator filter area: ____ ft diameter
2) Type: ____ Cyclone ____ Vanes ____ Pad
   ____ Other:

i) Efficiency: **90** % (estimated)

j) Are extra nozzles readily available? ________ Yes ___X___ No

How many? ________________

k) Pressure measurement devices installed? ________ Yes ___X___ No

5. Which process(es) does the scrubber control emissions from? **Approximately half (1/2) the Poly-Pale Process equipment is controlled by this scrubber.**

COMPLIANCE DEMONSTRATION BY RECORDKEEPING — SECTION M7

1. Emission Point No./Name: **AC-002 and AC-003**

2. Pollutant: **SO_2, VOC, HAP (Toluene), and Acid Mist (H_2SO_4)**

3. Material or parameter being monitored or recorded: **Scrubber water flow**

4. Method of monitoring and recordkeeping: **The scrubber water flow to the scrubbers is visually monitored through a sight glass and recorded on a weekly basis to ensure the scrubbers operate as intended.**

5. List any EPA methods used: **NA**

6. Compliance shall be demonstrated:

   ____ Daily **X** Weekly ____ Monthly ____ Quarterly

COMPLIANCE DEMONSTRATION BY RECORDKEEPING

SECTION M7

1. Emission Point No./Name: **AC-004**

2. Pollutant: **PM and VOC**

3. Material or parameter being monitored or recorded: **Raw material input**

4. Method of monitoring and recordkeeping: **The number of rosin drums opened and melted in the Rosin Melter are monitored and recorded on a daily basis.**

5. List any EPA methods used: **NA**

6. Compliance shall be demonstrated:

X Daily ____ Weekly ____ Monthly ____ Quarterly

ROSIN AMINE DERIVATIVES PROCESS AREA

MANUFACTURING PROCESSES (page 1 of 2) SECTION E

1. Emission Point No./ Name: **AF-000, Rosin Amine Derivatives (RAD) Process Area and AF-000(EO), RAD Process Area in Ethylene Oxide service**

2. Process Description: **The RAD Process Area produces chemicals (Rosin Amine and Ethylene Oxide Derivatives) primarily used as corrosion inhibitors. The Polyether Polyol (in EO service) manufacturing components are subject to NESHAP 40 CFR 63, Subpart PPP for controlling HAP emissions. Equipment in the process area includes reactors, tanks, vents, piping, etc. Emissions occur from associated equipment and fugitive losses.**

3. Was this unit constructed or modified after August 7, 1977? **X** yes ____ no
If yes please give date and explain. **Installed Ammonia Scrubber in 1997 and modified operation of EO scrubber in 2002.**

4. Capacity (in tons/hr): **Resin Nitrile – 0.51 tph, Distilled Nitrile – 0.51 tph, Resin Amine – 0.37 tph, Resin Amine Acetates – 0.01 tph, RADs – 0.10 tph, and EODs – 0.05 tph**

5. Raw Material Input:

MATERIAL	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR MAXIMUM* **
Resin Nitrile			
Resin	1342 lbs	1342 lbs	11,755,920 lbs
Ammonia	119 lbs	119 lbs	1,042,440 lbs
Distilled Nitrile			
Resin Nitrile	1020 lbs	1020 lbs	8,935,200 lbs
Resin Amine			
Distilled Nitrile	793 lbs	793 lbs	6,946,680 lbs
Hydrogen Gas	11 mcf	11 mcf	96,360 mcf
Resin Amine Acetates			
Resin Amine	8 lbs	8 lbs	70,080 lbs

Acetic Acid	6 lbs	6 lbs	52,560 lbs
Isopropyl Alcohol	3 lbs	3 lbs	26,280 lbs
Resin Amine Derivatives			
Resin Amine	76 lbs	76 lbs	665,760 lbs
Ethylene Oxide	86 lbs	86 lbs	753,360 lbs
Isopropyl Alcohol	47 lbs	47 lbs	411,720 lbs
Ethylene Oxide Derivatives			
Rosin	33 lbs	33 lbs	289,080 lbs
Ethylene Oxide	71 lbs	71 lbs	621,960 lbs

* Actual 2002 RAD production (Amine D - 384,615 lbs, Polyrads - 114,640 lbs, & Surfactants - 38,425 lbs).
** Maximum quantity per year is based on maximum quantity per hour for 24 hrs/day and 365 days/yr.

6. Product Output:

PRODUCT or BY-PRODUCT	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
Resin Nitrile	1020 lbs	1020 lbs	8,935,200 lbs
Distilled Nitrile	1020 lbs	1020 lbs	8,935,200 lbs
Resin Amine	732 lbs	732 lbs	6,412,320 lbs
Resin Amine Acetates	18 lbs	18 lbs	157,680 lbs
RADs	194 lbs	194 lbs	1,699,440 lbs
EODs	89 lbs	89 lbs	779,640 lbs

7. Stack Data:

AF-002 RAD Process Ammoniation Vent, which is equipped with a water scrubber.

A. Height: **15 ft** C. Exit gas velocity: **0-1 ft/s**
B. Inside diameter: **0.5 ft** D. Exit gas temperature: **Ambient**

AF-004 Ethylene Oxide Packed Bed Scrubber (with Sulfuric Acid) to control EO emissions.

A. Height: **50 ft** C. Exit gas velocity: **0-1 ft/s**
B. Inside diameter: **0.25 ft** D. Exit gas temperature: **Ambient**

8. UTM Coordinates:
A. Zone **16** B. North **3469.40** C. East **280.40**

MANUFACTURING PROCESSES (page 2 of 2) SECTION E

13. POLLUTANT EMISSIONS:

Example emission rate calculations, monitoring data, or stack test data must be attached in accordance with Operating Permit Application Requirements, pp. 3-5.

EMISSION POINT NO.	POLLUTANT (note 1)	CONTROL EQUIPMENT		ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)			PROPOSED ALLOWABLE EMISSION RATE (Optional)		
		* yes/no	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AF-000**	VOC	No				0.56			8.68
	Ethylene Oxide					0.56			8.68
AF-002	Ammonia	Yes	95%						
AF-004	VOC	Yes	98%			0.03			0.80
	Ethylene Oxide					0.03			0.80

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed in accordance with Operating Permit Application Requirements, pp. 3-5. A list of regulated air pollutants has been provided in Section A.
2. Provide emission rate in units of applicable emission standard, e.g. lb/MMbtu, gr/dscf, etc. This may not apply to every emission point or every pollutant from an emission point.

* If yes, attach appropriate Air Pollution Control Data Sheet from Section L or manufacturers specifications if other.
** Fugitive emissions and insignificant sources associated with the RAD Process Area.

1. Emission Point No. / Name: **AF-002**

2. Manufacturers Name and Model No.: **Hercules, Inc.**

3. Date of construction for existing sources or date of anticipated start-up for new sources: **1997**

4. Scrubber Data:

a) Scrubber type:

______	Venturi	______	Orifice
X	Packed Tower	______	Gravity Tower
______	Cyclonic	______	Condenser
______	Mist Eliminator	______	Impingement Plate
______	Other: ______		

b) Liquid injection rate:

1) Design maximum: **unknown** gpm @ **unknown** psia
2) Expected average: **4-6** gpm @ **unknown** pisa (estimated)

c) Pressure drop: **unknown** inches H_2O (estimated)

d) Scrubbing liquid: **Water**

1) **X** Once - through ______ Recycled
2) If recycled: ______ gpm make - up rate
3) If water, describe settling basin: **NA**
4) Solution / Reactant systems:
   a) Chemical make - up: **NA**
   b) How is discharge handled, treated? **Impoundment Basin to POTW**

e) Gas flow: **X** Counter current ______ Concurrent

1) Flow rate: **Variable** acfm
2) Inlet Temperature: **Ambient** °F

f) Venturi Data: **NA**

1) Inlet Area: ______ ft^2
2) Throat Area: ______ ft^2
3) Throat velocity: ______ ft / sec
4) ______ Fixed throat ______ Variable throat

g) Packed or Plate Tower Data:

1) Surface Area: **2** ft diameter
2) Packing depth: **6** ft
3) Type of packing: **X** Rings ______ Saddles
   ______ Other: ______
4) No. of plates: ______
5) Type of plates: ______

h) Demisting Data: **NA**

1) Mist eliminator filter area: ______ ft diameter
2) Type: ______ Cyclone ______ Vanes ______ Pad
   ______ Other:

i) Efficiency: **95** % (estimated)

j) Are extra nozzles readily available? _____ Yes __X__ No

How many? __________

k) Pressure measurement devices installed? _____ Yes __X__ No

5. Which process(es) does the scrubber control emissions from? **RAD Process Ammoniation Reactor**

1. Emission Point No. / Name: **AF-004**

2. Manufacturers Name and Model No.: **Anderson 2000 Inc. Serial No. S-4733-832**

3. Date of construction for existing sources or date of anticipated start-up for new sources: **1988**

4. Scrubber Data:

a) Scrubber type:

____	Venturi	____	Orifice
X	Packed Tower	____	Gravity Tower
____	Cyclonic	____	Condenser
____	Mist Eliminator	____	Impingement Plate
____	Other: ____		

b) Liquid injection rate:

1) Design maximum: **>0.5** gpm @ **Unknown** psia

2) Expected average: **0.5** gpm @ **Unknown** pisa

c) Pressure drop: **Unknown** inches H_2O (estimated)

d) Scrubbing liquid:

1) ____ Once - through **X** Recycled

2) If recycled: **< 1.10** pH maintained

3) If water, describe settling basin: **NA**

4) Solution / Reactant systems:

a) Chemical make - up: **Sulfuric Acid**

b) How is discharge handled, treated? **Impoundment Basin to POTW**

e) Gas flow: **X** Counter current ____ Concurrent

1) Flow rate: **Variable** acfm

2) Inlet Temperature: **200** °F

f) Venturi Data: **NA**

1) Inlet Area: ____ ft^2

2) Throat Area: ____ ft^2

3) Throat velocity: ____ ft / sec

4) ____ Fixed throat ____ Variable throat

g) Packed or Plate Tower Data:

1) Surface Area: **0.25** ft diameter

2) Packing depth: **unknown** ft

3) Type of packing: **X** Rings ____ Saddles

____ Other: ____

4) No. of plates: ____

5) Type of plates: ____

h) Demisting Data: **NA**

1) Mist eliminator filter area: ____ ft diameter

2) Type: ____ Cyclone ____ Vanes ____ Pad

____ Other:

i) Efficiency: **98** %

j) Are extra nozzles readily available? ________ Yes ___X___ No

How many? ____________________

k) Pressure measurement devices installed? ________ Yes ___X___ No

5. Which process(es) does the scrubber control emissions from? **RAD (EO) Process Area Vents**

COMPLIANCE DEMONSTRATION BY RECORDKEEPING — SECTION M7

1. Emission Point No./Name: **AF-000**

2. Pollutant: **VOC and HAP (Ethylene Oxide)**

3. Material or parameter being monitored or recorded: **Leak Detection and Repair (LDAR)**

4. Method of monitoring and recordkeeping: **The RAD (EO) Process Area equipment (reactor, tanks, piping, valves, relief valves, pumps, and connectors) that directly contacts Ethylene Oxide are monitored for leaks and the data is recorded on a schedule determined by 40 CFR 63, Subpart H and Subpart PPP.**

5. List any EPA methods used: **EPA Reference Method 21**

6. Compliance shall be demonstrated:

____ Daily ____ Weekly **X** Monthly **X** Quarterly **X** Yearly

COMPLIANCE DEMONSTRATION BY RECORDKEEPING

SECTION M7

1. Emission Point No./Name: **AF-002**

2. Pollutant: **Ammonia**

3. Material or parameter being monitored or recorded: **Scrubber water flow**

4. Method of monitoring and recordkeeping: **The scrubber water flow to the scrubber is visually monitored through a sight glass and recorded on a weekly basis to ensure the scrubber is operating as intended.**

5. List any EPA methods used: **NA**

6. Compliance shall be demonstrated:

   ____ Daily **X** Weekly ____ Monthly ____ Quarterly

COMPLIANCE DEMONSTRATION BY RECORDKEEPING

SECTION M7

1. Emission Point No./Name: **AF-004**

2. Pollutant: **VOC and HAP (Ethylene Oxide)**

3. Material or parameter being monitored or recorded: **Scrubber water flow rate and pH**

4. Method of monitoring and recordkeeping: **The scrubber water flow rate (gal/min) and pH are monitored and recorded on a continuous basis (a minimum of every 15 minutes). A flow rate of greater than 0.5 gal/min and a pH of less than 1.1 are recommended for the scrubber to operate at the designed efficiency and regulatory requirements.**

5. List any EPA methods used: **NA**

6. Compliance shall be demonstrated:

X Daily ____ Weekly ____ Monthly ____ Quarterly

HARD RESINS PROCESS AREA

1. Emission Point No./ Name: **AG-000, Hard Resins Process Area**

2. Process Description: **The Hard Resins Process Area produces specialty chemicals used primarily in food grade products (i.e., chewing gum) and adhesives. Equipment in the process area includes reactors, tanks, vents, piping, etc. Emissions occur from associated equipment and from fugitive losses.**

3. Was this unit constructed or modified after August 7, 1977? **X** yes ____ no
If yes please give date and explain. **Modified in January 1998.**

4. Capacity (in tons/hr): **Kettles – 3.2 tons/hr** **Flaking – 3.5 tons/hr**

5. Raw Material Input:

MATERIAL	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR MAXIMUM*,**
Kettle Feed Materials			
Rosin	6024 lbs	6024 lbs	52,770,240 lbs
Glycerin	435 lbs	435 lbs	3,810,600 lbs
Pentaerithritol	249 lbs	249 lbs	2,181,240 lbs
Maleic Anhydride	41 lbs	41 lbs	359,160 lbs
Phthalic Anhydride	9 lbs	9 lbs	78,840 lbs
Ethylene Glycol	4 lbs	4 lbs	35,040 lbs
Oxalic Acid	<1 lb	<1 lb	<8760 lbs
Calcium Formate	3 lbs	3 lbs	26,280 lbs
Irgonox 1010	<1 lb	<1 lb	<8760 lbs
Weston 618	<1 lb	<1 lb	<8760 lbs
TNPP	1 lb	1 lb	8760 lbs
Abalyn	15 lbs	15 lbs	131,400 lbs
Abitol	32 lbs	32 lbs	280,320 lbs
Picco	148 lbs	148 lbs	1,296,480 lbs
Adipic Acid	3 lbs	3 lbs	26,280 lbs
Fumaric Acid	20 lbs	20 lbs	175,200 lbs

DSTDP	<1 lb	<1 lb	<8760 lbs
Ethanox 323	<1 lb	<1 lb	<8760 lbs
Lithium Carbonate	<1 lb	<1 lb	<8760 lbs
Magnesium Oxide	<1 lb	<1 lb	<8760 lbs
Zinc Oxide	<1 lb	<1 lb	<8760 lbs
Santonox	<1 lb	<1 lb	<8760 lbs
Toluene Sulfonic Acid	<1 lb	<1 lb	<8760 lbs
Calcium Hydroxide	<1 lb	<1 lb	<8760 lbs
Paraformaldehyde	8 lbs	8 lbs	70,080 lbs
Paratertiary Octyl Phenol	25 lbs	25 lbs	219,000 lbs
Flaking and Drumming			
Resin	7000 lbs	7000 lbs	61,320,000 lbs

* Actual 2002 Hard Resins production (Kettle – 5,371,917 lbs and Flaked 9,676,150 lbs).
** Maximum quantity per year is based on maximum quantity per hour for 24 hrs/day and 365 days/yr.

6. Product Output:

PRODUCT or BY-PRODUCT	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
Kettle Resin Derivatives	6400 lbs	6400 lbs	56,064,000 lbs
Flaking and Drumming	7000 lbs	7000 lbs	61,320,000 lbs

7. Stack Data:

AG-003 Hard Resins Kettles and Flaking Belt (hot end – pouring) vented to a water scrubber.

A. Height: **35 ft** C. Exit gas velocity: **2 ft/s**
B. Inside diameter: **4 ft** D. Exit gas temperature: **Ambient**

AG-005 Hard Resins Flaking Belt (cold end – flaking) vented to a dust collector.

A. Height: **10 ft** C. Exit gas velocity: **28.73 ft/s**
B. Inside diameter: **2.4 ft x 1.5 ft** D. Exit gas temperature: **Ambient**

8. UTM Coordinates:
A. Zone **16** B. North **3469.20** C. East **280.70**

MANUFACTURING PROCESSES (page 2 of 2) — SECTION E

13. POLLUTANT EMISSIONS:

Example emission rate calculations, monitoring data, or stack test data must be attached in accordance with Operating Permit Application Requirements, pp. 3-5.

EMISSION POINT NO.	POLLUTANT (note 1)	CONTROL EQUIPMENT		ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)			PROPOSED ALLOWABLE EMISSION RATE (Optional)		
		* yes/no	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AG-003	VOC	Yes	60%		17.82	78.05		44.55	195.13
AG-005	PM/PM_{10}	Yes	90%		0.72	3.16		7.22	31.62

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed in accordance with Operating Permit Application Requirements, pp. 3-5. A list of regulated air pollutants has been provided in Section A.
2. Provide emission rate in units of applicable emission standard, e.g. lb/MMbtu, gr/dscf, etc. This may not apply to every emission point or every pollutant from an emission point.

* If yes, attach appropriate Air Pollution Control Data Sheet from Section L or manufacturers specifications if other.

1. Emission Point No. / Name: **AG-003**

2. Manufacturers Name and Model No.: **Hercules, Inc.**

3. Date of construction for existing sources or date of anticipated start-up for new sources: **Constructed Pre-1977, and Modified in 1990**

4. Scrubber Data:

a) Scrubber type:
- ____ Venturi
- ____ Packed Tower
- ____ Cyclonic
- ____ Mist Eliminator
- ____ Other: ____
- ____ Orifice
- **X** Gravity Tower
- ____ Condenser
- ____ Impingement Plate

b) Liquid injection rate:
1) Design maximum: **6** gpm @ **40** psia
2) Expected average: **6** gpm @ **20** pisa

c) Pressure drop: **6** inches H_2O (estimated)

d) Scrubbing liquid: **Water**
1) **X** Once - through ____ Recycled
2) If recycled: ____ gpm make - up rate
3) If water, describe settling basin: **NA**
4) Solution / Reactant systems:
   a) Chemical make - up: **NA**
   b) How is discharge handled, treated? **Impoundment Basin to POTW**

e) Gas flow: **X** Counter current ____ Concurrent
1) Flow rate: **8405** acfm
2) Inlet Temperature: **150** °F

f) Venturi Data: **NA**
1) Inlet Area: ____ ft^2
2) Throat Area: ____ ft^2
3) Throat velocity: ____ ft / sec
4) ____ Fixed throat ____ Variable throat

g) Packed or Plate Tower Data: **NA**
1) Surface Area: ____ ft diameter
2) Packing depth: ____ ft
3) Type of packing: ____ Rings ____ Saddles
   ____ Other: ____
4) No. of plates: ____
5) Type of plates: ____

h) Demisting Data: **NA**
1) Mist eliminator filter area: ____ ft diameter
2) Type: ____ Cyclone ____ Vanes ____ Pad
   ____ Other:

i) Efficiency: **60** % (estimated)

j) Are extra nozzles readily available? ______ Yes __X__ No

How many? ____________

k) Pressure measurement devices installed? __X__ Yes ______ No

5. Which process(es) does the scrubber control emissions from? **Hard Resins Kettles and Hot End (Pouring) of Flaking Belt.**

1. Emission Point No. / Name : **AG-005**

2. Manufacturers Name & Model No.: **Buell "Norblo" Mechanical Shaker Dust Collector Model No. 396-14-20**

3. Date of construction for existing sources or date of anticipated start-up for new sources: **1979**

4. Baghouse Data:
   a) Cloth area: **7344** ft^2
   b) Air to cloth ratio: **3.06:1** $acfm/ft^2$
   c) Type of bag: ____ Woven **X** Felted ____ Membrane ____ Other: ____
   d) Bag material: **Polyester**
   e) No. of bags: **396**
   f) No. of compartments: **4**
   g) Bag length: **14.17** ft
   h) Bag diameter: **0.42** ft
   i) Pressure drop: **4-6** inches H_2O
   j) Pressure measurement device installed: **X** Yes ____ No
   k) Air flow: **22,500** acfm @ **72** °F
   l) Efficiency: **90** % (estimated)
   m) Dirty air on: **X** inside ____ outside of bag
   n) Time between bag cleaning: **8** minutes
   o) Method of bag cleaning: **X** Shaking ____ Reverse Air ____ Pulse Jet ____ Other: ____
   p) Are extra bags readily available: **X** Yes ____ No How Many? **50 (re-order minimum)**
   q) How is the collected dust stored, handled, disposed of? **Reused or disposed of properly**

6. Which process(es) does the baghouse control emissions from? **Cold End of Hard Resins Flaking Belt.**

COMPLIANCE DEMONSTRATION BY RECORDKEEPING

SECTION M7

1. Emission Point No./Name: **AG-003**

2. Pollutant: **VOC**

3. Material or parameter being monitored or recorded: **Scrubber water flow**

4. Method of monitoring and recordkeeping: **The scrubber water flow to the scrubber is visually monitored and recorded on a weekly basis to ensure the scrubber is operated as intended. The kettle vent fan and the flaking belt "hot" end vent fan are also monitored on a weekly basis to ensure proper scrubber operation.**

5. List any EPA methods used: **NA**

6. Compliance shall be demonstrated:

   ____ Daily **X** Weekly ____ Monthly ____ Quarterly

COMPLIANCE DEMONSTRATION BY RECORDKEEPING

SECTION M7

1. Emission Point No./Name: **AG-005**

2. Pollutant: **PM**

3. Material or parameter being monitored or recorded: **Pressure drop**

4. Method of monitoring and recordkeeping: **The pressure drop across the baghouse is monitored and recorded on a weekly basis to ensure the baghouse operates at the designed efficiency.**

5. List any EPA methods used: **NA**

6. Compliance shall be demonstrated:

   ____ Daily **X** Weekly ____ Monthly ____ Quarterly

ROSIN SHED AREA

1. Emission Point No./ Name: **AH-000, Rosin Shed Process Area**

2. Process Description: **The Rosin Shed Process Area produces drummed rosin for various end uses. Equipment in the process area includes tanks, vents, piping, etc. Emissions occur from associated equipment and from fugitive losses.**

3. Was this unit constructed or modified after August 7, 1977? ______ yes __**X**__ no
If yes please give date and explain. ____________________

4. Capacity (in tons/hr): **11.4 tons/hr**

5. Raw Material Input:

MATERIAL	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR MAXIMUM*
Rosin	28,000 lbs	28,000 lbs	245,280,000 lbs

* Maximum quantity per year is based on maximum quantity per hour for 24 hrs/day and 365 days/yr.

6. Product Output:

PRODUCT or BY-PRODUCT	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
Rosin	28,000 lbs	28,000 lbs	245,280,000 lbs

7. Stack Data:

A. Height: **NA**
B. Inside diameter: **NA**
C. Exit gas velocity: **NA**
D. Exit gas temperature: **NA**

8. UTM Coordinates:
A. Zone **16** B. North **3469.40** C. East **280.50**

MANUFACTURING PROCESSES (page 2 of 2) SECTION E

13. POLLUTANT EMISSIONS:

Example emission rate calculations, monitoring data, or stack test data must be attached in accordance with Operating Permit Application Requirements, pp. 3-5.

EMISSION POINT NO.	POLLUTANT (note 1)	CONTROL EQUIPMENT		ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)			PROPOSED ALLOWABLE EMISSION RATE (Optional)		
		* yes/no	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AH-000**	VOC								

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed in accordance with Operating Permit Application Requirements, pp. 3-5. A list of regulated air pollutants has been provided in Section A.
2. Provide emission rate in units of applicable emission standard, e.g. lb/MMbtu, gr/dscf, etc. This may not apply to every emission point or every pollutant from an emission point.

* If yes, attach appropriate Air Pollution Control Data Sheet from Section L or manufacturers specifications if other.

** No stack emissions, only fugitive and insignificant emissions associated with the Rosin Shed Process Area (see Insignificant Activities- Section C).

ROSIN DISTILLATION PROCESS AREA

MANUFACTURING PROCESSES (page 1 of 2) SECTION E

1. Emission Point No./ Name: **AJ-000, Rosin Distillation Process Area**

2. Process Description: **The Rosin Distillation Process Area produces distilled rosin for various end uses. Equipment in the process area includes reactors, tanks, vents, piping, etc. Emissions occur from associated equipment and from fugitive losses.**

3. Was this unit constructed or modified after August 7, 1977? _____ yes **X** no
If yes please give date and explain. _____

4. Capacity (in tons/hr): **2.5 tons/hr**

5. Raw Material Input:

MATERIAL	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR MAXIMUM*,**
Rosin	5000 lbs	5000 lbs	43,800,000 lbs

* Actual 2002 Rosin Distillation production (Dymerex – 2,436,871 lbs and Resin 861 – 2,257,331 lbs).
** Maximum quantity per year is based on maximum quantity per hour for 24 hrs/day and 365 days/yr.

6. Product Output:

PRODUCT or BY-PRODUCT	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
Rosin	5000 lbs	5000 lbs	43,800,000 lbs

7. Stack Data:

A. Height: **NA** C. Exit gas velocity: **NA**
B. Inside diameter: **NA** D. Exit gas temperature: **NA**

8. UTM Coordinates:
A. Zone **16** B. North **3469.20** C. East **280.60**

13. POLLUTANT EMISSIONS:

Example emission rate calculations, monitoring data, or stack test data must be attached in accordance with Operating Permit Application Requirements, pp. 3-5.

EMISSION POINT NO.	POLLUTANT (note 1)	CONTROL EQUIPMENT		ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)			PROPOSED ALLOWABLE EMISSION RATE (Optional)		
		yes/no *	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AJ-000**	VOC								

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed in accordance with Operating Permit Application Requirements, pp. 3-5. A list of regulated air pollutants has been provided in Section A.
2. Provide emission rate in units of applicable emission standard, e.g. lb/MMbtu, gr/dscf, etc. This may not apply to every emission point or every pollutant from an emission point.

* If yes, attach appropriate Air Pollution Control Data Sheet from Section L or manufacturers specifications if other.
** No stack emissions, only fugitive and insignificant emissions associated with the Rosin Distillation Area (see Insignificant Activities – Section C).

POWER HOUSE AND EFFLUENT TREATMENT AREAS

1. Emission Point No. / Name: **AM-001, Package Boiler**

2. Equipment Description: **A steam generating boiler (Package Boiler No. 5), which produces steam for the facility.**

3. Was this unit constructed or modified after August 7, 1977? ____ Yes **X** No
If yes please give date and explain.

4. Capacity: **156** MMBTU/hr 5. Type of burner: **Multiple Port Gas**

6. Usage Type (i.e. Space Heat, Process, etc.) : **Process Steam (and Heat)**

7. Complete the following table, identifying each type of fuel and the amount used. Specify the units for heat content, hourly usage, and yearly usage.

FUEL TYPE	HEAT CONTENT	% SULFUR	% ASH	MAXIMUM HOURLY USAGE	YEARLY USAGE
Natural Gas	**1020 BTU/ft³**	**NA**	**NA**	**152,941 ft³/hr**	**1340 MMft³/yr**
Fuel Oil #2	**141 MBTU/gal**	**0.5**	**NA**	**1106 gal/hr**	**0***
Fuel Oil #6	**150 MBTU/gal**	**2.0**	**NA**	**1040 gal/hr**	**0***

* Fuel Oil was not burned in 2002, but can be used if necessary.

8. Please list any fuel components that are hazardous air pollutants and the percentage in the fuel.
Hexane (natural gas) and Chloride and Nickel (fuel oil) have potential emissions >0.1 lb/hr.

9. Operating Schedule: (Optional) **24** hours/day **7** days/week **52** weeks/year

10. Stack Data:
    A. Height: **71 ft**
    B. Inside diameter: **3 ft**
    C. Exit gas velocity: **56 ft/s**
    D. Exit gas temperature: **250 ° F**

11. UTM Coordinates:
    A. Zone **16** B. North **3469.30** C. East **280.5**

FUEL BURNING EQUIPMENT (page 1 of 2) SECTION D

1. Emission Point No. / Name: **AM-002, Package Boiler**

2. Equipment Description: **A steam generating boiler (Package Boiler No. 6), which produces steam for the facility.**

3. Was this unit constructed or modified after August 7, 1977? **X** Yes ____ No
If yes please give date and explain. **Installed in 1986.**

4. Capacity: **65** MMBTU/hr 5. Type of burner: **Multiple Port Gas**

6. Usage Type (i.e. Space Heat, Process, etc.) : **Process Steam (and Heat)**

7. Complete the following table, identifying each type of fuel and the amount used. Specify the units for heat content, hourly usage, and yearly usage.

FUEL TYPE	HEAT CONTENT	% SULFUR	% ASH	MAXIMUM HOURLY USAGE	YEARLY USAGE
Natural Gas	**1020 BTU/ft^3**	**NA**	**NA**	**63,725 ft^3/hr**	**558 MMft^3/yr**
Fuel Oil #2	**141 MBTU/gal**	**0.5**	**NA**	**461 gal/hr**	**0***
Fuel Oil #6	**150 MBTU/gal**	**2.0**	**NA**	**433 gal/hr**	**0***

* Fuel Oil was not burned in 2002, but can be used if necessary.

8. Please list any fuel components that are hazardous air pollutants and the percentage in the fuel.
Hexane (natural gas) and Chloride (fuel oil) have potential emissions >0.1 lb/hr.

9. Operating Schedule: (Optional) **24** hours/day **7** days/week **52** weeks/year

10. Stack Data:
A. Height: **64 ft** C. Exit gas velocity: **Variable**
B. Inside diameter: **4 ft** D. Exit gas temperature: **250 ° F**

11. UTM Coordinates:
A. Zone **16** B. North **3469.30** C. East **280.5**

FUEL BURNING EQUIPMENT (page 2 of 2) SECTION D

12. POLLUTANT EMISSIONS:

Example emission rate calculations, monitoring data, or stack test data must be attached in accordance with Operating Permit Application Requirements, pp. 3-5.

EMISSION POINT NO.	POLLUTANT (note 1)	CONTROL EQUIPMENT		ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)			PROPOSED ALLOWABLE EMISSION RATE (Optional)		
		* yes/no	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AM-001	PM/PM_{10}	No				1.50		22.46	98.39
	SO_2	No				0.12		326.56	1430.33
	NO_X	No				55.40		48.88	214.09
	CO	No				16.62		12.85	56.27
	VOC	No				1.09		0.84	3.68
	Total HAPs**	No				0.36		0.76	3.35
AM-002	PM/PM_{10}	No				0.14		4.33	18.97
	SO_2	No				0.01		135.96	595.51
	NO_X	No				1.81		23.82	104.31
	CO	No				1.52		5.35	23.45
	VOC	No				0.10		0.35	1.54
	Total HAPs**	No				0.03		0.31	1.39

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed. A list of regulated air pollutants has been provided in Section A.
2. Provide emission rate in units of applicable emission standard, e.g. lb/MMbtu, gr/dscf, etc. This may not apply to every emission point or every pollutant from an emission point.

* If yes, attach appropriate Air Pollution Control Data Sheet from Section L or manufacturers specifications if other.
** Individual HAP emission calculations are attached in report appendix.

MANUFACTURING PROCESSES (page 1 of 2) SECTION E

1. Emission Point No./ Name: **AN-000, Effluent Treatment Area**

2. Process Description: **The Effluent Treatment Area consists of equalization, solids removal, and pH adjustment prior to discharge to the local POTW. Emissions from the area occur from fugitive losses.**

3. Was this unit constructed or modified after August 7, 1977? ____ yes **X** no
   If yes please give date and explain.

4. Capacity (in tons/hr): **NA**

5. Raw Material Input:

MATERIAL	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR MAXIMUM
NA			

6. Product Output:

PRODUCT or BY-PRODUCT	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
NA			

7. Stack Data:

   A. Height: **NA** C. Exit gas velocity: **NA**
   B. Inside diameter: **NA** D. Exit gas temperature: **NA**

8. UTM Coordinates:
   A. Zone **16** B. North **3469.50** C. East **280.00**

MANUFACTURING PROCESSES (page 2 of 2) SECTION E

13. POLLUTANT EMISSIONS:

Example emission rate calculations, monitoring data, or stack test data must be attached in accordance with Operating Permit Application Requirements, pp. 3-5.

EMISSION POINT NO.	POLLUTANT (note 1)	CONTROL EQUIPMENT		ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)			PROPOSED ALLOWABLE EMISSION RATE (Optional)		
		yes/no *	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AN-000**	VOC	No				2.33			12.86
	Toluene								

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed in accordance with Operating Permit Application Requirements, pp. 3-5. A list of regulated air pollutants has been provided in Section A.
2. Provide emission rate in units of applicable emission standard, e.g. lb/MMbtu, gr/dscf, etc. This may not apply to every emission point or every pollutant from an emission point.

* If yes, attach appropriate Air Pollution Control Data Sheet from Section L or manufacturers specifications if other.
** Fugitive emissions and insignificant sources associated with the Effluent Treatment Area.

COMPLIANCE DEMONSTRATION BY RECORDKEEPING

SECTION M7

1. Emission Point No./Name: **AM-001 and AM-002**

2. Pollutant: **Fuel**

3. Material or parameter being monitored or recorded: **Fuel quality and fuel quantity**

4. Method of monitoring and recordkeeping: **The fuel type and quantity is recorded on a monthly basis, and a fuel analysis is obtained on a semi-annual basis. If fuel oil is combusted, the fuel quality (sulfur content) will be recorded. Also, if #6 fuel oil is combusted for five (5) consecutive days, the facility will comply with the existing Title V Operating Permit biennial compliance monitoring requirements.**

5. List any EPA methods used: **NA**

6. Compliance shall be demonstrated:

    ____ Daily ____ Weekly **X** Monthly ____ Quarterly

Current Applicable Requirements and Status (page 1 of 5) — SECTION N

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Pollutant	Test Method	Limits	Compliance Status IN / OUT
Facility-Wide	**APC-S-1, Section 3.1(a) & 3.2 – General Opacity Standard**	**PM (Smoke)**	**EPA Ref. Method 9**	**≤ 40%**	**IN**
Facility-Wide	**APC-S-1, Section 3.1(b) – Startup Opacity Standard**	**PM (Smoke)**	**EPA Ref. Method 9**	**≥ 40%, up to 15 minutes per startup in any 1 hour, not to exceed 3 startups in any 24 hour period.**	**IN**
Facility-Wide	**APC-S-1, Section 3.1(c) – Soot Blowing Opacity Standard**	**PM (Smoke)**	**EPA Ref. Method 9**	**≤ 60%, providing aggregate duration during any 24 hour period does not exceed 10 minutes per 10^9 BTU gross heating value in any 1 hour.**	**IN**
Facility-Wide	**APC-S-1, Section 3.3 – General Nuisance Standard**	**PM**	**NA**	**As specified in the regulations.**	**IN**
Facility-Wide	**APC-S-1, Section 3.7 – Open Burning Standard**	**PM**	**NA**	**As specified in the regulations.**	**IN**
Facility-Wide	**APC-S-1, Section 5.2 – Miscellaneous Chemical Emissions**	**HAPs (Toxics)**	**NA**	**As specified in the regulations.**	**IN**
Insignificant Activities – Fuel Burning Equipment	**Title V Operating Permit (TVOP) No. 0800-00001, Condition 3.C.1** **APC-S-1, Section 3.4(a)(1)**	**PM**	**EPA Ref. Method 1-5**	**0.6 lbs/MMBTU**	**IN**
Insignificant Activities – Fuel Burning Equipment	**TVOP No. 0800-00001, 3.C.2** **APC-S-1, Section 4.1(a)**	**SO_2**	**EPA Ref. Method 6**	**4.8 lbs/MMBTU**	**IN**
Insignificant Activities – Manufacturing Sources	**TVOP No. 0800-00001, 3.C.3** **APC-S-1, Section 3.6(a)**	**PM**	**NA**	**$E = 4.1(p)^{0.67}$**	**IN**
Insignificant Activities – Storage Vessels (Identified in Section C)	**TVOP No. 0800-00001, 3.C.4** **40 CFR 60, Subpart Kb (60.110b and 60116b(a) & (b))**	**VOC**	**NA**	**Record tank capacity and dimensions.**	**IN**

Current Applicable Requirements and Status (page 2 of 5) SECTION N

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Pollutant	Test Method	Limits	Compliance Status IN / OUT
AA-001, AA-002, AB-001, AC-002, AC-003, AF-004(EO), AG-003, and AG-005	**TVOP No. 0800-00001, 5.B.14** **APC-S-6, Section III.A.3**	**PM, VOC, and HAP**	**NA**	**Weekly monitoring and recordkeeping requirements for control equipment maintenance.**	**IN**
AA-000, AA-001, and AN-000	**TVOP No. 0800-00001, 3.B.1** **40 CFR 63, Subpart W (63.520)** **40 CFR 63, Subpart H (63.160)** **APC-S-1, Section 8.1**	**HAP (Epi)**	**EPA Ref. Method 21**	**Leak Detection and Repair (LDAR) for components in HAP (Epi) service.**	**IN**
AA-000, AA-001, and AN-000	**TVOP No. 0800-00001, 3.D.1-3** **40 CFR 63, Subpart A (63.6(e))**	**HAP (Epi)**	**NA**	**Startup, Shutdown, and Malfunction Plan**	**IN**
AA-000, AA-001, and AN-000	**TVOP No. 0800-00001, 5.B.2** **40 CFR 63, Subpart W (63.525(i))** **40 CFR 63, Subpart H (63.162(a) & (b))**	**HAP (Epi)**	**EPA Ref. Method 21**	**Compliance demonstration.**	**IN**
AA-000, AA-001, and AN-000	**TVOP No. 0800-00001, 5.B.3** **40 CFR 63, Subpart W (63.526(d))** **40 CFR, Subpart H**	**HAP (Epi)**	**EPA Ref. Method 21**	**Monitoring schedule and leak definition concentrations are as specified in the regulations (varies).**	**IN**
AA-000, AA-001, and AN-000	**TVOP No. 0800-00001, 5.B.4** **40 CFR 63, Subpart W (63.527(d))** **40 CFR, Subpart H (63.181)**	**HAP (Epi)**	**EPA Ref. Method 21**	**Recordkeeping Requirements**	**IN**
AA-000, AA-001, and AN-000	**TVOP No. 0800-00001, 5.C.1(b)** **40 CFR 63, Subpart W (63.528(b))** **40 CFR, Subpart H (63.182)**	**HAP (Epi)**	**EPA Ref. Method 21**	**Reporting Requirements**	**IN**

Current Applicable Requirements and Status (page 3 of 5) SECTION N

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Pollutant	Test Method	Limits	Compliance Status IN / OUT
AA-002	**TVOP No. 0800-00001, 3.B.2 & 5.B.8** **APC-S-1, Section 3.6(a)**	**PM**	**NA**	**$E = 4.1(p)^{0.67}$** **Monitor raw material processed (in lbs) and hours of operation daily.**	**IN**
AB-001	**TVOP No. 0800-00001, 3.B.2 & 5.B.9** **APC-S-1, Section 3.6(a)**	**PM**	**NA**	**$E = 4.1(p)^{0.67}$** **Monitor scrubber water flowrate weekly.**	**IN**
AC-002 and AC-003	**TVOP No. 0800-00001, 3.B.7 & 5.B.9** **APC-S-1, Section 4.2(a)**	**SO_2**	**NA**	**2000 ppm**	**IN**
AC-004	**TVOP No. 0800-00001, 3.B.2 & 5.B.13** **APC-S-1, Section 3.6(a)**	**PM**	**NA**	**$E = 4.1(p)^{0.67}$** **Monitor raw material processed (in lbs) and hours of operation daily.**	**IN**
AF-000 (EO)	**TVOP No. 0800-00001, 3.B.8, 3.B.11 & 5.B.31** **40 CFR 63, Subpart PPP (63.1420 and 63.1434(a) and (h))** **40 CFR 63, Subpart H (63.160)** **APC-S-1, Section 8.1**	**HAP (EO)**	**EPA Ref. Method 21**	**Leak Detection and Repair (LDAR) for components in HAP (EO) service.**	**IN**
AF-000 (EO)	**TVOP No. 0800-00001, 3.D.4 & 3.D.5** **40 CFR 63, Subpart PPP (63.1439(b)(1))**	**HAP (EO)**	**NA**	**Startup, Shutdown, and Malfunction Plan**	**IN**
AF-000 (EO)	**TVOP No. 0800-00001, 5.B.25** **40 CFR 63, Subpart PPP (63.1438(f) & (g))**	**HAP (EO)**	**NA**	**Record monitoring excursions.**	**IN**
AF-000 (EO)	**TVOP No. 0800-00001, 5.B.28** **40 CFR 63, Subpart PPP (63.1439(d)(1-8))**	**HAP (EO)**	**NA**	**Recordkeeping requirements.**	**IN**

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Pollutant	Test Method	Limits	Compliance Status IN / OUT
AF-000 (EO)	**TVOP No. 0800-00001, 5.B.29** **40 CFR 63, Subpart PPP (63.1439(g))**	**HAP (EO)**	**NA**	**Alternative monitoring and/or recordkeeping methods.**	**IN**
AF-000 (EO)	**TVOP No. 0800-00001, 5.B.30** **40 CFR 63, Subpart PPP (63.1439(h))**	**HAP (EO)**	**NA**	**Reduced recordkeeping program.**	**IN**
AF-000 (EO)	**TVOP No. 0800-00001, 5.C.4 (b) & (c)**	**HAP (EO)**	**NA**	**Reporting requirements.**	**IN**
AF-004(EO)	**TVOP No. 0800-00001, 3.B.9** **40 CFR 63, Subpart PPP (63.1425(b)(2)(ii))**	**HAP (EO)**	**NA**	**Aggregated 98% reduction of total epoxide emissions.**	**IN**
AF-004(EO)	**TVOP No. 0800-00001, 5.B.15-16 & 5.B.19** **40 CFR 63, Subpart PPP (63.1426(c), (e) & 1430(b)(2)(i))**	**HAP (EO)**	**NA**	**Organic HAP concentration and control efficiency and determining HAP emission reduction.**	**IN**
AF-004(EO)	**TVOP No. 0800-00001, 5.B.17, 5.B.18 & 5.B.20** **40 CFR 63, Subpart PPP (63.1429(a)(4), (d)(1-3) & 1430(c))**	**HAP (EO)**	**NA**	**Monitor scrubbing liquid flowrate and pH. Establish parameter monitoring levels for each.**	**IN**
AF-004(EO)	**TVOP No. 0800-00001, 5.B.21-23** **40 CFR 63, Subpart PPP (63.1430(d)(1), (2)(i-ii) & (5))**	**HAP (EO)**	**NA**	**Continuous records of applicable equipment parameters, including daily averages, breakdowns, repairs, calibration checks, zero and high level adjustments.**	**IN**
AF-004(EO)	**TVOP No. 0800-00001, 5.B.24** **40 CFR 63, Subpart PPP (63.1437(a)(1-4))**	**HAP (EO)**	**NA**	**Performance test requirements.**	**IN**
AF-005(EO)	**40 CFR 63, Subpart PPP (63.1423(b))**	**HAP (EO)**	**NA**	**The EO storage tank (AF-005) does not meet the definition of a storage vessel under Subpart PPP. AF-005 is a pressure vessel designed to operate in excess of 204.9 kilopascals and without emissions to the atmosphere.**	**IN**

Current Applicable Requirements and Status (page 5 of 5) SECTION N

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Pollutant	Test Method	Limits	Compliance Status IN / OUT
AG-005	**TVOP No. 0800-00001, 3.B.2 & 5.B.10** **APC-S-1, Section 3.6(a)**	**PM**	**NA**	$E = 4.1(p)^{0.67}$ **Monitor pressure drop across baghouse weekly.**	**IN**
AM-001	**TVOP No. 0800-00001, 3.B.5** **APC-S-1, Section 3.4(a)(2)**	**PM**	**EPA Ref. Method 1-5**	$E = 0.8808*I^{-0.1667}$**, not to exceed 22.5 lbs/hr and 98.6 TPY.**	**IN**
AM-002	**TVOP No. 0800-00001, 3.B.5** **APC-S-1, Section 3.4(a)(2)**	**PM**	**EPA Ref. Method 1-5**	$E = 0.8808*I^{-0.1667}$**, not to exceed 9.4 lbs/hr and 41.2 TPY.**	**IN**
AM-001 and AM-002	**TVOP No. 0800-00001, 3.B.4** **APC-S-1, Section 4.1(a)**	SO_2	**EPA Ref. Method 6**	**4.8 lbs/MMBTU**	**IN**
AM-001 and AM-002	**TVOP No. 0800-00001, 5.B.6 and 5.B.7**	**Fuel**	**NA**	**Record fuel type and quantity monthly and a fuel analysis semi-annually. If fuel oil is burned, also record the quality (sulfur content).**	**IN**
AM-001 and AM-002	**TVOP No. 0800-00001, 5.B.12**	**PM,** SO_2	**EPA Ref. Method 1-5 and 6**	**Biennial compliance monitoring requirements, if #6 Fuel Oil is burned for 5 consecutive days.**	**IN**

Future Applicable Requirements and Status

SECTION N

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Pollutant	Test Method	Limits	Compliance Status IN / OUT
AC-000	**40 CFR 63, Subpart FFFF – National Emission Standards for Hazardous Air Pollutants: Miscellaneous Chemical Manufacturing**	**HAPs**	**NA**	**≥ 98% HAP reduction, or ≤ 20 ppmv HAP or TOC concentration. Limits and requirements vary with operating conditions and process equipment.**	**Regulation proposed on 4/4/02. Compliance date is 3 years from promulgation.**
AM-001 and AM-002	**40 CFR 63, Subpart DDDDD – National Emission Standards for Hazardous Air Pollutants: Industrial, Commercial and Institutional Boilers and Process Heaters**	**HAPs**	**NA**	**Limits vary depending on fuel categories.**	**Regulation proposed on 1/13/03. Compliance date is 3 years from promulgation.**

COMPLIANCE CERTIFICATION SECTION O

1. Emission Point No./Name: **Process Areas AA-000, AB-000, AD-000, AF-000, AF-000(EO), AG-000, AH-000, AJ-000, and AN-000. Includes all permitted emission points associated with each process area.**

2. Indicate the source compliance status:

A. X Where this source(s) is currently in compliance, we will continue to operate and maintain this source to assure compliance for the duration of the permit.

B. ____ The Current Emissions Requirements and Status form (previous page) includes new requirements that apply or will apply to this source during the term of the permit. We will meet such requirements on a timely basis.

C. ____ This source is not in compliance. The following statement of corrective action is submitted to describe action, which we will take to achieve compliance.

1. ____ Attached is a brief description of the problem and the proposed solution.

2. ____ We will achieve compliance according to the following schedule.

Progress reports will be submitted: NA
Starting date: ____________ and every six (6) months thereafter

Problem	Action	Deadline

COMPLIANCE CERTIFICATION SECTION O

1. Emission Point No./Name: **AC-000, Poly-Pale Process Area**

2. Indicate the source compliance status:

A. **X** Where this source(s) is currently in compliance, we will continue to operate and maintain this source to assure compliance for the duration of the permit.

B. **X** The Current Emissions Requirements and Status form (previous page) includes new requirements that apply or will apply to this source during the term of the permit. We will meet such requirements on a timely basis.

C. ____ This source is not in compliance. The following statement of corrective action is submitted to describe action, which we will take to achieve compliance.

1. ____ Attached is a brief description of the problem and the proposed solution.

2. ____ We will achieve compliance according to the following schedule.

Progress reports will be submitted: NA
Starting date: ____________ and every six (6) months thereafter

Problem	Action	Deadline

COMPLIANCE CERTIFICATION SECTION O

1. Emission Point No./Name: **AM-001 and AM-002, Process Boilers**

2. Indicate the source compliance status:

   A. **X** Where this source(s) is currently in compliance, we will continue to operate and maintain this source to assure compliance for the duration of the permit.

   B. **X** The Current Emissions Requirements and Status form (previous page) includes new requirements that apply or will apply to this source during the term of the permit. We will meet such requirements on a timely basis.

   C. ______ This source is not in compliance. The following statement of corrective action is submitted to describe action, which we will take to achieve compliance.

      1. ______ Attached is a brief description of the problem and the proposed solution.

      2. ______ We will achieve compliance according to the following schedule.

Progress reports will be submitted: NA
Starting date: ____________________ and every six (6) months thereafter

Problem	Action	Deadline

APPENDIX B
EMISSION CALCULATIONS

FUEL BURNING EQUIPMENT

HERCULES, INCORPORATED
HATTIESBURG, MISSISSIPPI
SUMMARY OF POTENTIAL UNCONTROLLED AND REGULATORY ALLOWABLE EMISSIONS FROM FUEL BURNING EQUIPMENT

Emission Point		Pollutant	Potential Uncontrolled and Regulatory Allowable Emissions															
			APC-S-1			AP-42									Highest Factor		MOST STRINGENT**	
			Applicable Standard	lb/hr	tons/yr	Natural Gas	lb/hr	tons/yr	Fuel Oil #2	lb/hr	tons/yr	Fuel Oil #6	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
POWERHOUSE AREA																		
AM-001																		
Rated Capacity	156 MMBtu/hr	PM/PM_{10}	0.3796 lb/MMBtu	59.22	259.37	7.6 lb/MMft^3	1.16	5.09	2 lb/10^{3}gal	2.21	9.69	21.6 lb/10^{3}gal	22.46	98.39	22.46	98.39	22.46	98.39
Natural Gas Fired	152941 ft^3/hr of Nat. gas	SO_2	4.8 lb/MMBtu	748.80	3279.74	0.6 lb/MMft^3	0.09	0.40	78.5 lb/10^{3}gal	86.82	380.28	314 lb/10^{3}gal	326.56	1430.33	326.56	1430.33	326.56	1430.33
Fuel Oil #2 Fired	1106 gal/hr of Fuel oil #2	NO_X				280 lb/MMft^3	42.82	187.57	24 lb/10^{3}gal	26.54	116.26	47 lb/10^{3}gal	48.88	214.09	48.88	214.09	48.88	214.09
Sulfur Content	0.5 %	CO				84 lb/MMft^3	12.85	56.27	5 lb/10^{3}gal	5.53	24.22	5 lb/10^{3}gal	5.20	22.78	12.85	56.27	12.85	56.27
Fuel Oil #6 Fired	1040 gal/hr of Fuel oil #6	VOC				5.5 lb/MMft^3	0.84	3.68	0.2 lb/10^{3}gal	0.22	0.97	0.28 lb/10^{3}gal	0.29	1.28	0.84	3.68	0.84	3.68
Sulfur Content	2 %	Chloride							0.35 lb/10^{3}gal	0.38	1.68	0.347 lb/10^{3}gal	0.36	1.58	0.38	1.68	0.38	1.68
		Nickel							0.08 lb/10^{3}gal	0.09	0.41	0.085 lb/10^{3}gal	0.09	0.38	0.09	0.41	0.09	0.41
		Formaldehyde				0.075 lb/MMft^3	0.01	0.05							0.01	0.05	0.01	0.05
		Hexane				1.8 lb/MMft^3	0.28	1.21							0.28	1.21	0.28	1.21
AM-002																		
Rated Capacity	65 MMBtu/hr	PM/PM_{10}	0.3796 lb/MMBtu	24.67	108.07	7.6 lb/MMft^3	0.48	2.12	2 lb/10^{3}gal	0.92	4.04	10 lb/10^{3}gal	4.33	18.97	4.33	18.97	4.33	18.97
Natural Gas Fired	63725 ft^3/hr of Nat. gas	SO_2	4.8 lb/MMBtu	312.00	1366.56	0.6 lb/MMft^3	0.04	0.17	71 lb/10^{3}gal	32.73	143.36	314 lb/10^{3}gal	135.96	595.51	135.96	595.51	135.96	595.51
Fuel Oil #2 Fired	461 gal/hr of Fuel oil #2	NO_X				100 lb/MMft^3	6.37	27.91	20 lb/10^{3}gal	9.22	40.38	55 lb/10^{3}gal	23.82	104.31	23.82	104.31	23.82	104.31
Sulfur Content	0.5 %	CO				84 lb/MMft^3	5.35	23.45	5 lb/10^{3}gal	2.31	10.10	5 lb/10^{3}gal	2.17	9.48	5.35	23.45	5.35	23.45
Fuel Oil #6 Fired	433 gal/hr of Fuel oil #6	VOC				5.5 lb/MMft^3	0.35	1.54	0.2 lb/10^{3}gal	0.09	0.40	0.28 lb/10^{3}gal	0.12	0.53	0.35	1.54	0.35	1.54
Sulfur Content	2 %	Chloride							0.35 lb/10^{3}gal	0.16	0.70	0.347 lb/10^{3}gal	0.15	0.66	0.16	0.70	0.16	0.70
		Nickel							0.08 lb/10^{3}gal	0.04	0.17	0.085 lb/10^{3}gal	0.04	0.16	0.04	0.17	0.04	0.17
		Formaldehyde				0.075 lb/MMft^3	0.00	0.02							0.00	0.02	0.00	0.02
		Hexane				1.8 lb/MMft^3	0.11	0.50							0.11	0.50	0.11	0.50
INSIGNIFICANT ACTIVITIES																		
POLY-PALE PROCESS AREA																		
Heat Transfer Fluid Boiler (formerly AC-001)																		
Rated Capacity	3.2 MMBtu/hr	PM/PM_{10}	0.6 lb/MMBtu	1.92	8.41	7.6 lb/MMft^3	0.02	0.11	2 lb/10^{3}gal	0.05	0.20				0.05	0.20	0.05	0.20
Natural Gas Fired	3200 ft^3/hr of Nat. gas	SO_2	4.8 lb/MMBtu	15.36	67.28	0.6 lb/MMft^3	0.00	0.01	71 lb/10^{3}gal	1.63	7.15				1.63	7.15	1.63	7.15
Fuel Oil #2 Fired	23 gal/hr of Fuel oil #2	NO_X				100 lb/MMft^3	0.32	1.40	20 lb/10^{3}gal	0.46	2.01				0.46	2.01	0.46	2.01
Sulfur Content	0.5 %	CO				84 lb/MMft^3	0.27	1.18	5 lb/10^{3}gal	0.12	0.50				0.27	1.18	0.27	1.18
		VOC				5.5 lb/MMft^3	0.02	0.08	0.2 lb/10^{3}gal	0.00	0.02				0.02	0.08	0.02	0.08
HARD RESINS PROCESS AREA																		
Heat Transfer Fluid Boiler (formerly AG-001)																		
Rated Capacity	8.3 MMBtu/hr	PM/PM_{10}	0.6 lb/MMBtu	4.98	21.81	7.6 lb/MMft^3	0.06	0.28							0.06	0.28	0.06	0.28
Natural Gas Fired Only	8300 ft^3/hr of Nat. gas	SO_2	4.8 lb/MMBtu	39.84	174.50	0.6 lb/MMft^3	0.00	0.02							0.00	0.02	0.00	0.02
		NO_X				100 lb/MMft^3	0.83	3.64							0.83	3.84	0.83	3.64
		CO				84 lb/MMft^3	0.70	3.05							0.70	3.05	0.70	3.05
		VOC				5.5 lb/MMft^3	0.05	0.20							0.05	0.20	0.05	0.20

HERCULES, INCORPORATED
HATTIESBURG, MISSISSIPPI
SUMMARY OF POTENTIAL UNCONTROLLED AND REGULATORY ALLOWABLE EMISSIONS FROM FUEL BURNING EQUIPMENT

Emission Point		Pollutant	Potential Uncontrolled and Regulatory Allowable Emissions															
			APC-S-1			AP-42									Highest Factor		MOST STRINGENT**	
			Applicable Standard	lb/hr	tons/yr	Natural Gas	lb/hr	tons/yr	Fuel Oil #2	lb/hr	tons/yr	Fuel Oil #6	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
Heat Transfer Fluid Boiler (formerly AG-002)																		
Rated Capacity	3.3 MMBtu/hr	PM/PM_{10}	0.6 lb/MMBtu	1.98	8.67	7.6 $lb/MMft^3$	0.03	0.11							0.03	0.11	0.03	0.11
Natural Gas Fired Only	3300 ft^3/hr of Nat. gas	SO_2	4.8 lb/MMBtu	15.84	69.38	0.6 $lb/MMft^3$	0.00	0.01							0.00	0.01	0.00	0.01
		NO_x				100 $lb/MMft^3$	0.33	1.45							0.33	1.45	0.33	1.45
		CO				84 $lb/MMft^3$	0.28	1.21							0.28	1.21	0.28	1.21
		VOC				5.5 $lb/MMft^3$	0.02	0.08							0.02	0.08	0.02	0.08
RAD PROCESS AREA																		
Heat Transfer Fluid Boiler (formerly AF-001)																		
Rated Capacity	8.3 MMBtu/hr	PM/PM_{10}	0.6 lb/MMBtu	4.98	21.81	7.6 $lb/MMft^3$	0.06	0.28							0.06	0.28	0.06	0.28
Natural Gas Fired Only	8300 ft^3/hr of Nat. gas	SO_2	4.8 lb/MMBtu	39.84	174.50	0.6 $lb/MMft^3$	0.00	0.02							0.00	0.02	0.00	0.02
		NO_x				100 $lb/MMft^3$	0.83	3.64							0.83	3.64	0.83	3.64
		CO				84 $lb/MMft^3$	0.70	3.05							0.70	3.05	0.70	3.05
		VOC				5.5 $lb/MMft^3$	0.05	0.20							0.05	0.20	0.05	0.20
ROSIN DISTILLATION PROCESS AREA																		
Heat Transfer Fluid Boiler (formerly AJ-001)																		
Rated Capacity	3.3 MMBtu/hr	PM/PM_{10}	0.6 lb/MMBtu	1.98	8.67	7.6 $lb/MMft^3$	0.03	0.11							0.03	0.11	0.03	0.11
Natural Gas Fired Only	3300 ft^3/hr of Nat. gas	SO_2	4.8 lb/MMBtu	15.84	69.38	0.6 $lb/MMft^3$	0.00	0.01							0.00	0.01	0.00	0.01
		NO_x				100 $lb/MMft^3$	0.33	1.45							0.33	1.45	0.33	1.45
		CO				84 $lb/MMft^3$	0.28	1.21							0.28	1.21	0.28	1.21
		VOC				5.5 $lb/MMft^3$	0.02	0.08							0.02	0.08	0.02	0.08
Catalyst Regeneration Unit																		
Rated Capacity	2.2 MMBtu/hr	PM/PM_{10}	0.6 lb/MMBtu	1.32	5.78	7.6 $lb/MMft^3$	0.02	0.07							0.02	0.07	0.02	0.07
Natural Gas Fired Only	2200 ft^3/hr of Nat. gas	SO_2	4.8 lb/MMBtu	10.56	46.25	0.6 $lb/MMft^3$	0.00	0.01							0.00	0.01	0.00	0.01
		NO_x				100 $lb/MMft^3$	0.22	0.96							0.22	0.96	0.22	0.96
		CO				84 $lb/MMft^3$	0.18	0.81							0.18	0.81	0.18	0.81
		VOC				5.5 $lb/MMft^3$	0.01	0.05							0.01	0.05	0.01	0.05

POTENTIAL/ALLOWABLE FUEL BURNING EMISSIONS	
POLLUTANT	TONS/YEAR
PM/PM_{10}	118.40
SO_2	2033.07
NO_x	331.54
CO	90.24
VOC	5.91
HAPs*	2.36

* Contains only HAPs with an emission rate greater than 0.1 lbs/hr.

** Most stringent of Allowable Emissions vs. Potential Uncontrolled Emissions.

HERCULES, INCORPORATED
HATTIESBURG, MISSISSIPPI
SUMMARY OF ACTUAL EMISSIONS FROM FUEL BURNING EQUIPMENT

Emission Point		Pollutant	AP-42									Highest Factor		MOST STRINGENT	
			Natural Gas	lb/yr	tons/yr	Fuel Oil #2	lb/yr	tons/yr	Fuel Oil #6	lb/yr	tons/yr	lb/yr	tons/yr	lb/yr	tons/yr
POWERHOUSE AREA															
AM-001															
Rated Capacity	156.0 MMBtu/hr	PM/PM_{10}	7.6 lb/MMft^3	3007.52	1.50	2 lb/10^{3}gal	0.00	0.00	21.6 lb/10^{3}gal	0.00	0.00	3007.52	1.50	3007.52	1.50
Natural Gas Fired	395,726,000.0 ft^3/yr of Nat. gas	SO_2	0.6 lb/MMft^3	237.44	0.12	78.5 lb/10^{3}gal	0.00	0.00	314 lb/10^{3}gal	0.00	0.00	237.44	0.12	237.44	0.12
Fuel Oil #2 Fired	0.0 gal/yr of Fuel oil #2	NO_x	280 lb/MMft^3	110803.28	55.40	24 lb/10^{3}gal	0.00	0.00	47 lb/10^{3}gal	0.00	0.00	110803.28	55.40	110803.28	55.40
Sulfur Content	0.5 %	CO	84 lb/MMft^3	33240.98	16.62	5 lb/10^{3}gal	0.00	0.00	5 lb/10^{3}gal	0.00	0.00	33240.98	16.62	33240.98	16.62
Fuel Oil #6 Fired	0.0 gal/yr of Fuel oil #6	VOC	5.5 lb/MMft^3	2176.49	1.09	0.2 lb/10^{3}gal	0.00	0.00	0.28 lb/10^{3}gal	0.00	0.00	2176.49	1.09	2176.49	1.09
Sulfur Content	2.0 %	Hexane	1.8 lb/MMft^3	712.31	0.36									712.31	0.36
AM-002															
Rated Capacity	65.0 MMBtu/hr	PM/PM_{10}	7.6 lb/MMft^3	275.21	0.14	2 lb/10^{3}gal	0.00	0.00	10 lb/10^{3}gal	0.00	0.00	275.21	0.14	275.21	0.14
Natural Gas Fired	36,212,000.0 ft^3/yr of Nat. gas	SO_2	0.6 lb/MMft^3	21.73	0.01	71 lb/10^{3}gal	0.00	0.00	314 lb/10^{3}gal	0.00	0.00	21.73	0.01	21.73	0.01
Fuel Oil #2 Fired	0.0 gal/yr of Fuel oil #2	NO_x	100 lb/MMft^3	3621.20	1.81	20 lb/10^{3}gal	0.00	0.00	55 lb/10^{3}gal	0.00	0.00	3621.20	1.81	3621.20	1.81
Sulfur Content	0.5 %	CO	84 lb/MMft^3	3041.81	1.52	5 lb/10^{3}gal	0.00	0.00	5 lb/10^{3}gal	0.00	0.00	3041.81	1.52	3041.81	1.52
Fuel Oil #6 Fired	0.0 gal/yr of Fuel oil #6	VOC	5.5 lb/MMft^3	199.17	0.10	0.2 lb/10^{3}gal	0.00	0.00	0.28 lb/10^{3}gal	0.00	0.00	199.17	0.10	199.17	0.10
Sulfur Content	2.0 %	Hexane	1.8 lb/MMft^3	65.18	0.03									65.18	0.03
INSIGNIFICANT ACTIVITIES															
POLY-PALE PROCESS AREA															
Heat Transfer Fluid Boiler (formerly AC-001)															
Rated Capacity	3.2 MMBtu/hr	PM/PM_{10}	7.6 lb/MMft^3	95.27	0.05	2 lb/10^{3}gal	0.00	0.00				95.27	0.05	95.27	0.05
Natural Gas Fired	12,535,000.0 ft^3/yr of Nat. gas	SO_2	0.6 lb/MMft^3	7.52	0.00	71 lb/10^{3}gal	0.00	0.00				7.52	0.00	7.52	0.00
Fuel Oil #2 Fired	0.0 gal/yr of Fuel oil #2	NO_x	100 lb/MMft^3	1253.50	0.63	20 lb/10^{3}gal	0.00	0.00				1253.50	0.63	1253.50	0.63
Sulfur Content	0.5 %	CO	84 lb/MMft^3	1052.94	0.53	5 lb/10^{3}gal	0.00	0.00				1052.94	0.53	1052.94	0.53
		VOC	5.5 lb/MMft^3	68.94	0.03	0.2 lb/10^{3}gal	0.00	0.00				68.94	0.03	68.94	0.03
HARD RESINS PROCESS AREA															
Heat Transfer Fluid Boiler (formerly AG-001)															
Rated Capacity	8.3 MMBtu/hr	PM/PM_{10}	7.6 lb/MMft^3	102.48	0.05							102.48	0.05	102.48	0.05
Natural Gas Fired Only	13,484,000.0 ft^3/yr of Nat. gas	SO_2	0.6 lb/MMft^3	8.09	0.00							8.09	0.00	8.09	0.00
		NO_x	100 lb/MMft^3	1348.40	0.67							1348.40	0.67	1348.40	0.67
		CO	84 lb/MMft^3	1132.66	0.57							1132.66	0.57	1132.66	0.57
		VOC	5.5 lb/MMft^3	74.16	0.04							74.16	0.04	74.16	0.04
Heat Transfer Fluid Boiler (formerly AG-002)															
Rated Capacity	3.3 MMBtu/hr	PM/PM_{10}	7.6 lb/MMft^3	0.00	0.00							0.00	0.00	0.00	0.00
Natural Gas Fired Only	0.0 ft^3/yr of Nat. gas	SO_2	0.6 lb/MMft^3	0.00	0.00							0.00	0.00	0.00	0.00
		NO_x	100 lb/MMft^3	0.00	0.00							0.00	0.00	0.00	0.00
		CO	84 lb/MMft^3	0.00	0.00							0.00	0.00	0.00	0.00
		VOC	5.5 lb/MMft^3	0.00	0.00							0.00	0.00	0.00	0.00

HERCULES, INCORPORATED
HATTIESBURG, MISSISSIPPI
SUMMARY OF ACTUAL EMISSIONS FROM FUEL BURNING EQUIPMENT

Emission Point		Pollutant	AP-42									Highest Factor		MOST STRINGENT	
			Natural Gas	lb/yr	tons/yr	Fuel Oil #2	lb/yr	tons/yr	Fuel Oil #6	lb/yr	tons/yr	lb/yr	tons/yr	lb/yr	tons/yr
RAD PROCESS AREA															
Heat Transfer Fluid Boiler (formerly AF-001)															
Rated Capacity	8.3 MMBtu/hr	PM/PM_{10}	7.6 $lb/MMft^3$	37.54	0.02							37.54	0.02	37.54	0.02
Natural Gas Fired Only	4,940,000.0 ft^3/yr of Nat. gas	SO_2	0.6 $lb/MMft^3$	2.96	0.00							2.96	0.00	2.96	0.00
		NO_X	100 $lb/MMft^3$	494.00	0.25							494.00	0.25	494.00	0.25
		CO	84 $lb/MMft^3$	414.96	0.21							414.96	0.21	414.96	0.21
		VOC	5.5 $lb/MMft^3$	27.17	0.01							27.17	0.01	27.17	0.01
ROSIN DISTILLATION PROCESS AREA															
Heat Transfer Fluid Boiler (formerly AJ-001)															
Rated Capacity	3.3 MMBtu/hr	PM/PM_{10}	7.6 $lb/MMft^3$	21.97	0.01							21.97	0.01	21.97	0.01
Natural Gas Fired Only	2,891,000.0 ft^3/yr of Nat. gas	SO_2	0.6 $lb/MMft^3$	1.73	0.00							1.73	0.00	1.73	0.00
		NO_X	100 $lb/MMft^3$	289.10	0.14							289.10	0.14	289.10	0.14
		CO	84 $lb/MMft^3$	242.84	0.12							242.84	0.12	242.84	0.12
		VOC	5.5 $lb/MMft^3$	15.90	0.01							15.90	0.01	15.90	0.01
Catalyst Regeneration Unit *															
Rated Capacity	2.2 MMBtu/hr	PM/PM_{10}	7.6 $lb/MMft^3$	0.00	0.00							0.00	0.00	0.00	0.00
Natural Gas Fired Only	0.0 ft^3/yr of Nat. gas	SO_2	0.6 $lb/MMft^3$	0.00	0.00							0.00	0.00	0.00	0.00
		NO_X	100 $lb/MMft^3$	0.00	0.00							0.00	0.00	0.00	0.00
		CO	84 $lb/MMft^3$	0.00	0.00							0.00	0.00	0.00	0.00
		VOC	5.5 $lb/MMft^3$	0.00	0.00							0.00	0.00	0.00	0.00

*** Usage is accounted for in through the Rosin Distillation (AJ-001) gas flow meter.**

ACTUAL FUEL BURNING EMISSIONS	
POLLUTANT	TONS/YEAR
PM/PM_{10}	1.77
SO_2	0.14
NO_X	58.90
CO	19.56
VOC	1.28

MANUFACTURING PROCESSES

HERCULES, INCORPORATED

HATTIESBURG, MISSISSIPPI

SUMMARY OF POTENTIAL UNCONTROLLED AND REGULATORY ALLOWABLE EMISSIONS FROM MANUFACTURING PROCESSES

Emission Point/Process Area	Pollutant	Potential Uncontrolled/Allowable Emissions								
		Capacity	Emission Factor (3)	Point Source Emissions		Stack Test Data	Point Source Emissions		Fugitive Emissions	Emissions
		tons/hr	lb/ton	lb/hr	lb/yr	lb/hr (1)	lb/hr	lb/yr (2)	lb/yr (2)	tons/yr
KYMENE PROCESS AREA										
AA-000 Kymene Process Area	Epichlorohydrin (Fugitive)								2998.46	1.50
AA-001 Kettle Vent Water Scrubber	Epichlorohydrin and VOC (2)							22238.00		11.12
AA-002 Adipic Acid Baghouse	Particulate Matter (PM/PM_{10})	1.15	0.1	11.50	100740.00	0.212	21.20	185712.00		92.86
PARACOL/AKD PROCESS AREA										
AB-001 Water Scrubber	Particulate Matter (PM/PM_{10})	0.875	3.0	2.63	22995.00					11.50
POLY-PALE PROCESS AREA										
AC-000 Poly-Pale Process Area	Toluene (LDAR Fugitives)								80122.46	40.06
	Toluene (Other (2) Fugitives)								562228.60	281.11
AC-002 West Poly-Pale Scrubber #1	VOC					0.440	4.40	38544.00		19.27
	Toluene					0.171	1.71	14979.60		7.49
	Sulfur Dioxide (SO_2)					0.003	0.03	271.56		0.14
	Acid Mist (H_2SO_4)					0.000	0.00	8.76		0.00
AC-003 East Poly-Pale Scrubber #2	VOC					0.110	1.10	9636.00		4.82
	Toluene					0.013	0.13	1138.80		0.57
	Sulfur Dioxide (SO_2)					0.013	0.13	1138.80		0.57
	Acid Mist (H_2SO_4)					0.002	0.02	210.24		0.11
AC-004 Poly-Pale Melter	Particulate Matter (PM/PM_{10})								25039.00	12.52
	VOC (Fugitive)								3139.00	1.57
NEUPHOR PROCESS AREA										
AD-001 Adduct Reactor w/ carbon absorption system	VOC (4)							274.00		0.14
RAD PROCESS AREA										
AF-000 Rosin Amine Derivatives Process Area	Ethylene Oxide (LDAR Fugitives)								17364.51	8.68
AF-004 Water Scrubber with Sulfuric Acid	Ethylene Oxide (5)							1590.20		0.80

HERCULES, INCORPORATED
HATTIESBURG, MISSISSIPPI
SUMMARY OF POTENTIAL UNCONTROLLED AND REGULATORY ALLOWABLE EMISSIONS FROM MANUFACTURING PROCESSES

Emission Point/Process Area	Pollutant	Potential Uncontrolled/Allowable Emissions								
		Capacity	Emission Factor (3)	Point Source Emissions		Stack Test Data	Point Source Emissions		Fugitive Emissions	Emissions
		tons/hr	lb/ton	lb/hr	lb/yr	lb/hr (1)	lb/hr	lb/yr (2)	lb/yr (2)	tons/yr
HARD RESINS PROCESS AREA										
AG-003 Water Scrubber	VOC					17.820	44.55	390258.00		195.13
AG-005 Buell Norblo Dust Collector	Particulate Matter (PM/PM_{10})	3.5	3.0	10.50	91980.00	0.722	7.22	63247.20		31.62
ROSIN SHED PROCESS AREA										
AH-000 Rosin Shed Process Area (6)	VOC									
ROSIN DISTILLATION PROCESS AREA										
AJ-000 Rosin Distillation Process Area (6)	VOC									
EFFLUENT TREATMENT AREA										
AN-000 Effluent Treatment Area	Toluene (Fugitive)								25726.00	12.86
	Epichlorohydrin (Fugitive)								0.00	0.00
PAPER AREA AND RESIN AREA TANKS	VOC								9580.00	4.79
TOTAL EMISSIONS	**PM/PM_{10}**									**148.50**
	SO_2									**0.71**
	Acid Mist (H_2SO_4)									**0.11**
	VOC									**581.85**
	Epichlorohydrin									**12.62**
	Toluene									**342.10**
	Ethylene Oxide									**9.48**

(1) Data taken from the attached 1988 and 2001 stack test data.

(2) Data taken from the attached 2002 mass balance sheets developed by C. Jordan and attached in Appendix C or the Summary of Fugitive Emissions calculation spreadsheets.

(3) AA-002, used AP-42, Section 6.2 emission factor. The emission factor 0.1 lb/ton takes into account controls (assume 99% baghouse efficiency).
AB-001 and AG-005, used AP-42, Section 11.13 emission factor. Based on similar operation with a unit melter - glass fiber manufacturing.

(4) Based on January 22, 2001, submittal to MDEQ.

(5) Data taken from the attached 2002 mass balance sheets developed by C. Jordan and attached in Appendix. Emissions include capacity calculations and regulatory allowable efficiency of 98%.

(6) No stack emissions associated with the process.

HERCULES, INCORPORATED
HATTIESBURG, MISSISSIPPI
SUMMARY OF ACTUAL EMISSIONS FROM MANUFACTURING PROCESSES

Emission Point/Process Area	Pollutant	Potential Uncontrolled/Allowable Emissions								
		Capacity	Emission Factor (3)	Point Source Emissions		Stack Test Data	Point Source Emissions		Fugitive Emissions	Emissions
		tons/hr	lb/ton	lb/hr	lb/yr	lb/hr (1)	lb/hr	lb/yr (2)	lb/yr (2)	tons/yr
KYMENE PROCESS AREA										
AA-000 Kymene Process Area	Epichlorohydrin (Fugitive)								2998.46	1.50
AA-001 Kettle Vent Water Scrubber	Epichlorohydrin and VOC (2)							828.00		0.41
AA-002 Adipic Acid Baghouse	Particulate Matter (PM/PM_{10})	1.15	0.1	11.50	100740.00	0.212	0.212	1857.12		0.93
PARACOL/AKD PROCESS AREA										
AB-001 Water Scrubber	Particulate Matter (PM/PM_{10})	0.875	3.0	0.66	5748.75					2.87
POLY-PALE PROCESS AREA										
AC-000 Poly-Pale Process Area	Toluene (LDAR Fugitives)								80122.46	40.06
	Toluene (Other (2) Fugitives)								247653.92	123.83
AC-002 West Poly-Pale Scrubber #1	VOC					0.440	0.44	3854.40		1.93
	Toluene					0.171	0.17	1489.20		0.74
	Sulfur Dioxide (SO_2)					0.003	0.003	27.16		0.01
	Acid Mist (H_2SO_4)					0.000	0.000	0.88		0.00
AC-003 East Poly-Pale Scrubber #2	VOC					0.110	0.11	963.60		0.48
	Toluene					0.013	0.01	113.88		0.06
	Sulfur Dioxide (SO_2)					0.013	0.013	113.88		0.06
	Acid Mist (H_2SO_4)					0.002	0.002	21.02		0.01
AC-004 Poly-Pale Melter	Particulate Matter (PM/PM_{10})								7889.00	3.94
	VOC (Fugitive)								989.00	0.49
NEUPHOR PROCESS AREA										
AD-001 Adduct Reactor w/ carbon absorption system	VOC (4)							274.00		0.14
RAD PROCESS AREA										
AF-000 Rosin Amine Derivatives Process Area	Ethylene Oxide (LDAR Fugitives)								1127.00	0.56
AF-004 Water Scrubber with Sulfuric Acid	Ethylene Oxide (5)							62.44		0.03

HERCULES, INCORPORATED
HATTIESBURG, MISSISSIPPI
SUMMARY OF ACTUAL EMISSIONS FROM MANUFACTURING PROCESSES

Emission Point/Process Area	Pollutant	Potential Uncontrolled/Allowable Emissions								
		Capacity	Emission Factor (3)	Point Source Emissions		Stack Test Data	Point Source Emissions		Fugitive Emissions	Emissions
		tons/hr	lb/ton	lb/hr	lb/yr	lb/hr (1)	lb/hr	lb/yr (2)	lb/yr (2)	tons/yr
HARD RESINS PROCESS AREA										
AG-003 Water Scrubber	VOC					17.820	17.82	156103.20		78.05
AG-005 Buell Norblo Dust Collector	Particulate Matter (PM/PM_{10})	3.5	3.0	10.50	91980.00	0.722	0.72	6324.72		3.16
ROSIN SHED PROCESS AREA										
AH-000 Rosin Shed Process Area (6)	VOC									
ROSIN DISTILLATION PROCESS AREA										
AJ-000 Rosin Distillation Process Area (6)	VOC									
EFFLUENT TREATMENT AREA										
AN-000 Effluent Treatment Area	Toluene (Fugitive)								4660.00	2.33
	Epichlorohydrin (Fugitive)								0.00	0.00
PAPER AREA AND RESIN AREA TANKS	VOC								3160.00	1.58
TOTAL EMISSIONS	**PM/PM_{10}**									**10.91**
	SO_2									**0.07**
	Acid Mist (H_2SO_4)									**0.01**
	VOC									**251.40**
	Epichlorohydrin									**1.91**
	Toluene									**167.02**
	Ethylene Oxide									**0.59**

(1) Data taken from the attached 1988 and 2001 stack test data.

(2) Data taken from the attached 2002 mass balance sheets developed by C. Jordan and attached in Appendix C or the Summary of Fugitive Emissions calculation spreadsheets.

(3) AA-002, used AP-42, Section 6.2 emission factor. The emission factor 0.1 lb/ton takes into account controls (assume 99% baghouse efficiency).
AB-001 and AG-005, used AP-42, Section 11.13 emission factor. Based on similar operation with a unit melter - glass fiber manufacturing.

(4) Based on January 22, 2001, submittal to MDEQ.

(5) Data taken from the attached 2002 mass balance sheets developed by C. Jordan and attached in Appendix. Emissions include capacity calculations and regulatory allowable efficiency of 98%.

(6) No stack emissions associated with the process.

FUGITIVE EMISSIONS

HERCULES, INCORPORATED
HATTIESBURG, MISSISSIPPI
SUMMARY OF POTENTIAL UNCONTROLLED FUGITIVE EMISSIONS FROM MANUFACTURING PROCESSES

Emission Point/Process Area	Pollutant	Equipment Type	No. of Equipment	SOCMI Emission Factor (lb/hr)		Emissions	
				Non-Leaking	Average	lb/hr	tons/yr
AA-000 Kymene Process Area	Epichlorohydrin and VOC (Fugitive)	Pumps (3) and Agitator (1)	4.00	0.03		0.10	0.46
		Valves (liquid service)	49.00	0.00		0.19	0.82
		Valves (vapor service)	8.00	0.00		0.01	0.04
		Connectors	333.00	0.00		0.04	0.19
							1.50
AC-000 Poly-Pale Process Area	Toluene and VOC (Fugitive)	Pumps (17) and Agitator (8)	25.00		0.11	2.75	12.05
		Valves (total)	111.00		0.02	1.78	7.78
		Connectors	1,928.00		0.00	3.47	15.20
		Magnitrols	5.00		0.23	1.15	5.04
							40.06
AF-000 RAD Process Area	Ethylene Oxide and VOC (Fugitive)	Pumps	3.00	0.03		0.08	0.34
		Valves (liquid service)	73.00	0.00		0.28	1.22
		Valves (vapor service)	21.00	0.00		0.02	0.10
		Connectors	275.00	0.00		0.04	0.16
		Relief Valves	16.00	0.10		1.57	6.87
							8.68
Emission Point/Process Area	**Pollutant**	**Equipment Type/Process**	**Amount (lbs)**	**Emission Factor**		**Emissions**	
						lbs/yr	tons/yr
Facility-Wide	Lead (Fugitive)*	Lead Welding	115.00	1.50	lb/ton	0.09	0.00
		Tyvex Suits	295.00	344.00	ppm	0.10	0.00
* Based on best available information and engineering estimates.		Sandblasting	1,000.00	1,142.00	ppm	1.14	0.00
							0.00
AN-000 Effluent Treatment Area	Toluene and VOC (Fugitive)					25,726.00	**12.86**
	Epichlorohydrin (Fugitive)					0.00	**0.00**
AC-004 Pol-Pale Melter (1)	Particulate Matter (PM/PM10)	Loading Melter/Melting	5,000.00	1.00	lb/ton	25,039.00	**12.52**
	VOC (Fugitive) (2)	Melting	3,139.00			3,139.00	**1.57**

(1) AC-004, used AP-42, Section 11.21 emission factor. Based on similar operation loading material - phosphate rock processing. PM emissions also include PM entrained with VOC emissions; therefore, it is assumed that each pound of VOC emissions calculated will also equal a pound of PM.

(2) Data taken from the attached 2002 mass balance sheets developed by C. Jordan and attached in Appendix C.

HERCULES, INCORPORATED
HATTIESBURG, MISSISSIPPI
SUMMARY OF ACTUAL FUGITIVE EMISSIONS FROM MANUFACTURING PROCESSES

Emission Point/Process Area	Pollutant	Equipment Type	No. of Equipment	SOCMI Emission Factor (lb/hr)		Days Operated	Emissions	
				Non-Leaking	Average		lb/hr	tons/yr
AA-000 Kymene Process Area	Epichlorohydrin and VOC (Fugitive)	Pumps (3) and Agitator (1)	4	0.02600		365	0.10	0.46
		Valves (liquid service)	49	0.00380			0.19	0.82
		Valves (vapor service)	8	0.00110			0.01	0.04
		Connectors	333	0.00013			0.04	0.19
								1.50
AC-000 Poly-Pale Process Area	Toluene and VOC (Fugitive)	Pumps (17) and Agitator (8)	25		0.11000	115	2.75	3.80
		Valves (total)	111		0.01600		1.78	2.45
		Connectors	1928		0.00180		3.47	4.79
		Magnitrols	5		0.23000		1.15	1.59
								12.62
AF-000 RAD Process Area	Ethylene Oxide and VOC (Fugitive)	Pumps	3	0.02600		28	0.08	0.03
		Valves (liquid service)	73	0.00380			0.28	0.09
		Valves (vapor service)	21	0.00110			0.02	0.01
		Connectors	275	0.00013			0.04	0.01
		Relief Valves	16	0.09800			1.57	0.53
								0.67
Emission Point/Process Area	**Pollutant**	**Equipment Type/Process**	**Amount (lbs)**	**Emission Factor**			**Emissions**	
							lbs/yr	tons/yr
Facility-Wide	Lead (Fugitive)*	Lead Welding	115	1.50	lb/ton		0.09	0.00
		Tyvex Suits	295	344.00	ppm		0.10	0.00
* Based on best available information and engineering estimates.		Sandblasting	1000	1142.00	ppm		1.14	0.00
								0.00
AN-000 Effluent Treatment Area	Toluene and VOC (Fugitive)						4660.00	**2.33**
	Epichlorohydrin (Fugitive)						0.00	**0.00**
AC-004 Pol-Pale Melter (1)	Particulate Matter (PM/PM_{10})	Loading Melter/Melting	5000	1.00	lb/ton	115.00	7889.00	**3.94**
	VOC (Fugitive) (2)	Melting	3139				989.00	**0.49**

(1) AC-004, used AP-42, Section 11.21 emission factor. Based on similar operation loading material - phosphate rock processing. PM emissions also include PM entrained with VOC emissions; therefore, it is assumed that each pound of VOC emissions calculated will also equal a pound of PM.

(2) Data taken from the attached 2002 mass balance sheets developed by C. Jordan and attached in Appendix C.

APPENDIX C
SUPPORTING DATA

STACK TESTING RESULTS

AIR EMISSIONS TESTS

HERCULES, INC

EAST AND WEST POLY-PALE SCRUBBER.

FACILITY NO. 0800-00001

Hattiesburg, Mississippi
July 2 and 3, 2001

Hercules, Inc.
613 West 7th Street
Hattiesburg, MS 39401-2812

Performed by:

ENVIRONMENTAL MONITORING LABORATORIES, INC.

624 Ridgewood Road
P.O. Box 655
Ridgeland, Mississippi 39158

Phone: (601)856-3092

Fax: (601)853-2151

REPORT OF
AIR EMISSIONS TESTS
FOR
HERCULES, INC.

EAST AND WEST POLY-PALE SCRUBBER

Hattiesburg, Mississippi
July 2 and 3, 2001

FACILITY NO. 0800-00001

Hercules, Inc.
613 West 7th Street
Hattiesburg, Mississippi 39401-2812

contact: Brian Ketchum
phone: 601/584-3264

Performed By:
Environmental Monitoring Laboratories
Ridgeland, Mississippi
<601/856-3092>

ENVIRONMENTAL MONITORING LABORATORIES, INC.

P.O. Box 655 · 624 Ridgewood Road
Ridgeland, Mississippi 39158

phone: 601/856-3092
fax : 601/853-2151

August 13, 2001

Subject: Hercules, Inc. Hattiesburg, Mississippi
FACILITY NO. 0800-00001

On July 2 and 3, 2001, Environmental Monitoring Laboratories performed air emissions testing for Hercules, Inc. in Hattiesburg, Mississippi. Testing was performed to measure total hydrocarbon (VOC), Toluene, sulfur dioxide and sulfuric acid emissions from the East and West Poly-Pale Scrubber at the request of Hercules. The East and West Poly-Pale Scrubbers both exhaust to the atmosphere through the same vent stack. Each was tested independently by blinding off the source not being tested.

Results of testing are summarized in the table below.

	VOC (as C)		Toluene		SO_2		H_2SO_4	
	ppm	#/hr.	ppm	#/hr.	ppm	#/hr.	ppm	#/hr.
EAST POLY-PALE	6399	0.07	83	0.007	136	0.009	9	0.0009
WEST POLY-PALE	51383	0.42	1990	0.124	24	0.0016	1	0.0001

Mr. Brian Ketchum of Hercules, Inc. coordinated the testing project. Danny Russell of EML was responsible for sample and data collection and for report preparation. Bag samples for toluene analysis were shipped to Bonner Analytical for analysis. Otherwise, sample custody was limited to Mr. Russell.

Following is a report of the test.

REPORT OF AIR EMISSIONS TESTS FOR
HERCULES, INC.
EAST AND WEST POLY-PALE SCRUBBER
HATTIESBURG, MISSISSIPPI
JULY 2 AND 3, 2001

CONTENTS

REPORT CERTIFICATION

I certify that I have examined the information submitted herein, and based upon inquires of those responsible for obtaining the data or upon my direct acquisition of data, I believe the submitted information is true, accurate and complete.

Signed ______________________

Daniel G. Russell

1.0 Test Results:

The following tables are technical summaries of the measured flow parameters and test results for air emissions testing done on July 2 and 3, 2001, for the East and West Poly-Pale Scrubbers at Hercules in Hattiesburg, Mississippi.

1.2 West Poly-Pale Scrubber

Run No. ...... Date ...... Time Start ...... Time End		1 07/02/01 1334 1434	2 07/02/01 1500 1600	3 07/02/01 1618 1719	AVG. ------ ----- ----
VOC EMISSIONS	#/hr as C	0.41	0.44	0.41	0.42
VOC EMISSIONS	ppm as C	49798	54723	49627	51383
TOLUENE EMISSIONS	#/hr	0.097	0.171	0.106	0.124
TOLUENE EMISSIONS	ppm	1550	2770	1650	1990.00
SO_2 EMISSIONS	#/hr	0.0017	0.0031	0.0001	0.0016
SO2 EMISSIONS	ppm	39	32	1	24
H2SO4 EMISSIONS	#/hr	0.0001	0.0001	0.0001	0.0001
H2SO4 EMISSIONS	ppm	1	1	2	1
VOLUMETRIC FLOWRATE	acfm	6	6	6	6
VOLUMETRIC FLOWRATE	dscfm	4	4	4	4
VELOCITY	ft./sec.	1.7	1.7	1.7	1.7
STACK TEMPERATURE	°F	93	95	96	94
MOISTURE	%	21.8	23.3	19.4	21.5

1.2 East Poly-Pale Scrubber

Run No. / Date / Time Start / Time End		1	2	3	AVG.
Run No.		1	2	3	AVG.
Date		07/03/01	07/03/01	07/03/01	-------
Time Start		0919	1043	1202	-----
Time End		1019	1144	1302	-----
VOC EMISSIONS	#/hr as C	0.11	0.04	0.05	0.07
VOC EMISSIONS	ppm as C	10243	4241	4714	6399
TOLUENE EMISSIONS	#/hr	0.013	0.001	0.006	0.007
TOLUENE EMISSIONS	ppm	162	15	71	82.67
SO_2 EMISSIONS	#/hr	0.013	0.007	0.007	0.009
SO2 EMISSIONS	ppm	231	88	90	136
H2SO4 EMISSIONS	#/hr	0.0002	0.0001	0.0024	0.0009
H2SO4 EMISSIONS	ppm	2	1	25	9
VOLUMETRIC FLOWRATE	acfm	6	6	6	6
VOLUMETRIC FLOWRATE	dscfm	6	6	6	6
VELOCITY	ft./sec.	1.8	1.8	1.8	1.8
STACK TEMPERATURE	°F	92	91	89	90
MOISTURE	%	6.4	7.5	3.6	5.8

HERCULES

Interoffice Memo

cc: E. P. Trotter
D. W. Linde
G. Shelley
W. Langhans
D. Flanner

Hattiesburg, MS
July 25, 1989

To: P. W. Kirkendall

From: C. S. Jordan

AIR SAMPLING SUMMARY

The attachment is a summary of air sampling results for emission points as required in our permit to operate air emission equipment.

Test results are shown as the average of three-one hour samplings. The flowrates are in SCFH and the VOC in lbs/hr unless indicated otherwise. Analyses other than VOC are also indicated. The lbs/yr does not take into account actual operating hours.

Rather than going through a lengthy discussion of each sampling results please let me know if you have specific questions about any of the results.

CSJ:ml

Jordan

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m10011/1

SAMPLING PLAN

RESULTS

Emission Point	Definition	Sampling	FLOW SCFH #1	FLOW SCFH #2	FLOW SCFH #3	FLOW SCFH AVG	V.O.C. (lbs/hr) #1	V.O.C. (lbs/hr) #2	V.O.C. (lbs/hr) #3	V.O.C. (lbs/hr) AVG	LBS/Y
010	Rosin Process Area	Storage tank data forms	(Tanks E,L,P,R,W,Y,TX)								
011	Mill Room Area	Area down.	(Down)								
012	Extractor, Refinery, and Still House Combination Water and Oil Scrubber	Area down.	(Down)								
013	Pexite Plant Oil Scrubber	EPA Method 25 for VOC.	123	160	149	144	0.468	0.885	0.873	0.742	6,500
020	Delnav Plant	Area permanently shut down by year's end.	(Down)								
021	Flare Tower	Calculation for sulfur dioxide for banking.	124,288 lbs. H_2S ——> 233,954 lbs. SO_2 (CY-1987)								
022	Limestone Tank No. 1	See Emission Point 020.	(Down)								
023	Limestone Tank No. 2	See Emission Point 020.	(Down)								
024	Digestion Sump Vent	EPA Method 25 for VOC for banking.	(Down)								
030	Poly-Pale Plant	Storage tank data forms	(Tanks T)								
031	McKee Boiler	By calculation for natural gas	2,475 MCF/Yr. of Natural Gas								
032	McKee Boiler	By calculation for natural gas	2,475 MCF/Yr. of Natural Gas								
033	Water Scrubber (2 vents)	EPA Method 25 for VOC, plus sulfur dioxide impinger trap, plus toluene by G.C. for East and West vents.	4.14	0.009	0.01	1.39	6.48^{-4} 2.4^{-3} 6.84^{-4}	1.12^{-5} 1.56^{-5} 5.29^{-5}	4.21^{-6} 6.18^{-5} 4.31^{-6}	2.21^{-4} 8.25^{-4} 2.47^{-4}	1.9 (EA 7.2 (SO 2.2 (Tol

m10011/2

SAMPLING PLAN

Emission Point	Definition	Sampling	RESULTS: FLOW SCFH #1	#2	#3	AVG	V.O.C. (lbs/hr) #1	#2	#3	AVG	LBS/
033	(Continued)		554	288	370	404	0.836 1.093 0.834	1.254 0.691 0.766	2.07 0.924 1.220	1.39 0.903 0.94	12,147(7,907(S 8,234(T
034	Heat Treatment	No vent									
040	Rosin Shed	Storage tank data forms	(Tanks B)								
041	Drumming Operation	Per our discussion we propose not to sample.	(Did not sample)								
042	Flaking Belt Vapor Water Scrubber	EPA Method 25 for VOC	0	0	0	0	1,346 ppm	1,418 ppm	4,518 ppm	2,427 ppm	No flow
043	Flaking Belt Dust Water Scrubber	EPA Method 5 for particulate	23,108	21,981	23,998	23,029	0.374	0.40	0.470	0.415	3,634
050	Package Boiler No. 5	By calculation for natural gas	842,277 MCF/yr. of Natural Gas								
060	Vinsol Resin Process	Storage tank data forms	(Tanks VN)								
061	Sealas Furnace No. 1	By calculation for natural gas	121 MCF/Yr. of Natural Gas								
062	Sealas Furnace No. 2	Identical to Emission Point 061	(Spare)								
063	Water Scrubber Kettle No. 1	EPA Method 25 for VOC	219	240	212	224	0.217	0.416	0.294	0.309	2,707
064	Water Scrubber Kettle No. 2	Identical to Emission Point 063	(Only one scrubber - See 063)								

m10011/3

SAMPLING PLAN

			RESULTS								
			FLOW SCFH				V.O.C. (lbs/hr)				
Emission Point	Definition	Sampling	#1	#2	#3	AVG	#1	#2	#3	AVG	LBS/
070	Truline Flaking and Packaging Area	Storage tank data forms	(Tanks VN)								
071	Flaking Belt Vapor Water Scrubber	EPA Method 25 for VOC	143	142	138	141	1.65^{-3}	6.71^{-3}	4.19^{-3}	4.18^{-3}	
072	Dracco Baghouse Model 20-S	EPA Method 5 for particulates	85,224	92,547	92,082	89,951	0.154	0.184	0.127	0.155	1,3
073	Pangborn Baghouse Modal 600	EPA Method 5 for particulates	(Removed)								
080	Hard Resins Area	Storage tank data forms	(Tanks S)								
081	Struthers-Wells Boiler	By calculation for natural gas	35,146 MCF/Yr. of Natural Gas								
082	Water Scrubber	EPA Method 25 for VOC, plus Maleic Anhydride by G.C.	86,258	86,258	82,059	84,858	9.14	8.12	16.54	11.27	98,6
090	Continuous Esterification Area	Storage tank data forms	(Tanks S)								
091	Foster Wheeler Boiler	By calculation for natural gas	11,715 MCF/Yr. of Natural Gas								
092	Continuous Esterification Unit	EPA Method 25 for VOC	(Awaiting Data)								
100	Hard Resins Flaking House	Storage tank data forms	(Tanks S)								

m10011/4

SAMPLING PLAN

Emission Point	Definition	Sampling	Flow SCFH #1	Flow SCFH #2	Flow SCFH #3	Flow SCFH AVG	V.O.C. (lbs/hr) #1	V.O.C. (lbs/hr) #2	V.O.C. (lbs/hr) #3	V.O.C. (lbs/hr) AVG	LBS/
101	Bvell Norbo Dust Collector	EPA Method 5 for particulates	487,959	50,510	465,287	467,918	0.651	0.673	0.842	0.722	6,325
102	Flaking Belt Vapor Water Scrubber	EPA Method 25 for VOC	406,603	425,254	426,495	419,450	10.14	3.40	6.11	6.55	57,378
110	Foral and Staybelite Plant	Storage tank data forms	(Tanks FL,H)								
111	Struthers-Wells Boiler	By calculation for natural gas	10,462 MCF/Yr. of Natural Gas								
112	Hydrogen Process	EPA Method 25 for VOC	1,677	1,859	2,006	1,847	0.147	0.484	0.352	0.328	2,870
120	Hydrogen Furnace	Storage tank data forms	(Tanks S)								
130	Pilot Plant Area	Storage tank data forms	(Tanks LB)								
131	Struthers-Wells Boiler	By calculation for natural gas	232 MCF/Yr. of Natural Gas								
132	Vent No. 1	Area down.	(Down)								
133	Vent No. 2	Area down.	(Down)								
140	Resin 731 Area	Storage tank data forms	(Tanks D)								
150	Stills and Dresinate Area	Storage tank data forms	(Tanks D, PS)								
151	Foster-Wheeler Boiler	By calculation for natural gas	8,160 MCF/Yr. of Natural Gas								

ml0011/5

SAMPLING PLAN

Emission Point	Definition	Sampling	FLOW SCFH #1	FLOW SCFH #2	FLOW SCFH #3	FLOW SCFH AVG	RESULTS V.O.C. (lbs/hr) #1	V.O.C. #2	V.O.C. #3	V.O.C. AVG	LBS/
160	Kymene Plant	Storage tank data forms	(Tanks K)								
161	Kettle Water Aspirator	EPA Method 25 for VOC, plus Epichlorohydrin by G.C.	0	0	0	0	18,595ppm 0	8,320 ppm 137 ppm	3,134ppm 16 ppm	10,016 ppm 51 ppm	0 0 (E
162	Dust Collector	EPA Method 5 for particulates	36,251	35,071	33,635	34,985	0.307	0.266	0.0635	0.212	1,858
170	Defoamer Plant	Storage tank data forms	(Tanks DP)								
171	Silica Drier Furnace	By calculation for natural gas	1,918 MCF/Yr. of Natural Gas								
172	Dust Collector	EPA Method 5 for particulates	81,235	78,154	77,215	78,868	6.246	0.782	0.961	2.669	23,380
180	Rosin Amine D Plant	Storage tank data forms	(Tanks RA)								
181	Struthers-Wells Boiler	By calculation for natural gas	24,515 MCF/Yr. of Natural Gas								
182	Ammoniation Water Scrubber	EPA Method 25 for VOC plus ammonia impinger trap	0	0	0	0	36.6% 2,534 ppm	41.7% 2,422 ppm	34.7% 2,489 ppm	37.7% 2,482 ppm	0 (NH_3)
183	Amine Reactor Water Scrubber	EPA Method 25 for VOC	0	0	0	0	2.53%	1.96%	1.63%	2.04%	0
190	Polyrad and Polyol Area	Storage tank data forms, plus EPA Method 25 for VOC, plus ethylene oxide by G.C.	(Tanks RA) 0	0	0	0	2.23% 6,056 ppm	2.96% 8,457 ppm	2.32% 5,666 ppm	2.50% 6,726 ppm	0 0(E.C
200	Para-menthane Unit	Area down.	(Down)								
210	Para-menthane Hydro-peroxide Unit	Area down.	(Down)								

ml0011/6

SAMPLING PLAN

Emission Point	Definition	Sampling	FLOW SCFH #1	FLOW SCFH #2	FLOW SCFH #3	FLOW SCFH AVG	V.O.C. (lbs/hr) #1	V.O.C. (lbs/hr) #2	V.O.C. (lbs/hr) #3	V.O.C. (lbs/hr) AVG	LBS/
220	Sulfate Turpentine Refining Unit	Area down.	(Down)								
230	Carbon Regeneration Furnace Scrubber	EPA Method 25 for VOC	101,962	101,499	103,826	102,429	13.62	3.24	5.15	7.34	64,2
240	Murry Boiler	By calculation for natural gas	267,443 MCF/Yr. of Natural Gas								
152	Stills and Dresinate Area	Storage tank data forms	(Tanks D,PS)								
250	Para-cymene Unit	Storage tank data forms	(Tanks HP)								
260	Synthetic Pine Oil Facility	Storage tank data forms	(Tanks TC)								
270	Paracol Plant	Storage tank data forms	(Tanks DP)								
038	Neuphor Plant	Storage tank data forms, plus VOC	(Tanks T)								
			269	260	289	273	8.54^{-3}	1.7^{-2}	3.88^{-3}	0.01	8

MASS BALANCE SPREADSHEETS

CAPACITY

*** INPUT ***

CALANDER YEAR	CAPACITY	
	*** = No input change	
POLY-PALE (LBS)	60,426,480	LBS
MELHI (LBS)	2,645,520	LBS
TOTAL PRODUCTION **CALC**	63,072,000	LBS
WASTEWATER FLOW (GPM)	52	GPM***
TOLUENE SOLUBILITY (PPM)	570	PPM***
DISPOSAL (LBS)	0	LBS
DISP. SOLV. FRACTION	0.00	FRACTION
TOLUENE USAGE (LBS)	794,243	LBS
NITROGEN (MCF) *	37,809	MCF ***
STEAM (MCF)*	149,032	MCF ***
% STEAM, BLOWING LINES	10	%***
MELHI (% TOLUENE)	4.0	%***
PP HEAT TREAT (% TOLUENE)	1.5	%***
POLY-PALE (% TOLUENE)	0.2	%***
NITROGEN SWEEP EFFICIENCY	0.5	DECIMAL***
COMMON VENT COND. TEMP. (I	75	deg F***
(1) PRODUCTION	63,072,000	LBS
LAB SOLVENT DISPOSAL	16,200	LBS
% TOLUENE	50	%***
OLD PAINT DISPOSAL	0	LBS
% TOLUENE	50	%***

*** OUTPUT ***

	TOLUENE(LBS)		P.V.F / LDAR ADJUSTED
COST SHEET USAGE (LOSSES)	794,243		794,243
TANK BREATHING AND WORKING	150,198		150,198
NITROGEN VENTING/BLOWING	194,088		194,088
WASTEWATER TREATMENT VENTING	25,726	e	25,726
WWT PARTIONED TO SLUDGE	7,146	a	7,146
WWT ADSORBTION/INCINERATION	0		0
WWT DISCHARGE	0		0
POLY-PALE	121,095	b	121,095
MELHI	105,821	c	105,821
P.V.F (LDAR/ADJUSTED BY DIFF)	80,122	d	80,122
TOTAL CALCULATED	794,243		794,243
FUGITIVE BY DIFF = a + b + c +d =	314,184		339,506
DIFFERENCE(COST SHEET-CALC)	(0)		0
WWT DISCHARGE TO POTW =	110,048		110,048
QUANTITY ON-SITE IMPOUNDMENT	404	f	404

TOLUENE SUMMARY FOR :
POLY-PALE
METAL RESINATES
ZEON
LAB

Point source	344,285	R(II / 5.2)
Discharge direct	0	R(II / 5.3.1)
WWT Ad/Inc	0	
Venting@WWT	25,726	
Fug(by diff)	313,780	
Total Fug (Fug + wwtVent)	339,506	R(II / 5.1)
Discharge to POTW	110,048	R(II / 6.1A1.)
Total(Pt,Dis,Inc,Vt,Fug)	794,243	
Total(less Inc)	794,243	
Quantity on-site impoundment	404	R(II / 5.5.3)
Quantity Released	684,195	R(II / 8.1)
Treated on-site	0	R(II / 8.6)
Treated off-site	118,148	R(II / 8.7)
activity index	1.00	R(II / 8.9)

98% SULFURIC ACID	7,348,712	LBS (PP+WT)
HISTORICAL NEUTRALIZATION	0.84	FACTOR***
PPM SULFUR IN PPRODUCT	500	PPM***
OTHER ALK. WASTEWATER	150,000	GPD***
AVERAGE pH	~10.5	pH (>10 & <11)
AVERAGE NORMALITY	0.005	eq/l (for ~ 10.5 pH)
TYPICAL PRODUCTION RATE	120,000	LBS/DAY***
DAYS OPERATION**CALC**	526	DAYS
100% CAUSTIC	3,060,540	LBS (PP+WT)
T/T WEAK ACID SOLD	0	NUMBER
AVERAGE T/T WEIGHT	42,000	LBS
AVERAGE % ACID STRENGTH	0.40	FRACTION***

	HISTORICAL		ACID BALANCE	
FUGITIVE SO2 =	616,290	LBS	1,023,380	LBS
	48.86	LBS/HR	81.13	LBS/HR
	308.14	TONS/YEAR	511.69	TONS/YEAR
AT CAPACITY =	615,586	LBS	1,022,211	LBS
	70.27	LBS/HR	116.69	LBS/HR
	307.79	TONS/YEAR	511.11	TONS/YEAR
RECYCLED OFF-SITE =	0	LBS/YEAR		
RECYCLED ON-SITE =	6,405,018	LBS/YEAR		

LEAD USAGE		
LEAD BARS 1/4"	70	LBS
LEAD BARS 3/16"	44	LBS
TOTAL BURNING BARS	114	LBS >100 REPORT I
SANDBLASTING SAND	1,000	LBS
SAND TCLP LEAD	1,142	PPM
TYVEX SUITS	295	LBS
TYVEX TCLP LEAD	344	PPM
LEAD EMISSION FACTOR	1.5	LB / TON
LEAD SHEETS 1/8"	4,960	LBS
LEAD SHEETS 1/4"	0	LBS
TOTAL SHEETS	4,960	LBS
SOLD TO SHEMPER	0	LBS

FUGITIVE EMISSIONS =	0.09	LBS/YEAR	(R5.1, R8.1)
RELEASED ONSITE =	0.20	LBS/YEAR	(R5.5.4 R8.1)
TRANSFER OFFSITE =	1.24	LBS/YEAR	(R6.2 R8.1)
RECYCLED OFFSITE =	0.00	LBS/YEAR	(R8.5)
ACTIVITY INDEX =	1.00		

E.O. USAGE IN POLYDAD	753,360	LBS
E.O. USAGE IN E.O.D.	621,960	LBS
TOTAL E.O. USAGE (CALC)	1,375,320	LBS
POLYRAD 0515	0	LBS
POLYRAD 0515A	424,860	LBS
POLYRAD 1110	1,019,664	LBS
POLYRAD 1110A	254,916	LBS

E.O. "LOSSES"(USAGE-THEORY)	96,875	LBS	
FUGITIVE EMISSIONS	17,365	LBS	R(II / 5.1)
POINT SOURCE EMISSIONS	1,590	LBS	R(II / 5.2)
E.O. TO ETHYLENE GLYCOL	77,920	LBS	R(II / 8.6)
ETHYLENE GLYCOL PRODUCED	109,797	LBS	>25,000LBS ?
QUANTITY RELEASED	18,955	LBS	R(II / 8.1)

SURFACTANT AR150	779,640 LBS	ACTIVITY INDEX	1.00		R(II/ 8.9)
SURFACTANT AR160	0 LBS	FOR >25,000LBS :			
# DAYS OP. (CAN USE NA)	365 DAYS (manual input	ETHYLENE GLYCOL DISCHARGED	0	LBS	R(II / 5.3.1)
(1) E. O. USAGE	1,375,320 required in "F132")	ETHYLENE GLYCOL TREATED ON-SITE	0	LBS	R(II/8.6)
SCRUBBER EFFICIENCY	98.0 % ASSUME***	ETHYLENE GLYCOL TO POTW	109,797	LBS	R(II/6.1.A.1)

KYMENE 557H	0 LBS	FIGITIVE EMISSIONS	2,998	LBS/YEAR	R(II / 5.1)
KYMENE 557LX	0 LBS	POINT SOURCE EMISSION	4,841	LBS/YEAR	R(II / 5.2)
KYMENE 736	0 LBS	TO WWT	17,493	LBS/YEAR	
KYMENE 1022	0 LBS	WWT VENTING	0	LBS/YEAR	
KYMENE MXC	0				
KYMENE 621	0				
KYMENE 625LX	0				
TOTAL KYMENE **CALC**	121,939,200 LBS	WWT TO SLUDGE	350	LBS/YEAR	
EPI IN 557H	0 LBS	WWT BIOLOGICAL	2,274	LBS/YEAR	R(II/ 8.6)
EPI IN 557LX	0 LBS	WWT ADSORB. / INCIN.	0	LBS/YEAR	
EPI IN 736	0 LBS	WWT EFF. DISCHARGE	0	LBS/YEAR	R(II / 5.3.1)
EPI IN 1022	0 LBS	QUANTITY RELEASED	8,189	LBS/YEAR	R(II / 8.1)
EPI IN MCX	0				
EPI IN 621	0				
EPI IN 625LX	0				
TOTAL EPI **CALC**	5,475,000 LBS	QUANTITY TREAT ON-SITE	2,274	LBS/YEAR	R(II / 8.6)
NITROGEN USAGE	9,481 MCF	QUANTITY ON-SITE IMPOL	350	LBS/YEAR	R(II/ 5.5.3)
NITROGEN SWEEP EFFICIENCY	0.2	ACTIVITY INDEX	1.00		R(II / 8.9)
(1) PRODUCTION	121,939,200 LBS	WWT DISCHARGE TO POT	14,869	LBS/YEAR	R(II8.7)
SCRUBBER EFFICIENCY	98.0 % ASSUME				

MONTHS WWT FURN OP	0 MONTHS

HISTORICAL DATA ("SAME"?)	
TOLUENE IN ZEON WWT	0 LBS/YR
TOLUENE IN I.B. SLUDGE	404 LBS/YR
AMMONIA IN I.B. SLUDGE	443 LBS/YR
I.B. SLUDGE GEN. RATE	4 CU YDS/ DAY

ROSIN METLER @ POLY-PALE			SHEEN QUANTITY =	7	Gallons spilled
CHEMICAL NAME	PEXOIL / LIGHT ENDS		SHEEN QUANTITY =	56	Lbs spilled
MOLECULAR WEIGHT	302	lb/mole	EST. RECOVERY =	42	Lbs recovered
AREA OF SPILL	96	ft2	(SPILL-RECOVERY) =	14	LBS (NET RELEASE)
VAPOR PRESSURE	0.004450	psia	VAPOR GENERATION	0.000100	lbs/sec
TEMPERATURE	266	oF		0.0060	lbs/min
WIND SPEED	5	miles/hour		0.36	lbs/hr
SHEEN THICKNESS	0.125	inches		8.6	lbs/day
SP. GR.	0.89	decimal		3,139	lbs/year
EST. % RECOVERY	75	%		1.57	tpy

RESIN PRODUCTION	246,758,792	LBS		ROSIN PLANT-WIDE VOC =	3.68 TPY
PAPER PRODUCTION	425,035,200	LBS			
"ROSIN" HANDLING FACTOR(est)	2	(ie," DOUBLE" HANDLING)		ROSIN PLANT-WIDE VOC =	11.13 TPY (@ CAI
NUMBER OF TANKS (est.)	30	RESINS			
NUMBER OF TANKS (est.)	10	PAPER			
AVERAGE TANK DIAMETER(est)	10	FT			
AVERAGE TANK HEIGHT(est)	20	FT			
AVG. VAPOR SPACE**CALC**	10	FT			
"ROSIN" MOL. WEIGHT	302				
TEMPERATURE	175	oC	or = 347 oF (calc)		
VAPOR PRESSURE	0.200	mm Hg	or= 0.003868 psi (calc)		
AMBIENT DELTA TEMP.	20	oF			

TPY

EPI (Form R-Air "only")	7,839	lbs/yr
Eth BZ (Form R-Air)	0	lbs/yr
Eth GLYCOL(Form R-Air)	0	lbs/yr
Eth OXIDE (Form R-Air)	18,955	lbs/yr
MALEIC ANH (Form R-Air)	0	lbs/yr
TOLUENE (Form R-Air)	683,791	lbs/yr
XLYENE (Form R-Air)	0	lbs/yr
Adipic acid - lbs	7,043,040	lbs/yr
Gum rosin/PP-lbs (melter)	43,800,000	lbs/yr
Resin flaked/HRA-lbs	61,320,000	lbs/yr
Nat Gas-(Poly-Pale)	12,535	mcf
(Power House)	431,938	mcf
(HRA)	13,484	mcf
(Rosin Dist.)	2,891	mcf
(Hydrogen)	0	mcf
(RAD)	4,940	mcf
(Eff. Treatment)	0	mcf
CAPACITY Fee Rate =	25.00	$/TON
Poly-pale prod	60,426,480	lbs
SO2 Fugitives @ Poly-Pale	511.69	TPY
HRA Kettle production	56,064,000	lbs/yr
HRA Flaked	61,320,000	lbs/yr
Plt. fug. est. non-HAP VOC	3.68	TPY
Poly-Pale melter n-H- VOC	3,139	lbs/yr
Dowtherm-(Poly-Pale)	26,200	lbs/yr
Dowtherm-(HRA)	169,193	lbs/yr
Dowtherm-(Rosin Dist.)	222,228	lbs/yr
Dowtherm-(RAD)	33,685	lbs/yr

		TPY
	PM	44.93
	SO2	522.96
	NOX	60.22
	CO	19.56
	VOC*	584.78
	TRS	0
	LEAD	0
	CFC/HCFC	0
	Other	0
	totHAP-voc	355.29
	TH non-voc	0
	SUM =	1232.46 TPY
CAPACITY	FEE RATE=	25.00 $/TON
	TOTAL $ =	30,811
	By quarters	7,702.85

*** = Reflects Total VOC from the facility including VOC,s that are HAP's**

BIPHENYL LOSS = 27*TOTAL= **121,853** LBS

(LESS THAN 10,000 LBS ?)
NO REPORT REQUIRED

EPICHLOROHYDRIN

(1999 LDAR UPDATE WITH NON-LEAKING FACTORS)

INPUT	***INPUT***	
CALANDER YEAR	CAPACITY	
KYMENE 557H	0	LBS
KYMENE 557LX	0	LBS
KYMENE 736	0	LBS
KYMENE 1022	0	LBS
KYMENE MXC	0	
KYMENE 621	0	
KYMENE 625LX	0	
TOTAL KYMENE **CALC**	121,939,200	LBS
EPI IN 557H	0	LBS
EPI IN 557LX	0	LBS
EPI IN 736	0	LBS
EPI IN 1022	0	LBS
EPI IN MCX	0	
EPI IN 621	0	
EPI IN 625LX	0	
TOTAL EPI **CALC**	5,475,000	LBS
NITROGEN USAGE	9,481	MCF
NITROGEN SWEEP EFFICIENCY	0.2	
(1) PRODUCTION	121,939,200	
PRODUCTION/ACTIVITY INDEX	1.00	
SCRUBBER EFFICIENCY	98.0	% ASSUME

OUTPUT

FIGITIVE EMISSIONS	2,998	LBS/YEAR	R(II / 5.1)
POINT SOURCE EMISSIONS	4,841	LBS/YEAR	R(II / 5.2)
TO WWT	17,493	LBS/YEAR	
WWT VENTING	0	LBS/YEAR	
WWT TO SLUDGE	350	LBS/YEAR	
WWT BIOLOGICAL	2,274	LBS/YEAR	R(II / 8.6)
WWT ADSORB. / INCIN	0	LBS/YEAR	
WWT EFF. DISCHARGE	0	LBS/YEAR	R(II / 5.3.1)
QUANTITY RELEASED	8,189	LBS/YEAR	R(II / 8.1)
QUANTITY TREAT ON-SITE	2,274	LBS/YEAR	R(II / 8.6)
QUANTITY ON-SITE IMPOUND	350	LBS/YEAR	R(II/ 5.5.3)
WWT DISCHARGE TO POTW	14,869	LBS/YEAR	R(II/8.7)

WITH COMPLETION OF KYMENE PROJECT, EQUIPMENT UPDATE "DOUBLED"					SOCMI FACTORS (LBS/HR)	
	OLD(1987)	UPDATE1992	LDAR(1995)	LDAR(1999)	AVERAGE	NON-LEAKING
NUMBER PUMPS (+1 AGIT)	1	2	2	4	0.11	0.02600
NUMBER VALVES (LIQ)	13	26	34	49	0.016	0.00380
NUMBER VALVES (VAP)				8		0.00110
NUMBER FLANGES (+CONN)	56	112	222	333	0.0018	0.00013
LBS/HR =	0	1	1	0		
LBS/YEAR =	3,669	7,337	10,193	**2,998**		

FOR EPI, ASSUME WORST CASE FOR ALL EPI EXCECT 557LX
SINCE THE EPI "DROPS IN"
ASSUME ALL VAPOR SPACE DISPLACEMENT IS EPI

DISPLACEMENT =	EPI* 1GAL/8.34*1.2 * 1FT/7.48GAL =	73,137	FT3
EPI TO SCRUBBER =	EPI* 1MOLE/379FT3 * 92.5LBS/MOLE =	17,850	LBS

FOR 557LX WHICH IS PUMPED IN UNDERNEATH THE LIQUID
EPI VAPOR PRESSURE = 40 mm Hg
EPI MOLE FRACTION IN VAPOR, VP/760 = 0.0526

LX DISPLACEMENT=	EPI* 1GAL/8.34*1.2 *1FT/7.48/GAL =	0	FT3
EPI TO SCRUBBER = EPI* 1MOLE/379FT3 *92.5LBS/MOLE =		0	LBS

TOTAL EPI(FROM RX) TO SCRUBBER = 17,850 LBS

ASSUME **98.0** PERCENT SCRUBBER EFFICIENCY
EPI IN SCRUBBER WATER TO WWT = **17,493** LBS
EPI FROM SCRUBBER VENT = **357** LBS

BREATHING LOSSES FROM K-110, 11.5FT DIA, 22FT HT
BREATHING LOSSES (K-110) = 94 LBS/YR
BREATHING LOSSES (K-111) = 2 LBS/YR
BREATHING LOSSES TOTAL = **96**

ASSUME NUMBER OF BATCHES IS (LBS PRODUCTION / 107,000 LBS/BATCH)

NUMBER BATCHES = 121,939,200 DIVIDED BY 107,000 = 1,140 BATCHES

FOR 30 SCFM NITROGEN PURGE FOR 30 MINUTES PER BATCH (30*30=900CFM/BATCH)
TOTAL NITROGEN PURGE = 1,140 * 900 = 1,025,657 CF

NITROGEN LEFT FOR BLANKET OF EPICHLOROHYDRIN AND DETA & HMDA = 8,455,343 CF

ASSUME NITROGEN SPLIT BETWEEN THE TWO SERVICES

THEREFORE NITROGEN IN EPI SERVICE = 4,227,672 = 483 SCFM

Antoine vapor pressure equation for: EPICHLOROHYDRIN
LOG(P)= A-(B/(t+C))
A =
B =
C = 22 oC

NOTE: V.P. for EPI @ 22 oC = 15 mmHg

Nitrogen = 483 SCFH = 1.344 #moles/Hr

T1(Centigrade) 22 72 oF

	Vap Press mm Hg	Par Press mm Hg	Vapor Mol. Fr.	Vapor #moles/Hr
Nitrogen		745	0.980	1.3443
EPI	15	15	0.020	0.0271
Total		760.00	1.000	1.3714

T1(Centigrade) 22 72 oF

Vap.Press. mm Hg	Vapor Mol. Fr.	Vapor #moles/Hr	Vapor #/Hr	Liq. Cond. #/Hr
745	0.980	1.3443	37.6625	
15	0.020	0.0271	2.5045	0.0000
760.00	1.000	1.3714	40.1670	0.0000

Epichlorohydrin (% Recovered) = 0.00 %

Mol. Wt. (Epichlorohydrin) = 92.53
Mol. Wt. (Nitrogen) = 28.016
Volume of 1 # mole of Nitrogen at Standard Conditions = 359 cuft

EMISSIONS (I19 * 8,760 HRS/YR) = 21939 LBS/YEAR

FOR A NITROGEN SWEEP EFFICIENCY OF 0.2

EMISSIONS = 21,939 * 0.2 = 4,388 LBS/YEAR

FUGITIVE EMISSIONS =	2,998 LBS/YR	(FROM LDAR P.V.F "F1236")
PT SOURCE =	4,841 LBS/YR	("D1257" + "D1262" + "H1341")
TO WWT =	17,493 LBS/YR	("E1256")

TOTAL = 25,332 LBS/YEAR

POLY-PALE

INPUT

CALENDAR YEAR	CAPACITY
POLY-PALE (LBS)	60,426,480
MELHI (LBS)	2,645,520
TOTAL PRODUCTION **CALC**	63,072,000
WASTEWATER FLOW (GPM)	52
TOLUENE SOLUBILITY (PPM)	570
DISPOSAL (LBS)	0
DISP. SOLV. FRACTION	0.00
TOLUENE USAGE (LBS)	794,243
NITROGEN (MCF) *	37,809
STEAM (MCF)*	149,032
% STEAM, BLOWING LINES	10
MELHI (% TOLUENE)	4.0
PP HEAT TREAT (% TOLUENE)	1.5
POLY-PALE (% TOLUENE)	0.2
NITROGEN SWEEP EFFICIENCY	0.5
COMMON VENT COND. TEMP. (I	75

*** OUTPUT ***

	TOLUENE(LBS)		P.V.F / LDAR ADJUSTED	
COST SHEET USAGE (LOSSES)	794,243		794,243	
TANK BREATHING AND WORKING	150,198		150,198	R5.2
NITROGEN VENTING/BLOWING	194,088		194,088	R5.2
WASTEWATER TREATMENT VENTING	25,726	e	25,726	
WWT PARTIONED TO SLUDGE	7,146	a	7,146	
WWT ADSORBTION/INCINERATION	0		0	
WWT DISCHARGE	0		0	
POLY-PALE	121,095	b	121,095	
MELHI	105,821	c	105,821	
P.V.F (LDAR/ADJUSTED BY DIFF)	80,122	d	80,122	
TOTAL CALCULATED	794,243		794,243	
FUGITIVE BY DIFFERENCE = a+b+c+d+e-f =	314,184		339,506	
DIFFERENCE(COST SHEET-CALC)	(0)		0	
WWT DISCHARGED TO POTW =	110,048		110,048	R6.1 A1 , R8.7
QUANTITY ON-SITE IMPOUNDMENT	404	f	404	R5.5.3

SOLVENT LOSSES = 12.6 LBS/ 1,000 LBS PRODUCTION (COST SHEET)
SOLVENT LOSSES = 12.6 LBS/ 1,000 LBS PRODUCTION(CALCULATED)

SOLVENT LOSSES = 0.8 % COST SHEET LOSSES/TOTAL USAGE
SOLVENT LOSSES = 0.8 % CALCULATED USAGE/TOTAL USAGE

SOLVENT RECY(62,277,757 LBS/YEAR
POINT SOURCE = 344,285 LBS/YEAR

* NOTE: Must calculate each Antoine V.P. equation below
Must calc Kc and C for thruput and small tank dia

LBS TOLUENE IN MELHI FROM T-108 =	4 %	*	2,645,520	=	105,821	LBS
LBS TOLUENE TO HEAT TREATMENT =	2 %	*	61,346,680	=	920,200	LBS
LBS TOLUENE IN POLY-PALE =	0 %	*	60,547,575	=	121,095	LBS

FOR: PUMPS,VALVES FLANGES, ASSUME

	NUMBER	FACTOR	RATE
PUMPS	17	0.1100	1.8700
VALVES	111	0.0160	1.7760
FLANGES	1,928	0.0018	3.4704
AGITATORS	8	0.1100	0.8800
MAGNITROLS	5	0.2300	1.1500

TOTAL = 9.15 LBS/HOUR

FUGITIVE EMISSIONS (P.V.F) = 8,760 * 9.15 = 80,122 LBS/YEAR

FOR THE SUMP

FOR SUMP ASSU	74,880	GALLONS/DAY WASTEWATER FLOWRATE			
ASSUME	570	PPM TOLUENE SOLUBILITY			
LBS/DAY =	74,880	* 00000834*	570 PPM =	356 0	LBS/DAY
ASSUME (10% EXCESS) FOR SPILLS, UPSETS, FLOWS, ETC, =				391 6	LBS/DAY
ESTIMATE DAYS OPERATION =	63,072,000	% 100,000 LBS/DAY =		365	DAYS
LBS/YEAR =	392	LBS/DAY *	365 DAYS =	142,920	LBS/YEAR

WASTEWATER TREATMENT SOLVENT DISTRIBUTION

BIOLOGICAL STUDIES @ 20 DAY RETENTION FOR UNACCUMULATED ARE

VOLATILIZED TO ATMOSHPERE = 72 %
PARTIONED TO SLUDGE = 18 %

OUR HOLD-UP IS ONLY 1/4 TO 1/5 OF 20 DAY BIOLOGICAL, THEREFORE

EQUALIZATION VOLATILIZED = 72 * 1/4 = 18 %
PARTIONED TO SLUDGE = 18 * 1/4 = 5 %
AVAILABLE FOR TREATMENT = 100 - 23 = 77 %

FOR APPROXIMATELY 90 % TREATMENT,
TREATED = 77 * 90 = 69 %
DISCHARGED = 77 * 10 = 8 %

FOR NO CARBON ADSORPTION, TREATED GOES TO ZERO BELOIW

WASTEWATER TREATMENT (WWT) VENTING		142,920 LBS/YR =	25,726	LBS/YEAR
WWT PARTIONED TO SLUDGE	= 05 *	142,920 LBS/YR =	7 146	LBS/YEAR
WWT ADSORBTION OR INCINERATION	= 69 *	142,920 LBS/YR =	0	LBS/YEAR
WWT DISCHARGED DIRECT	= 08 *	142,920 LBS/YR =	0	LBS/YEAR
WWT DISCHARGED TO POTW =			110,048	LBS/YEAR

VOC EMISSIONS - FIXED ROOF TANKS (TOLUENE)

TANK NO	TOTAL LOSS LBS/YR	EQUAT1 BREATHING LOSS LBS/YR	EQUAT2 WORKING LOSS LBS/YR	MOL-WT Mv	EQUAT2 MULTIPLY FACTOR	TVP	EQUAT 2 Kn	EQUAT2 ANNUAL THRUPUT GAL/YR	EQUAT2 TANK CAPACITY GAL/YR	EQUAT2 TURNOVER PER YR N	EQUAT1 AVG VAPOR SPACE HT (FT)
T-3 FD SOLN	9,270	81	9,189	92.13	0.000024	1.025	0.250	16,218,514	2,055	7892	2.50
T-7 #1 SEP	2,192	0	2,192	92.13		0.440	0.250	9,010,286	52	173275	1.00
T-8 #1 POLYZ	2,192	1	2,192	92.13		0.440	0.250	9,010,286	130	69310	1.00
T-9 #2 SEP	0	0	0	92.13	OUT	0.000	1.000	0	52	0	1.00
T-10 #2 POLYZ	0	0	0	92.13	OUT	0.000	1.000	0	130	0	1.00
T-11 #3 SEP	2,192	0	2,192	92.13		0.440	0.250	9,010,286	52	173275	1.00
T-12 #3 POLYZ	2,192	1	2,192	92.13		0.440	0.250	9,010,286	130	69310	1.00
T-13 #5 SEP	2,192	0	2,192	92.13		0.440	0.250	9,010,286	52	173275	1.00
T-14 #5 POLYZ	2,192	1	2,192	92.13		0.440	0.250	9,010,286	130	69310	1.00
T-15 #6 SEP	2,192	0	2,192	92.13		0.440	0.250	9,010,286	52	173275	1.00
T-16 #6 POLYZ	2,192	1	2,192	92.13		0.440	0.250	9,010,286	130	69310	1.00
T-17 #4 SEP	2,192	0	2,192	92.13		0.440	0.250	9,010,286	52	173275	1.00
T-18 #4 POLYZ	2,192	1	2,192	92.13		0.440	0.250	9,010,286	130	69310	1.00
T-21 PZD SOLN	5,703	25	5,678	92.13		0.600	0.250	17,119,543	1,200	14266	2.50
T-22 PZD SEP	0	0	0	92.13	NO VENT	0.700	0.250	855,977	400	2140	1.20
T-23 PZD SURGE	5,408	14	5,394	92.13		0.600	0.250	16,263,566	700	23234	2.40
T-24 HYZ SOLN	47,174	46	47,127	92.13		3.320	0.250	25,679,314	1,175	21855	4.00
T-25 WASH TK	25,151	44	25,108	92.13		1.420	0.250	31,986,514	4,170	7671	0.50
T-26 WASHD SOI	14,631	81	14,550	92.13		1.025	0.250	25,679,314	2,060	12466	2.50
T-27 EVAP FD	14,631	81	14,550	92.13		1.025	0.250	25,679,314	2,060	12466	2.50
T-30 1ST PP EV	14,555	5	14,550	92.13		1.025	0.250	25,679,314	420	61141	2.00
T-31 2ND PP EV	5,365	5	5,360	92.13		1.025	0.250	9,460,800	420	22526	2.00
T-36 PEXOIL/TOL	0	0	0	92.13	NO VENT	14.697	0.700	40,772	190	215	1.00
T-40 PEX/TOL ST	192,437	189,041	3,397	92.13		14.697	1.000	104,519	9,050	12	10.00
T-48 1ST MEL EV	465	6	459	92.13		1.025	0.250	810,926	505	1606	3.00
T-71 MEL SOLN	1,062	51	1,011	92.13		1.025	0.550	810,926	2,700	300	4.00
T-80 40%ACD/TO	1,607	229	1,378	92.13	ATM VENT	1.025	1.000	608,194	20,000	30	10
T-81 40%ACD/TO	1,607	229	1,378	92.13	ATM VENT	1.025	1.000	608,194	20,000	30	10
T-83 DEC SEP	1,708	54	1,654	92.13		1.025	0.360	2,027,314	3,450	588	6.00
T-84 40% AC/TOL	2,961	204	2,757	92.13	ATM VENT	1.025	1.000	1,216,389	17,000	72	8.00
T-85 FR TOL STG	859	247	613	92.13	ATM VENT	1.025	1.000	270,309	13,600	20	6.00
T-86 REC TOL	995	52	943	92.13		1.025	0.660	630,720	2,700	234	4.50
T-88 PP HYDRO	29,708	122	29,585	92.13		6.600	0.250	8,109,257	1,400	5792	2.00
T-93 SLG DEC	1,249	55	1,195	92.13		1.025	0.260	2,027,314	1,700	1193	3.00
T-99 H2O/TOL SE	4,931	81	4,850	92.13		1.025	0.250	8,559,771	2,065	4145	2.50
T-101 MEL ACCU	705	16	689	92.13		1.025	0.750	405,463	1,050	386	3.00
T-105 TOL FD MX	4,931	81	4,850	92.13		1.025	0.250	8,559,771	2,065	4145	2.50
T-108 MEL BLND	34,199	28,007	6,192	92.13	ATM VENT	14.695	0.470	405,463	1,070	379	2.00
T-116 H2O/TOL S	13,378	105	13,274	92.13		1.025	0.250	23,426,743	3,500	6693	2.50
T-117 WASH FEE	47,247	119	47,127	92.13		3.320	0.250	25,679,314	2,400	10700	3.00
T-124 2ND MEL E	256	1	255	92.13		1.025	0.250	450,514	71	6345	1.00
T-131 PP HYDRO	29,708	122	29,585	92.13	NO VENT	6.600	0.250	8,109,257	1,400	5792	2.00
T-139 SUMP	28,363	412	27,951	92.13	ATM VENT	1.025	0.250	49,331,314	2,500	19733	4.30
T-201 RX #7	5,404	10	5,394	92.13		0.600	0.250	16,263,566	1,500	10842	1.00
T-202 RX #8	5,404	10	5,394	92.13		0.600	0.250	16,263,566	1,500	10842	1.00
T-203 RX #9	5,404	10	5,394	92.13		0.600	0.250	16,263,566	1,500	10842	1.00
TOTAL (LBS/YR)	578,397	219,648	358,749					475,708,171	128,668	3697	

(ROSIN)

TANK NO	TOTAL LOSS LBS/YR	EQUAT1 BREATHING LOSS LBS/YR	EQUAT2 WORKING LOSS LBS/YR	MOL-WT Mv	EQUAT2 MULTIPLY FACTOR	TVP	EQUAT 2 Kn	EQUAT2 ANNUAL THRUPUT GAL/YR	EQUAT2 TANK CAPACITY GAL/YR	EQUAT2 TURNOVER PER YR N	EQUAT1 AVG VAPOR SPACE HT (FT)
P-59 ROSIN STG	34	34	0	302		0	1	626,340	10,278	61	4.00
T-20 ROSIN FEEI	58	58	0	302		0	0	7,446,000	17,167	434	4.50
T-33 ROSIN/DOV	1	1	0	604		0	0	7,884,000	730	10800	4.00
T-34 R SPG TANI	1	1	0	604		0	0	7,884,000	730	10800	4.00
T-106 MELHI STG	21	21	0	604		0	1	394,200	10,310	38	6.00
T-119 GUM STG	29	29	0	302		0	1	2,299,500	21,000	110	7.00
T-120 ROSIN STC	173	173	0	302		0	1	7,446,000	125,000	60	12.00
T-129 PP SURGE	0	0	0	604		0	0	7,008,000	240	29200	2.00
T-130 SCRAP RO	43	43	0	302		0	1	98,550	32,200	3	8.00
T-132 PP STG TK	232	232	0	604		0	1	7,008,000	82,000	85	10.00
T-133 GUM STG	41	41	0	302		0	1	2,299,500	31,200	74	10.00
TOTAL (LBS/YR)	634	634	0					50,394,090	330,855	152	

(OTHER)

T-77 98% H2SO4	5	5	0	98	0	1	144,540	10,170	14	6.00
T-78 98% H2SO4	7	7	0	98	0	1	144,540	12,750	11	6.00
T-96 25% NAOH	13	13	0	40	0	1	1,323 154	9,395	141	12 50
T-100 98% H2SO·	5	5	0	98	0	1	144 540	8,300	17	6.00
T-134 DOW CAT(	0	0	0	166	0	0	8,760,000	75	116800	2.30
T-135 DOW FLAS	#NUM!	#NUM!	0	166	37	0	236,520,000	350	675771	4.70
T-136 DOW STOI	8	8	0	166	0	1	4,380	1,100	4	6.70
T-137 SER WATE	4	4	0	18	0	0	96,360,000	4,000	24090	1.00
T-138 DOW BLO\	#NUM!	#NUM!	0	166	37	1	0	1,100	0	2.50

T-3 FD SOLN	48.3	4 793	
T-7 #1 SEP	0.0	2,192	
T-8 #1 POLYZ	0.0	2,192	
T-9 #2 SEP	0.0	0	OUT
T-10 #2 POLYZ	0.0	0	OUT
T-11 #3 SEP	0.0	2,192	
T-12 #3 POLYZ	0.0	2,192	
T-13 #5 SEP	0 0	2 192	
T-14 #5 POLYZ	0.0	2,192	
T-15 #6 SEP	0.0	2,192	
T-16 #6 POLYZ	0.0	2,192	
T-17 #4 SEP	0 0	2,192	
T-18 #4 POLYZ	0.0	2,192	
T-21 PZD SOLN	8.5	5,218	
T-22 PZD SEP	100.0	0	NO VENT
T-23 PZD SURGE	8 5	4,948	
T-24 HYZ SOLN	86.7	6,274	
T-25 WASH TK	65.8	8,602	
T-26 WASHD SOI	48.3	7 564	
T-27 EVAP FD	48.3	7 564	
T-30 1ST PP EV	48.3	7,525	
T-31 2ND PP EV	48.3	2,774	
T-36 PEXOIL/TOL	100.0	0	NO VENT
T-40 PEX/TOL ST	99.4	1,155	
T-48 1ST MEL EV	48.3	241	
T-71 MEL SOLN	48.3	549	
T-80 40%ACD/TOL		1,607	ATM VENT
T-81 40%ACD/TOL		1,607	ATM VENT
T-83 DEC SEP	48.3	883	
T-84 40% AC/TOL		2,961	ATM VENT
T-85 FR TOL STG		859	ATM VENT
T-86 REC TOL	48.3	514	
T-88 PP HYDRO	100 0	0	
T-93 SLG DEC	48.3	646	
T-99 H2O/TOL SE	48 3	2,549	
T-101 MEL ACCU	48 3	364	
T-105 TOL FD MX	48.3	2,549	
T-108 MEL BLND	100 0	0	ATM VENT *
T-116 H2O/TOL S	48.3	6,917	
T-117 WASH FEE	86.7	6,284	
T-124 2ND MEL E	48.3	132	
T-131 PP HYDRO	100 0	0	NO VENT
T-139 SUMP		28,363	ATM VENT
T-201 RX #7	8.5	4,945	
T-202 RX #8	8.5	4,945	
T-203 RX #9	8.5	4,945	
TOTAL		150,198	

NOTE FOR VOC CALCULATIONS, MUST MANUALLY INPUT Kc AND C FOR THE THRUPUT TURNOVERS(Kc) AND SMALL TANK DIAMETER(C)

TURNOVER FACTOR

TURNOVERS	Kc
<35	1
40	1
45	1
50	1
60	1
75	1
100	0
150	0
200	0
250	0
300	0
400	0

SMALL TANK DIAMETER FACTOR

DIA(FT)	C
1FT	0.05
2FT	0.10
3FT	0.15
5FT	0.25
7.5FT	0.40
10FT	0.50
12.5FT	0.65
15FT	0.75
17.5FT	0.85
20FT	0.90
25FT	0.95
30FT	1.00

NOTE *EMISSIONS IN T-108 ARE SHOWN IN FINISHED PRODUCT MELHI

TOTAL TANKAGE CAPACITY = 128 668 GALLONS
TOTAL NITROGEN USAGE = 4,316 SCFH

FOR BREATHING DISPLACEMEI $\frac{P1\ V1}{T1} = \frac{P2\ V2}{T2}$

AVERAGE DAY TEMPERATURE(76.3 DEG F.
AVERAGE NIGHT TEMPERATUR 52.9 DEG F.

FOR NIGHT VOLUEME(V2) = 128,668 GALLONS OR 17,202 CU FT
THE DAY VOLUEME(V1) = 134,538 GALLONS OR 17,986 CU FT

BREATHING DISPLACEMENT 785 FT3/DAY
= 286,447 FT3/YEAR OR 33 SCFH
FOR WORKING DISPLACEMENT 475708171 GALLONS
= 63 597 349 FT3/YEAR OR 7260 SCFH
TOTAL DISPLACI 286 447 FT3/YR + 63,597,349 FT3/YR
= 63 883,797 FT3/YEAR
= 7,293 SCFH

NITROGEN VENT 4,316 SCFH - 7,293 SCFH = (2,977) SCFH
(MAX) = 4,293 SCFH (SEE NOTE BELOW)

NOTE : FOR POLY-PALE, PRODUCTION IS CONTINUEOUS/"STEADY-STATE"/LEVEL CONTROL

THEREFORE, BATCH VOLUMETRIC DISPLACEMENT IS MINIMAL. (EMPTY TANKS EACH RUN)

ASSUME, TANKAGE VOLUMETRIC DISPLACEMENT (12 TIMES A YEAR) IS ACTUAL DISPLACEMENT

TANKAGE VOLUI 128,668 GALLONS = 17,202 CU FT

VOLUME DISPLA 17,202 CU FT * 12 TIMES/YR % 8,760 HRS/YR = 24 SCFH

THEREFORE, MAXIMUM VENTIN 4,316 SCFH - 24 SCFH = 4,293 SCFH

FOR NITROGEN DISTRIBUTION BASED ON THRUPUT AND BREATHING VOLUEME
CONDENSER EXIT TEMPERATU 75.0 DEG F = 23.9 DEG C
"cond. Exit temp. = cell C29

NOTE: MUST MANUALLY ADJUST "COND. TEMP." FOR TANKS THAT VENT TO ATMOSPHERE

ANTOINE EMISSI 445 SCFH AND 100.0 DEG F OR 37.8 DEG C
EQUAL = 36,655 LBS/YEAR

TABLE BELOW BREAKS DOWN THE TOTAL ANTOINE EMISSIONS INTO INDIVIDUAL TANKS
(IT HAS TO BE CALCULATED FOR EACH INDIVIDUAL TANK NITROGEN FLOW)

TANK NO	ANNUAL THRUPUT GAL/YR	TANK BREATHING GAL/YR	TOTAL GALS/YR	NITROGEN SCFH	TEMP DEG F	ANTOINE EMISSIONS LBS/YEAR	
T-3 FD SOLN	16,218,514	701	16,219,216	146	100	12,026	
T-7 #1 SEP	9,010,286	18	9,010,303	81	70	6,672	
T-8 #1 POLYZ	9,010,286	44	9,010,330	81	70	6,672	
T-9 #2 SEP	0	18	18	0	MTY	0	OUT
T-10 #2 POLYZ	0	44	44	0	MTY	0	OUT
T-11 #3 SEP	9,010,286	18	9,010,303	81	70	6,672	
T-12 #3 POLYZ	9,010,286	44	9,010,330	81	70	6,672	
T-13 #5 SEP	9,010,286	18	9,010,303	81	70	6,672	
T-14 #5 POLYZ	9,010,286	44	9,010,330	81	70	6,672	
T-15 #6 SEP	9,010,286	18	9,010,303	81	70	6,672	
T-16 #6 POLYZ	9,010,286	44	9,010,330	81	70	6,672	
T-17 #4 SEP	9,010,286	18	9,010,303	81	70	6,672	
T-18 #4 POLYZ	9,010,286	44	9,010,330	81	70	6,672	
T-21 PZD SOLN	17,119,543	410	17,119,952	154	80	12,685	
T-22 PZD SEP	855,977	137	856,114	8	85	0	NO VENT
T-23 PZD SURGE	16,263,566	239	16,263,805	147	80	12,109	
T-24 HYZ SOLN	25,679,314	401	25,679,715	232	150	19,110	
T-25 WASH TK	31,986,514	1,423	31,987,937	289	115	23,805	
T-26 WASHD SOI	25,679,314	703	25,680,017	232	100	19,110	
T-27 EVAP FD	25,679,314	703	25,680,017	232	100	19,110	
T-30 1ST PP EV	25,679,314	143	25,679,458	232	100	19,110	
T-31 2ND PP EV	9,460,800	143	9,460,943	85	100	7,002	
T-36 PEXOIL/TOL	40,772	65	40,836	0	222	0	NO VENT
T-40 PEX/TOL ST	104,519	3,088	107,608	1	222	82	
T-48 1ST MEL EV	810,926	172	811,098	7	100	577	
T-71 MEL SOLN	810,926	921	811,847	7	100	577	
T-80 40%ACD/TO	608,194	6,825	615,019	6	100	1,019	ATM VENT
T-81 40%ACD/TO	608,194	6,825	615,019	6	100	1,019	ATM VENT
T-83 DEC SEP	2,027,314	1,177	2,028,492	18	100	1,483	
T-84 40% AC/TOL	1,216,389	5,801	1,222,190	11	100	1,868	ATM VENT
T-85 FR TOL STG	270,309	4,641	274,950	2	100	340	ATM VENT
T-86 REC TOL	630,720	921	631,641	6	100	494	
T-88 PP HYDRO	8,109,257	478	8,109,735	73	185	6,013	
T-93 SLG DEC	2,027,314	580	2,027,894	18	100	1,483	
T-99 H2O/TOL SE	8,559,771	705	8,560,476	77	100	6,343	
T-101 MEL ACCU	405,463	358	405,821	4	100	329	
T-105 TOL FD MX	8,559,771	705	8,560,476	77	100	6,343	
T-108 MEL BLND	405,463	365	405,828	4	222	679	ATM VENT
T-116 H2O/TOL S	23,426,743	1,194	23,427,937	211	100	17,380	
T-117 WASH FEE	25,679,314	819	25,680,133	232	150	19,110	
T-124 2ND MEL E	450,514	24	450,539	4	100	329	
T-131 PP HYDRO	8,109,257	478	8,109,735	73	185	0	NO VENT
T-139 SUMP	49,331,314	853	49,332,167	445	100	75,593	ATM VENT
T-201 RX #7	16,263,566	512	16,264,078	147	80	12,109	
T-202 RX #8	16,263,566	512	16,264,078	147	80	12,109	
T-203 RX #9	16,263,566	512	16,264,078	147	80	12,109	
TOTAL (LBS/YR)	475,708,171	43,909	475,752,080	4293		388,175	

FOR 0.5 % NITROGEN SWEEP EFFICIENCY = 194,088

Antoine vapor pressure equation for: TOLUENE

LOG(P)= A-(B/(t+C))

A = 7

B = 1,345

C = 219 oC

Nitrogen = 445 SCFH = 1.240 #moles/Hr

	T1(Centigrade) 37.8	100.0 oF			T1(Centigrade) 23.9	75.0 oF			
	Vap Press. mm Hg	Par Press. mm Hg	Vapor Mol. Fr.	Vapor #moles/Hr	Vap.Press. mm Hg	Vapor Mol. Fr.	Vapor #moles/Hr	Vapor #/Hr	Liq. Cond. #/Hr
Nitrogen		707	0.930	1.2396	733	0.965	1.2396	34.7274	
Toluene	53	53	0.070	0.0937	27	0.035	0.0454	4.1844	4.4458
Total		760.00	1.000	1.3332	760.00	1.000	1.2850	38.9117	4.4458

Toluene (% Recovered) = 51.51 %

Mol. Wt. (Toluene) = 92.134

Mol. Wt. (Nitrogen) = 28.016

Volume of 1 # mole of Nitrogen at Standard Conditions = 359 cuft

EMISSIONS (I1178 * 8,760 HRS/YR) = 36,655 LBS/YEAR

ETHYLENE OXIDE

With 1999 LDAR update for NON-LEAKING factors

INPUT	**INPUT**		
CALANDER YEAR	CAPACITY		
E O USAGE IN POLYDAD	753,360	LBS	
E O USAGE IN E O D	621,960	LBS	
TOTAL E O USAGE (CALC)	1,375,320	LBS	
POLYRAD 0515	0	LBS	
POLYRAD 0515A	424,860	LBS	
POLYRAD 1110	1,019,664	LBS	
POLYRAD 1110A	254,916	LBS	
SURFACTANT AR150	779,640	LBS	
SURFACTANT AR160	0	LBS	
# DAYS OPERATION (CAN USE NA)	365	DAYS (manual input required "F132")	
SCRUBBER EFFICIENCY	98 0	% ASSUME	

OUTPUT	*OUTPUT*		
E O "LOSSES"(USAGE-THEORY)	96,875	LBS	
FUGITIVE EMISSIONS	17,365	LBS	R(II / 5 1)
POINT SOURCE EMISSIONS	1,590	LBS	R(II / 5 2)
E O TO ETHYLENE GLYCOL	77,920	LBS	R(II / 8 6)
ETHYLENE GLYCOL PRODUCED	109,797	LBS	
QUANTITY RELEASED	18,955	LBS	R(II / 8 1)
FOR ETHYLENE GLYCOL			
ETHYLENE GLYCOL DISCHARGED	0	LBS	R(II / 5 3 1)
ETHYLENE GLYCOL TREATED ON-SITE	0	LBS	R(II/8 6)
ETHYLENE GLYCOL TO POTW	109,797	LBS	R(II/6 1A 1
E O USAGE/ 1,000 LBS PRODUCT	555	LBS	
E O "LOSSES"/ 1,000 LBS PRODUCT	39	LBS	

FOR POLYRADS ASSUME

ROSIN AMINE MOL WT	285	
ROSIN AMINE PURITY	94	%
ADJUSTED MOL WT	303	

POLYRAD 0515	0	* 85 =	0
POLYRAD 0515A	424,860	* 7 * 85=	252,792
POLYRAD 0500 =			252,792
POLYRAD 1110	1,019,664	* 90 =	917,698
POLYRAD 1110A	254,916	* 7 * 9=	160,597
POLYRAD 1100 =			1,078,295

FOR 0500 1 MOLE AMINE + 5 MOLES E O = 0500
303 + 5(44) =523
E O = 5(44)/523 * LBS OF 0500 = 106,337 LBS

FOR 1100 1 MOLE AMINE + 11 MOLES E O = 1100
303 + 11(44) =787
E O = 11(44)/787 * LBS 1100 = 663,144 LBS

FOR SURFACTANTS ASSUME

WOOD ROSIN MOL WT	302	
WOOD ROSIN ACID NO	160	
THEROETICAL ACID NO	186	
WOOD ROSIN PURITY	86	%
ADJUSTED MOL WT	351	

SURFACTANT AR150	779 640	* 1 0 =	779 640
SURFACTANT AR160	0	* 1 0 =	0

FOR AR150 1 MOLE ROSIN + 15 MOLES E O = AR150
351 + 15(44) =1011
E O = 15(44) * LBS OF AR150 = 508,964 LBS

FOR AR160 1 MOLE ROSIN + 16 MOLES E O = AR160
351 + 16(44) = 1055
E O = 16(44) * LBS OF AR160 = 0 LBS

THEROETICAL E.O.				1,278,445	LBS
E.O. "LOSSES"(USAGE-THEORY)				96,875	LBS
E.O. USAGE = LBS OF E.O /(8.34* 85)				194,008	GALLONS
DAYS OF OPERATION, FROM LOG SHEETS =				365	DAYS
TOTAL E.O. ADDUCTS =				2,110,726	LBS
TYPICAL PRODUCTION = LBS % DAYS =				5,783	LBS/DAY
BASE YR 1993 TYP PROD = 5,470LBS/DAY					
DAYS OPERATION =				365	DAYS
FOR P,V,F					
Pumps/liq=	3	*	0.0260	0.08	LBS/HR
Valves/liq=	73	*	0.0038	0.28	LBS/HR
Valves/Vap=	21	*	0.0011	0.02	LBS/HR
Flg&con/liq=	231	*	0.0001	0.03	LBS/HR
Flg&con/Vap=	44	*	0.0001	0.01	LBS/HR
RELIEF =	16	*	0.0980	1.57	LBS/HR

				1.98	LBS/HR
ON A CONTINUEOUS BASIS =				17,365	LBS/YR
SINCE WE BLOW THE LINES WE ONLY HAVE E.O. IN THE P,V,F SERVICE THE ACTUAL DAYS OF OPERATION =				365	DAYS
THEREFORE P,V,F FUGITIVE EMISSIONS =				17,365	LBS/YR
THEREFORE E.O. TO SCRUBBER =				79,510	LBS/YR
ASSUME SCRUBBER EFFICIENCY =			98.0		
E.O. TO ETHLYENE GLYCOL =				77,920	LBS/YR
E.O. VENTED FROM SCRUBBER STACK =				1,590	LBS/YR
ETHYLENE GLYCOL PRODUCED					
LBS E.O. * 62/44 =				109,797	LBS/YR

04/29/03
FEES 01adj#2 xls

Fees 01adj#2 uses a different calculation method for scrubber efficiency based upon MACT standards for E O and EPI
The implied efficiency in both standards is 98 0 which is in this forms input data, unless otherwise input differently

FEES

*** INPUT ***

CALANDER YEAR	2002	
	*** = No input change	
POLY-PALE (LBS)	10,754,657	LBS
MELHI (LBS)	706,745	LBS
TOTAL PRODUCTION **CALC**	11,461,402	LBS
WASTEWATER FLOW (GPM)	30	GPM***
TOLUENE SOLUBILITY (PPM)	570	PPM***
DISPOSAL (LBS)	0	LBS
DISP SOLV FRACTION	0 00	FRACTION
TOLUENE USAGE (LBS)	353,976	LBS
NITROGEN (MCF) *	25,012	MCF ***
STEAM (MCF)*	32,380	MCF ***
% STEAM, BLOWING LINES	10	%***
MELHI (% TOLUENE)	4 0	%***
PP HEAT TREAT (% TOLUENE)	1.5	%***
POLY-PALE (% TOLUENE)	0.2	%***
NITROGEN SWEEP EFFICIENCY	0.5	DECIMAL***
COMMON VENT COND TEMP (I	75	deg F***
2001 PRODUCTION	9,461,508	LBS
LAB SOLVENT DISPOSAL	16,200	LBS
% TOLUENE	50	%***
OLD PAINT DISPOSAL	0	LBS
% TOLUENE	50	%***

*** OUTPUT ***

	TOLUENE(LBS)		P,V,F / LDAR ADJUSTED
COST SHEET USAGE (LOSSES)	353,976		353,976
TANK BREATHING AND WORKING	29,707		29,707
NITROGEN VENTING/BLOWING	142,554		142,554
WASTEWATER TREATMENT VENTING	4,660	e	4,660
WWT PARTIONED TO SLUDGE	1,295	a	1,295
WWT ADSORBTION/INCINERATION	0		0
WWT DISCHARGE	0		0
POLY-PALE	21,552	b	21,552
MELHI	28,270	c	28,270
P,V,F (LDAR/ADJUSTED BY DIFF)	80,122	d	106,002
TOTAL CALCULATED	328 097		353,976
FUGITIVE BY DIFF = a + b + c +d =	131,239		161,375
DIFFERENCE(COST SHEET-CALC)	25,879		0
WWT DISCHARGE TO POTW =	19 936		19,936
QUANTITY ON-SITE IMPOUNDMENT	404	f	404

TOLUENE SUMMARY FOR
POLY-PALE
METAL RESINATES
ZEON
LAB

Point source	172 261	R(II / 5.2)
Discharge direct	0	R(II / 5.3.1)
WWT Ad/Inc	0	
Venting@WWT	4 660	
Fug(by diff)	156,714	
Total Fug (Fug + wwtVent)	161,375	R(II / 5.1)
Discharge to POTW	19,936	R(II / 6.1A1)
Total(Pt,Dis,Inc,Vt,Fug)	353,976	
Total(less Inc)	353 976	
Quantity on-site impoundment	404	R(II / 5.5.3)
Quantity Released	334,040	R(II / 8.1)
Treated on-site	0	R(II / 8.6)
Treated off-site	28,036	R(II / 8.7)
activity index	1.21	R(II / 8.9)

98% SULFURIC ACID	1,441,747	LBS (PP+WT)
HISTORICAL NEUTRALIZATION	0.84	FACTOR***
PPM SULFUR IN PPRODUCT	500	PPM***
OTHER ALK WASTEWATER	150,000	GPD***
AVERAGE pH	~10 5	pH (>10 & <11)
AVERAGE NORMALITY	0.005	eq/l (for ~ 10 5 pH)
TYPICAL PRODUCTION RATE	120,000	LBS/DAY***
DAYS OPERATION**CALC**	96	DAYS
100% CAUSTIC	544,713	LBS (PP+WT)
T/T WEAK ACID SOLD	0	NUMBER
AVERAGE T/T WEIGHT	42,000	LBS
AVERAGE % ACID STRENGTH	0.40	FRACTION***

	HISTORICAL		ACID BALANCE	
FUGITIVE SO2 =	63 027	LBS	313,211	LBS
	27.50	LBS/HR	136.64	LBS/HR
	31 51	TONS/YEAR	156.61	TONS/YEAR
AT CAPACITY =	346,443	LBS	1,721,630	LBS
	39.55	LBS/HR	196.53	LBS/HR
	173 22	TONS/YEAR	860.82	TONS/YEAR
RECYCLED OFF-SITE =	0	LBS/YEAR		
RECYCLED ON-SITE =	1,345 236	LBS/YEAR		

LEAD USAGE		
LEAD BARS 1/4"	70	LBS
LEAD BARS 3/16"	44	LBS
TOTAL BURNING BARS	114	LBS >100 REPORT I
SANDBLASTING SAND	1,000	LBS
SAND TCLP LEAD	1,142	PPM
TYVEX SUITS	295	LBS
TYVEX TCLP LEAD	344	PPM
LEAD EMISSION FACTOR	1 5	LB / TON
LEAD SHEETS 1/8"	4,960	LBS
LEAD SHEETS 1/4"	0	LBS
TOTAL SHEETS	4,960	LBS
SOLD TO SHEMPER	0	LBS

FUGITIVE EMISSIONS =	0.09	LBS/YEAR	(R5 1, R8.1)
RELEASED ONSITE =	0.20	LBS/YEAR	(R5.5.4 R8.1)
TRANSFER OFFSITE =	1.24	LBS/YEAR	(R6.2 R8 1)
RECYCLED OFFSITE =	0.00	LBS/YEAR	(R8 5)
ACTIVITY INDEX =	1 21		

E O USAGE IN POLYDAD	51,884	LBS	E O "LOSSES"(USAGE-THEORY)	4,249	LBS	
E O USAGE IN E O D	30,758	LBS	FUGITIVE EMISSIONS	1,127	LBS	R(II / 5 1)
TOTAL E O USAGE (CALC)	82,642	LBS	POINT SOURCE EMISSIONS	62	LBS	R(II / 5 2)
POLYRAD 0515	0	LBS	E O TO ETHYLENE GLYCOL	3 060	LBS	R(II / 8 6)
POLYRAD 0515A	23,650	LBS	ETHYLENE GLYCOL PRODUCED	4,312	LBS	**>25,000LBS 1**
POLYRAD 1110	73,790	LBS	QUANTITY RELEASED	1,189	LBS	R(II / 8 1)
POLYRAD 1110A	17 200	LBS				
SURFACTANT AR150	38,245	LBS	ACTIVITY INDEX	0 64		R(II/ 8 9)
SURFACTANT AR160	0	LBS	**FOR >25,000LBS :**			
# DAYS OP (CAN USE NA)	28	DAYS (manual input	ETHYLENE GLYCOL DISCHARGED	0	LBS	R(II / 5 3 1)
2001 E O USAGE	128 154	required in "F132")	ETHYLENE GLYCOL TREATED ON-SITE	0	LBS	R(II/8 6)
SCRUBBER EFFICIENCY	98 0	% ASSUME***	ETHYLENE GLYCOL TO POTW	4,312	LBS	R(II/6 1 A 1)

KYMENE 557H	46,648,810	LBS	FIGITIVE EMISSIONS	2 998	LBS/YEAR	R(II / 5 1)
KYMENE 557LX	24,100,813	LBS	POINT SOURCE EMISSION	828	LBS/YEAR	R(II / 5 2)
KYMENE 736	1,868,409	LBS	TO WWT	8,669	LBS/YEAR	
KYMENE 1022	344,421	LBS	WWT VENTING	0	LBS/YEAR	
KYMENE MXC	101,480					
KYMENE 621	351,410					
KYMENE 625LX	47 340					
TOTAL KYMENE **CALC**	73,462 683	LBS	WWT TO SLUDGE	173	LBS/YEAR	
EPI IN 557H	2 121 156	LBS	WWT BIOLOGICAL	1,127	LBS/YEAR	R(II/ 8 6)
EPI IN 557LX	760,599	LBS	WWT ADSORB / INCIN	0	LBS/YEAR	
EPI IN 736	468,099	LBS	WWT EFF DISCHARGE	0	LBS/YEAR	R(II / 5 3 1)
EPI IN 1022	47,718	LBS	QUANTITY RELEASED	4 000	LBS/YEAR	R(II / 8 1)
EPI IN MCX	4,330					
EPI IN 621	25,645					
EPI IN 625LX	6,368					
TOTAL EPI **CALC**	3,433,915	LBS	QUANTITY TREAT ON-SITE	1,127	LBS/YEAR	R(II / 8 6)
NITROGEN USAGE	1,688	MCF	QUANTITY ON-SITE IMPOU	173	LBS/YEAR	R(II/ 5 5 3)
NITROGEN SWEEP EFFICIENCY	0 2		ACTIVITY INDEX	1 18		R(II / 8 9)
2001 PRODUCTION	62,497,806	LBS	WWT DISCHARGE TO POT	7,369	LBS/YEAR	R(II8 7)
SCRUBBER EFFICIENCY	98 0	% ASSUME				

MONTHS WWT FURN OP	0	MONTHS

HISTORICAL DATA ("SAME"?)		
TOLUENE IN ZEON WWT	0	LBS/YR
TOLUENE IN I B SLUDGE	404	LBS/YR
AMMONIA IN I B SLUDGE	443	LBS/YR
I B SLUDGE GEN RATE	4	CU YDS/ DAY

ROSIN METLER @ POLY-PALE			SHEEN QUANTITY =	7	Gallons spilled
CHEMICAL NAME	PEXOIL / LIGHT ENDS		SHEEN QUANTITY =	56	Lbs spilled
MOLECULAR WEIGHT	302	lb/mole	EST RECOVERY =	42	Lbs recovered
AREA OF SPILL	96	ft2	(SPILL-RECOVERY) =	14	LBS (NET RELEASE)
VAPOR PRESSURE	0 004450	psia	VAPOR GENERATION	0 000100	lbs/sec
TEMPERATURE	266	oF		0 0060	lbs/min
WIND SPEED	5	miles/hour		0 36	lbs/hr
SHEEN THICKNESS	0 125	inches		8 6	lbs/day
SP GR	0 89	decimal		3,139	lbs/year
EST % RECOVERY	75	%		1 57	tpy

RESIN PRODUCTION	23,458,712	LBS				ROSIN PLANT-WIDE VOC =	1 58	TPY
PAPER PRODUCTION	164 483 244	LBS						
"ROSIN" HANDLING FACTOR(est)	2	(ie," DOUBLE" HANDLING)				ROSIN PLANT-WIDE VOC =	4 79	TPY (@ CAI
NUMBER OF TANKS (est)	30	RESINS						
NUMBER OF TANKS (est)	10	PAPER						
AVERAGE TANK DIAMETER(est)	10	FT						
AVERAGE TANK HEIGHT(est)	20	FT						
AVG VAPOR SPACE**CALC**	10	FT						
"ROSIN" MOL WEIGHT	302							
TEMPERATURE	175	oC	or =	347	oF (calc)			
VAPOR PRESSURE	0 200	mm Hg	or=	0 003868	psi (calc)			
AMBIENT DELTA TEMP	20	oF						

EPI (Form R-Air "only")	3,827	lbs/yr
Eth BZ (Form R-Air)	0	lbs/yr
Eth GLYCOL(Form R-Air)	0	lbs/yr
Eth OXIDE (Form R-Air)	1,189	lbs/yr
MALEIC ANH (Form R-Air)	0	lbs/yr
TOLUENE (Form R-Air)	333,636	lbs/yr
XLYENE (Form R-Air)	0	lbs/yr
Adipic acid - lbs	4,417,347	lbs/yr
Gum rosin/PP-lbs (melter)	4,313,790	lbs/yr
Resin flaked/HRA-lbs	9,676,150	lbs/yr
Nat Gas-(Poly-Pale)	12,535	mcf
(Power House)	417,857	mcf
(HRA)	13,484	mcf
(Rosin Dist.)	2,891	mcf
(Hydrogen)	0	mcf
(RAD)	4,940	mcf
(Eff. Treatment)	0	mcf
2002 Fee Rate =	25.00	$/TON
Poly-pale prod.	10,754,657	lbs
SO2 Fugitives @ Poly-Pale	156.61	TPY
HRA Kettle production	5,371,917	lbs/yr
HRA Flaked	9,676,150	lbs/yr
Plt. fug. est. non-HAP VOC	1.58	TPY
Poly-Pale melter n-H- VOC	3,139	lbs/yr
Dowtherm-(Poly-Pale)	4,663	lbs/yr
Dowtherm-(HRA)	16,607	lbs/yr
Dowtherm-(Rosin Dist.)	23,817	lbs/yr
Dowtherm-(RAD)	2,037	lbs/yr

		TPY	
	PM	7.86	
	SO2	158.72	
	NOX	58.31	
	CO	18.97	
	VOC*	200.55	
	TRS	0	
	LEAD	0	
	CFC/HCFC	0	
	Other	0	
	totHAP-voc	169.33	
	TH non-voc	0	
	SUM =	444.41	TPY
2002	FEE RATE=	25.00	$/TON
	TOTAL $ =	11,110	
	By quarters	2,777.58	

*** = Reflects Total VOC from the facility including VOC,s that are HAP's**

BIPHENYL LOSS = 27*TOTAL= **12,723** LBS (LESS THAN 10,000 LBS ?)
NO REPORT REQUIRED

FROM FORM R CALCULATIONS=	"TPY"
EPICHLOROHYDRIN	1.91
ETHYL BENZENE	0.00
ETHYLENE GLYCOL	0.00
ETHYLENE OXIDE	0.59
MALEIC ANHYDRIDE	0.00
TOLUENE	166.82
XYLENE	0.00
total VOC (Form R)	169.33

AMMONIA USAGE @ RAD	107,972	LBS
NITRILE PRODUCTION	429,814	LBS OF 731-D FEED
WASTEWATER FLOW AVG.	95,268	GPD
AVERAGE WASTEWATER pH	10.0	
pH NORMALITY	0.00100	
I.B. SLUDGE GENERATE RATE	4	CU YD/DAY
AQ NH3 AT DRESINOL	0	LBS
H2SO4 TOTES @40% =	0	NUMBER

NH3 "LOSSES"(USAGE-THEORY)	89,761	LBS	= 83.1%	
FUGITIVE EMISSIONS	2,667	LBS		R(II / 5.1)
POINT SOURCE EMISSIONS	885	LBS		R(II / 5.2)
NH3 TO (NH4)2SO4 @ 90%, & 10% POTV	86,209	LBS		
AMMONIUM SULFATE PRODUCED	301,224	LBS	<?> 25,000LBS	
AMMONIA RECYCLE	462,727	LBS		R(II / 8.4)
NH3 "LOSSES"/ 1,000 LBS FEED	208.8	LBS/1,000 LBS FEED		
QUANTITY RELEASED	12,616	LBS		R(II / 8.1)
QUANTITY TO POTW	8,621	LBS		R(6.1A.1.)(R8
QUANTITY ON-SITE IMPOUNDMENT	443	LBS		(RII/ 5.5.3)

PARTICULATE MATTER

AC-002 (162) Dust collector @ Kymene

$$\frac{0.93 \text{ TPY in 1988(base data)}}{2{,}370{,}000 \text{ lbs used in 1988}} * 4{,}417{,}347 \text{ lbs} = 1.73 \text{ TPY (PM)}$$

AC-004 (-) Gum rosin melted @ Poly-Pale
Based on process weight equation, E = 4.1 * P ^0.67
E = Particulate emissions in lbs/hour
P = Process input capacity in tons/hour
Capacity = 80drs/8hr shift = 2.5 tons/hour
= 3.27 TPY (PM)

AG-005 (101) Dust collector @ HRA

3 16 TPY in 1988(base data)
------------------------------------ * 9,676,150 lbs = 1.14 TPY (PM)
26,840,510 lbs flaked in 1988

A-(Plant) Fuel burning @ PP,PH,HRA,Rosin dist H2,RAD,Eff

Poly-Pale - 3 2mmBTU/hr heat input		
PM =7 6lb/mmCUFT nat gas =	0 05 tpy	0 05 TPY(PM)
PM(10)=0lb/mmCUFT nat gas =	0 00 tpy	
SO2 = 0 6lb/mmCUFT nat gas =		0 00 TPY(SO2)
NOX = 100lb/mmCUFT nat gas =		0 63 TPY(NOX)
CO = 84lb/mmCUFT nat gas =		0 53 TPY(CO)
VOC = 5 5lb/mmCUFT nat gas =		0 03 TPY(VOC)

Power House - #5 Boiler = 156mmBTU/hr heat input
Power House - #6 Boiler = 65mmBTU/hr heat input
Assume 95% and 5% split of nat gas between #5 and #6 boilers

For #5 Boiler		
PM =7 6lb/mmCUFT nat gas =	1.51 tpy	1.51 TPY(PM)
PM(10)=0lb/mmCUFT nat gas =	0 00 tpy	
SO2 = 0 6lb/mmCUFT nat gas =		0 12 TPY(SO2)
NOX =280lb/mmCUFT nat gas =		55 57 TPY(NOX)
CO = 84lb/mmCUFT nat gas =		16 67 TPY(CO)
VOC = 5 5lb/mmCUFT nat gas =		1 09 TPY(VOC)

For #6 Boiler		
PM =7 6lb/mmCUFT nat gas =	0 08 tpy	0 08 TPY(PM)
PM(10)=0lb/mmCUFT nat gas =	0 00 tpy	
SO2 = 0 6lb/mmCUFT nat gas =		0 01 TPY(SO2)
NOX =100lb/mmCUFT nat gas =		1 04 TPY(NOX)
CO = 84lb/mmCUFT nat gas =		0 88 TPY(CO)
VOC = 5 5lb/mmCUFT nat gas =		0 06 TPY(VOC)

Hard Resins - 8 3mmBTU/hr heat input		
PM =7 6lb/mmCUFT nat gas =	0 05 tpy	0 05 TPY(PM)
PM(10)=0lb/mmCUFT nat gas =	0 00 tpy	
SO2 = 0 6lb/mmCUFT nat gas =		0 00 TPY(SO2)
NOX = 100lb/mmCUFT nat gas =		0 67 TPY(NOX)
CO = 84lb/mmCUFT nat gas =		0 57 TPY(CO)
VOC = 5 5lb/mmCUFT nat gas =		0 04 TPY(VOC)

Rosin Dist - 3 3mmBTU/hr heat input		
PM =7 6lb/mmCUFT nat gas =	0 01 tpy	0 01 TPY(PM)
PM(10)=0lb/mmCUFT nat gas =	0 00 tpy	
SO2 = 0 6lb/mmCUFT nat gas =		0 00 TPY(SO2)
NOX = 100lb/mmCUFT nat gas =		0 14 TPY(NOX)
CO = 84lb/mmCUFT nat gas =		0 12 TPY(CO)
VOC = 5 5lb/mmCUFT nat gas =		0 01 TPY(VOC)

Hydrogen - 21 0mmBTU/hr heat input		
PM =7 6lb/mmCUFT nat gas =	0 00 tpy	0 00 TPY(PM)
PM(10)=0lb/mmCUFT nat gas =	0 00 tpy	
SO2 = 0 6lb/mmCUFT nat gas =		0 00 TPY(SO2)
NOX = 100lb/mmCUFT nat gas =		0 00 TPY(NOX)
CO = 84lb/mmCUFT nat gas =		0 00 TPY(CO)
VOC = 5 5lb/mmCUFT nat gas =		0 00 TPY(VOC)

Rosin Amine D - 8 3mmBTU/hr heat input		
PM =7 6lb/mmCUFT nat gas =	0 02 tpy	0 02 TPY(PM)
PM(10)=0lb/mmCUFT nat gas =	0 00 tpy	
SO2 = 0 6lb/mmCUFT nat gas =		0 00 TPY(SO2)
NOX = 100lb/mmCUFT nat gas =		0 25 TPY(NOX)
CO =84lb/mmCUFT nat gas =		0 21 TPY(CO)
VOC = 5 5lb/mmCUFT nat gas =		0 01 TPY(VOC)

Eff Treatment - 2 95mmBTU/hr heat input		
PM =7 6lb/mmCUFT nat gas =	0 00 tpy	0 00 TPY(PM)
PM(10)=0lb/mmCUFT nat gas =	0 00 tpy	
SO2 = 0 6lb/mmCUFT nat gas =		0 00 TPY(SO2)
NOX = 100lb/mmCUFT nat gas =		0 00 TPY(NOX)
CO = 84lb/mmCUFT nat gas =		0 00 TPY(CO)
VOC = 5 5lb/mmCUFT nat gas =		0 00 TPY(VOC)

TOTAL PM	7 86 TPY
TOT SO2	0 14 TPY
TOT NOX	58 31 TPY
TOT CO	18 97 TPY
TOT VOC	1 24 TPY

SO2 FROM 1988 DATA

Poly-Pale east and west vents = 7 2lbs/yr + 7,907lbs/yr = 7,914lbs/yr = 3 96TPY

$$\frac{3\ 96\ \text{TPY (1988 Base data)}}{21{,}495{,}048\ \text{lbs Poly-Pale (1988)}} * 10{,}754{,}657\ \text{lbs} = 1\ 98\ \text{TPY(SO2)}$$

VOC = VOC Assumed to be non-HAP

VOC FROM 1988 DATA

Poly-Pale east and west vents = 1 9lb/hr + 12 147lb/yr = 12,149lb/yr = 6 07 TPY

$$\frac{6\ 07\ \text{TPY (1988 Base data)}}{21{,}495{,}048\ \text{lbs Poly-Pale (1988)}} * 10{,}754{,}657\ \text{lbs} = 3\ 04\ \text{TPY(VOC)}$$

HRA Water scrubber - Kettles/Hot = 98,696lbs/yr = 49 35 TPY

$$\frac{49\ 35\ \text{TPY (1988 Base data)}}{19{,}713{,}604\ \text{lbs Production (1988)}} * 5{,}371{,}917\ \text{lbs} = 13\ 45\ \text{TPY(VOC)}$$

HRA Water scrubber - Flaking/Hot end = 57,378lbs/yr = 28 69 TPY

$$\frac{28\ 69\ \text{TPY (1988 Base data)}}{26{,}840{,}510\ \text{lbs flaked (1988)}} * 9{,}676{,}150\ \text{lbs} = 10\ 34\ \text{TPY(VOC)}$$

Carbon Furnace = 64,269 lbs/yr = 32 14 TPY

32 14 TPY (1988 Base data) "ASSUME THE SAME" = 32 14 TPY(VOC)

'NOTE Furnace only ran "X" months Therefore subtract (12 - "x") months -32 14

"Rosin" VOC and "Paper Chemicals" VOC "ESTIMATES"

From Plant-wide fugitive emission estimates spreadsheet = 1 58 TPY(VOC)

Poly-Pale melter fugitives 1 57 TPY(VOC)

TOTAL VOC* = 29 98 TPY(VOC*)

EVAPORATION LOSSES

SOURCE : Rosin Melter@ Poly-Pale (VP of Pexoil / Light Ends)

*** INPUT ***

CHEMICAL NAME	PEXOIL / LIGHT ENDS	
MOLECULAR WEIGHT	302	lb/mole
AREA OF SPILL	96	ft2
VAPOR PRESSURE	0 004450	psia
TEMPERATURE	266	oF
WIND SPEED	5	miles/hour
SHEEN THICKNESS	0 125	inches
SP GR	0 89	decimal
EST % RECOVERY	75	%

*** OUTPUT ***

SHEEN QUANTITY =	7	Gallons spilled
SHEEN QUANTITY =	56	Lbs spilled
EST RECOVERY =	42	Lbs recovered
(SPILL-RECOVERY) =	14	LBS (NET RELEASE)
VAPOR GENERATION	0 000100	lbs/sec
	0 0060	lbs/min
	0 36	lbs/hr
	8 6	lbs/day
	3,139	lbs/year

1 57 tpy

$$W = \frac{M K A P}{R T}$$

W = VAPOR GENERATION RATE, lbs/second

M = MOLECULAR WEIGHT OF CHEMICAL

A = AREA OF SPILL, ft2

P = VAPOR PRESSURE, psia,

R = UNIVERSAL GAS CONSTANT 10.73 psia-ft3/oR-lb mole

T = TEMPERATURE OF LIGUID oR = oF + 460

K = GAS-PHASE MASS TRANSFER COEFFICIENT, ft/second

K = 0.00438 (U) ^0.78 (D / 3 1 * 10^-4) ^2/3

D = DIFFUSION COEFFICIENT, ft/second

U = WINDSPEED, miles/hour

IF " D " IS NOT AVAILABLE

K = 0.00438 (U) ^0 78 (18/M)^1/3

ROSIN FUGITIVE EMISSIONS ESTIMATES-PLANT WIDE

INPUT

CALANDER YEAR	2,002				
RESIN PRODUCTION	23,458,712	LBS			
PAPER PRODUCTION	164,483,244	LBS			
"ROSIN" HANDLING FACTOR(est)	2	(ie," DOUBLE" HANDLING)			
NUMBER OF TANKS (est.)	30	RESINS			
NUMBER OF TANKS (est.)	10	PAPER			
AVERAGE TANK DIAMETER(est)	10	FT			
AVERAGE TANK HEIGHT(est)	20	FT			
AVG. VAPOR SPACE**CALC**	10	FT			
"ROSIN" MOL. WEIGHT	302				
TEMPERATURE	175	oC	or =	347	oF (calc)
VAPOR PRESSURE	0.200	mm Hg	or=	0.003868	psi (calc)
AMBIENT DELTA TEMP.	20	oF			

* FOR CALCULATIONS: PAINT FACTOR,PRODUCT FACTOR,SMALLTANK FACTOR,TURNOVER FACTOR, ARE IN EQUATIONS

OUTPUT

ROSIN PLANT-WIDE VOC = 1.58 TPY

ROSIN PLANT-WIDE VOC = 4.79 TPY (@ CAPACITY)

FOR ROSIN "VOC" ESTIMATES

ROSIN HANDLING FACTOR = 30 TANKS * 2 = 60

P / (Pa - P) = P / (14.7 - P) = 0

PAINT FACTOR = 1

SMALL TK. FACTOR = 1

PRODUCT FACTOR = 1

TANK CAPACITY = 11,750 GALS

ANNUAL THRUPUT = 97,745 GALS/TANK

NO. TURNOVERS = 8

TURNOVER FACTOR= 1

FOR BREATHING LOSSES , L(b) resins = 14 LBS/YR

FOR 60 "TANKS" L(b) resins = 813 94 LBS/YEAR
0.093 LBS/HR

0.41 TPY

FOR WORKING LOSSES, L(w).resins = 3 LBS/YR

FOR 60 "TANKS" L(w).resins = 164.44 LBS/YEAR
0.019 LBS/HR
0.08 TPY

FOR PAPER "VOC" ESTIMATES

KYMENE = 12.2 % TOTAL SOLIDS
NEUPHOR = 31.0 % TOTAL SOLIDS
PARACOL = 12.0 % TOTAL SOLIDS

ASSUME SIMILAR PRODUCTION RATES
THEREFORE THE AVERAGE TOTAL SOLIDS = 18 %

ROSIN PRODUCTION FACTOR = 30,264,917 LBS (adjusted for %T.S.)

ROSIN HANDLING FACTOR = 10 TANKS * 2 = 20

ANNUAL THRUPUT = 2,056,041 GALS/TANK

NO. TURNOVERS = 175

TURNOVER FACTOR= 0

FOR BREATHING LOSSES, L(b).paper = 14 LBS/YR

FOR 20 "TANKS" L(b).paper = 271.31 LBS/YEAR
0.03 LBS/HR
0.14 TPY

FOR WORKING LOSSES, L(w).paper = 17 LBS/YR

FOR 20 "TANKS" L(w).paper = 334.36 LBS/YEAR
0.04 LBS/HR
0.17 TPY

PLANT-WIDE VOC FOR ROSIN L(B) and L(w)

L(total) = L(b).rosin + L(w).rosin + L(b).paper + L(w).paper
= 0.41 0.08 0.14 0.17

L(total) = 0.79 TPY

ASSUME PLANT-WIDE FUGITIVES (P,V,F) AND STEAM BLOWING SAME AS L(total)

THEREFORE TOTAL ROSIN VOC= 1.58 TPY

FOR CAPACITY

RATIO FACTOR = $\dfrac{\text{61.34 TPH (@ CAPACITY)}}{\text{20.38 TPH (1994)}}$ = 3.02

TOLUENE TOTAL

CALANDER YEAR 2,002

FOR ZEON WASTEWATER:
Assume toluene in wastewater is = 0 Lbs

For WWT solvent distribution :
Biological studies @ 20 day retention for unaccumulated are:
Volatilized to atmosphere = 72%
Partioned to the sludge = 18%

Our hold-up is only 1/4 to 1/5 of 20 day biological, therefore

Equalization volatilized = .72 * 1/4 = 18%
Partioned to the sludge = .18 * 1/4 = 5%
Available for treatment = 100 - 18 - 5 = 77%

For approximately 90% treatment :
Treated = .77 * .9 = 69%
Discharged = .77 * .1 = 8%

Wastewater treatment (WWT) venting = .18 *	0 lbs =	0 lbs/year
WWT partioned to the sludge = .05 *	0 lbs =	0 lbs/year
WWT adsorbtion or incineration = .69 *	0 lbs =	0 lbs/year
WWT effluent discharge = .08 *	0 lbs =	0 lbs/year
WWT discharged to POTW =		0 lbs/year

TOLUENE SUMMARY (POLY-PALE & METAL RESINATES & ZEON)

	Poly-Pale	Met Res	Zeon	TOTAL	
Point source	172,261	0	0	172,261	R(II / 5.2)
Discharge direct	0	0	0	0	R(II / 5.3.1)
WWT Ad/Inc	0	0	0	0	
Venting@WWT	4,660	0	0	4,660	
Fug(by diff)	156,714	0	0	156,714	
Total Fug (Fug + wwtVent)	161,375	0	0	161,375	R(II / 5.1)
Discharge to POTW	19,936	0	0	19,936	
Total(Pt,Dis,Inc,Vt,Fug)	353,976	0	0	353,976	
Total(less Inc)	353,976	0	0	353,976	
Quantity on-site impoundment	404	0	0	404	R(II/ 5.5.3)
Quantity Released	334,040	0	0	334,040	R(II / 8.1)
Treated on-site	0	0	0	0	R(II / 8.6)
Treated off-site	28,036	0	0	28,036	R(II / 8.7)

	Ethyl Benz		Xylene
Point source	0	R(II / 5.2)	0
Discharge	0	R(II / 5.3.1)	0
WWT Ad/Inc	0		0
Venting@WWT	0		0
Fug(by diff)	0		0
Total(Fug + Vent)	0	R(II / 5.1)	0
Total(Pt,Dis,Inc,Vt Fug)	0		0
Total(less Inc)	0	R(II / 8.1)	0
Recycled on-site	0	R(II / 8.4)	0
Treated on-site	0	R(II / 8.6)	0
Treated off-site	0	R(II / 6.2.1)	0

POLY-PALE

INPUT

CALENDAR YEAR	2 002
POLY-PALE (LBS)	10,754,657
MELHI (LBS)	706,745
TOTAL PRODUCTION **CALC**	11,461,402
WASTEWATER FLOW (GPM)	30
TOLUENE SOLUBILITY (PPM)	570
DISPOSAL (LBS)	0
DISP SOLV FRACTION	0.00
TOLUENE USAGE (LBS)	353,976
NITROGEN (MCF) *	25,012
STEAM (MCF)*	32,380
% STEAM BLOWING LINES	10
MELHI (% TOLUENE)	4.0
PP HEAT TREAT (% TOLUENE)	1.5
POLY-PALE (% TOLUENE)	0.2
NITROGEN SWEEP EFFICIENCY	0.5
COMMON VENT COND TEMP (I	75

*** OUTPUT ***	TOLUENE(LBS)		P.V.F / LDAR ADJUSTED	
COST SHEET USAGE (LOSSES)	353,976		353,976	
TANK BREATHING AND WORKING	29,707		29,707	R5.2
NITROGEN VENTING/BLOWING	142,554		142,554	R5.2
WASTEWATER TREATMENT VENTING	4,660	e	4,660	
WWT PARTIONED TO SLUDGE	1,295	a	1,295	
WWT ADSORBTION/INCINERATION	0		0	
WWT DISCHARGE	0		0	
POLY-PALE	21,552	b	21,552	
MELHI	28,270	c	28,270	
P.V.F (LDAR/ADJUSTED BY DIFF)	80,122	d	106,002	
TOTAL CALCULATED	328,097		353,976	
FUGITIVE BY DIFFERENCE = a+b+c+d+e-f =	131,239		161,375	
DIFFERENCE(COST SHEET-CALC)	25,879		0	
WWT DISCHARGED TO POTW =	19,936		19,936	R6.1 A1 , R8.7
QUANTITY ON-SITE IMPOUNDMENT	404	f	404	R5.5.3

SOLVENT LOSSES = 30.9 LBS/ 1,000 LBS PRODUCTION (COST SHEET)
SOLVENT LOSSES = 28.6 LBS/ 1,000 LBS PRODUCTION(CALCULATED)

SOLVENT LOSSES = 2.1 % COST SHEET LOSSES/TOTAL USAGE
SOLVENT LOSSES = 1.9 % CALCULATED USAGE/TOTAL USAGE

SOLVENT RECY(11,107,426 LBS/YEAR
POINT SOURCE : 172,261 LBS/YEAR

* NOTE Must calculate each Antoine V P equation below
Must calc Kc and C for thruput and small tank dia

LBS TOLUENE IN MELHI FROM T-108 =	4 %	*	706,745	=	28,270	LBS
LBS TOLUENE TO HEAT TREATMENT =	2 %	*	10,918,434	=	163,777	LBS
LBS TOLUENE IN POLY-PALE =	0 %	*	10,776,209	=	21,552	LBS

FOR PUMPS,VALVES,FLANGES, ASSUME

	NUMBER	FACTOR	RATE
PUMPS	17	0.1100	1.8700
VALVES	111	0.0160	1.7760
FLANGES	1,928	0.0018	3.4704
AGITATORS	8	0.1100	0.8800
MAGNITROLS	5	0.2300	1.1500

TOTAL = 9.15 LBS/HOUR

FUGITIVE EMISSIONS (P.V.F) = 8 760 * 9.15 = 80,122 LBS/YEAR

FOR THE SUMP

FOR SUMP ASSU 43,200 GALLONS/DAY WASTEWATER FLOWRATE

ASSUME	570	PPM TOLUENE SOLUBILITY					
LBS/DAY =	43,200	*.00000834*	570	PPM =		205.4	LBS/DAY
ASSUME (10% EXCESS) FOR SPILLS, UPSETS, FLOWS, ETC =						225.9	LBS/DAY
ESTIMATE DAYS OPERATION =	11,461,402	% 100,000 LBS/DAY =				115	DAYS
LBS/YEAR =	226	LBS/DAY *	115	DAYS =		25,891	LBS/YEAR

WASTEWATER TREATMENT SOLVENT DISTRIBUTION

BIOLOGICAL STUDIES @ 20 DAY RETENTION FOR UNACCUMULATED ARE

VOLATILIZED TO ATMOSHPERE = 72 %
PARTIONED TO SLUDGE = 18 %

OUR HOLD-UP IS ONLY 1/4 TO 1/5 OF 20 DAY BIOLOGICAL THEREFORE

EQUALIZATION VOLATILIZED = 72 * 1/4 = 18 %
PARTIONED TO SLUDGE = .18 * 1/4 = 5 %
AVAILABLE FOR TREATMENT = 100 - 23 = 77 %

FOR APPROXIMATELY 90 % TREATMENT
TREATED = .77 * .90 = 69 %
DISCHARGED = .77 * .10 = 8 %

FOR NO CARBON ADSORPTION , TREATED GOES TO ZERO BELOIW

WASTEWATER TREATMENT (WWT) VENTING		25,891	LBS/YR =	4,660	LBS/YEAR
WWT PARTIONED TO SLUDGE	= .05 *	25,891	LBS/YR =	1,295	LBS/YEAR
WWT ADSORBTION OR INCINERATION	= .69 *	25,891	LBS/YR =	0	LBS/YEAR
WWT DISCHARGED DIRECT	= .08 *	25,891	LBS/YR =	0	LBS/YEAR
WWT DISCHARGED TO POTW =				19,936	LBS/YEAR

VOC EMISSIONS - FIXED ROOF TANKS (TOLUENE)

	TOTAL LOSS	EQUAT1 BREATHING LOSS	EQUAT2 WORKING LOSS	MOL-WT Mv	EQUAT2 MULTIPLY	TVP	EQUAT 2 Kn	EQUAT2 ANNUAL THRUPUT	EQUAT2 TANK CAPACITY	EQUAT2 TURNOVER PER YR	EQUAT1 AVG VAPOR SPACE

TANK NO	LBS/YR	LBS/YR	LBS/YR	FACTOR			GAL/YR	GAL/YR	N	HT (FT)
T-3 FD SOLN	1,751	81	1,670	92 13 0.000024	1.025	0.250	2,947,218	2,055	1434	2.50
T-7 #1 SEP	398	0	398	92 13	0.440	0.250	1,637,343	52	31487	1.00
T-8 #1 POLYZ	399	1	398	92 13	0.440	0.250	1,637,343	130	12595	1.00
T-9 #2 SEP	0	0	0	92 13 OUT	0.000	1.000	0	52	0	1.00
T-10 #2 POLYZ	0	0	0	92.13 OUT	0.000	1.000	0	130	0	1.00
T-11 #3 SEP	398	0	398	92 13	0.440	0.250	1,637,343	52	31487	1.00
T-12 #3 POLYZ	399	1	398	92 13	0.440	0.250	1,637,343	130	12595	1.00
T-13 #5 SEP	398	0	398	92 13	0.440	0.250	1,637,343	52	31487	1.00
T-14 #5 POLYZ	399	1	398	92 13	0.440	0.250	1,637,343	130	12595	1.00
T-15 #6 SEP	398	0	398	92 13	0.440	0.250	1,637,343	52	31487	1.00
T-16 #6 POLYZ	399	1	398	92 13	0.440	0.250	1,637,343	130	12595	1.00
T-17 #4 SEP	398	0	398	92 13	0.440	0.250	1,637,343	52	31487	1.00
T-18 #4 POLYZ	399	1	398	92 13	0.440	0.250	1,637,343	130	12595	1.00
T-21 PZD SOLN	1,057	25	1,032	92 13	0.600	0.250	3,110,952	1,200	2592	2.50
T-22 PZD SEP	0	0	0	92 13 NO VENT	0.700	0.250	155,548	400	389	1.20
T-23 PZD SURGE	994	14	980	92.13	0.600	0.250	2,955,404	700	4222	2.40
T-24 HYZ SOLN	8,610	46	8,564	92.13	3.320	0.250	4,666,428	1,175	3971	4.00
T-25 WASH TK	4,606	44	4,563	92.13	1.420	0.250	5,812,568	4,170	1394	0.50
T-26 WASHD SOI	2,725	81	2,644	92 13	1.025	0.250	4,666,428	2,060	2265	2.50
T-27 EVAP FD	2,725	81	2,644	92 13	1.025	0.250	4,666,428	2,060	2265	2.50
T-30 1ST PP EV	2,649	5	2,644	92 13	1.025	0.250	4,666,428	420	11111	2.00
T-31 2ND PP EV	979	5	974	92 13	1.025	0.250	1,719,210	420	4093	2.00
T-36 PEXOIL/TOL	0	0	0	92.13 NO VENT	14.697	0.700	7,409	190	39	1.00
T-40 PEX/TOL ST	189,658	189,041	617	92 13	14.697	1.000	18,993	9,050	2	10.00
T-48 1ST MEL EV	89	6	83	92 13	1.025	0.250	147,361	505	292	3.00
T-71 MEL SOLN	235	51	184	92 13	1.025	0.550	147,361	2,700	55	4.00
T-80 40%ACD/TO	479	229	250	92 13 ATM VENT	1.025	1.000	110,521	20,000	6	10
T-81 40%ACD/TO	479	229	250	92 13 ATM VENT	1.025	1.000	110,521	20,000	6	10
T-83 DEC SEP	354	54	301	92 13	1.025	0.360	368,402	3,450	107	6.00
T-84 40% AC/TOL	705	204	501	92 13 ATM VENT	1.025	1.000	221,041	17,000	13	8.00
T-85 FR TOL STG	358	247	111	92 13 ATM VENT	1.025	1.000	49,120	13,600	4	6.00
T-86 REC TOL	223	52	171	92 13	1.025	0.660	114,614	2,700	42	4.50
T-88 PP HYDRO	5,498	122	5,376	92 13	6.600	0.250	1,473,609	1,400	1053	2.00
T-93 SLG DEC	272	55	217	92.13	1.025	0.260	368,402	1,700	217	3.00
T-99 H2O/TOL SE	962	81	881	92 13	1.025	0.250	1,555,476	2,065	753	2.50
T-101 MEL ACCU	141	16	125	92 13	1.025	0.750	73,680	1,050	70	3.00
T-105 TOL FD MX	962	81	881	92 13	1.025	0.250	1,555,476	2,065	753	2.50
T-108 MEL BLND	29,132	28,007	1,125	92 13 ATM VENT	14.695	0.470	73,680	1,070	69	2.00
T-116 H2O/TOL S	2,517	105	2,412	92 13	1.025	0.250	4,257,092	3,500	1216	2.50
T-117 WASH FEE	8,683	119	8,564	92 13	3.320	0.250	4,666,428	2,400	1944	3.00
T-124 2ND MEL E	47	1	46	92 13	1.025	0.250	81,867	71	1153	1.00
T-131 PP HYDRO	5,498	122	5,376	92 13 NO VENT	6.600	0.250	1,473,609	1,400	1053	2.00
T-139 SUMP	5,491	412	5,079	92 13 ATM VENT	1.025	0.250	8,964,454	2,500	3586	4.30
T-201 RX #7	990	10	980	92 13	0.600	0.250	2,955,404	1,500	1970	1.00
T-202 RX #8	990	10	980	92 13	0.600	0.250	2,955,404	1,500	1970	1.00
T-203 RX #9	990	10	980	92 13	0.600	0.250	2,955,404	1,500	1970	1.00
TOTAL (LBS/YR)	284,840	219,648	65,192				86,445,373	128,668	672	

(ROSIN)

P-59 ROSIN STG	34	34	0	302	0	1	98,835	10,278	10	4.00
T-20 ROSIN FEEI	58	58	0	302	0	0	1,174,961	17,167	68	4.50
T-33 ROSIN/DOW	1	1	0	604	0	0	1,244,076	730	1704	4.00
T-34 R SPG TANI	1	1	0	604	0	0	1,244,076	730	1704	4.00
T-106 MELHI STG	21	21	0	604	0	1	62,204	10,310	6	6.00
T-119 GUM STG	29	29	0	302	0	1	362,856	21,000	17	7.00
T-120 ROSIN STC	173	173	0	302	0	1	1,174,961	125,000	9	12.00
T-129 PP SURGE	0	0	0	604	0	0	1,105,846	240	4608	2.00
T-130 SCRAP RO	43	43	0	302	0	1	15,551	32,200	0	8.00
T-132 PP STG TK	232	232	0	604	0	1	1,105,846	82,000	13	10.00
T-133 GUM STG	41	41	0	302	0	1	362,856	31,200	12	10.00
TOTAL (LBS/YR)	634	634	0				7,952,067	330,855	24	

(OTHER)

T-77 98% H2SO4	5	5	0	98	0	1	22,808	10,170	2	6.00
T-78 98% H2SO4	7	7	0	98	0	1	22,808	12,750	2	6.00
T-96 25% NAOH	13	13	0	40	0	1	208,791	9,395	22	12.50
T-100 98% H2SO4	5	5	0	98	0	1	22,808	8,300	3	6.00
T-134 DOW CATC	0	0	0	166	0	0	1,382,307	75	18431	2.30
T-135 DOW FLAS	#NUM!	#NUM!	0	166	37	0	37,322,293	350	106635	4.70
T-136 DOW STOI	8	8	0	166	0	1	691	1,100	1	6.70
T-137 SER WATE	4	4	0	18	0	0	15,205,379	4,000	3801	1.00
T-138 DOW BLOV	#NUM!	#NUM!	0	166	37	1	0	1,100	0	2.50

T-3 FD SOLN	48.3	905	
T-7 #1 SEP	0.0	398	
T-8 #1 POLYZ	0.0	399	
T-9 #2 SEP	0.0	0	OUT
T-10 #2 POLYZ	0.0	0	OUT
T-11 #3 SEP	0.0	398	
T-12 #3 POLYZ	0.0	399	

NOTE: FOR VOC CALCULATIONS MUST MANUALLY INPUT Kc AND C FOR THE THRUPUT TURNOVERS(Kc) AND SMALL TANK DIAMETER(C)

TURNOVER FACTOR		SMALL TANK DIAMETER FACTOR	
TURNOVERS	Kc	DIA(FT)	C
<35	1	1FT	0.05

T-13 #5 SEP	0.0	398	
T-14 #5 POLYZ	0.0	399	
T-15 #6 SEP	0.0	398	
T-16 #6 POLYZ	0.0	399	
T-17 #4 SEP	0.0	398	
T-18 #4 POLYZ	0.0	399	
T-21 PZD SOLN	8.5	967	
T-22 PZD SEP	100.0	0	NO VENT
T-23 PZD SURGE	8.5	910	
T-24 HYZ SOLN	86.7	1,145	
T-25 WASH TK	65.8	1,575	
T-26 WASHD SOI	48.3	1,409	
T-27 EVAP FD	48.3	1,409	
T-30 1ST PP EV	48.3	1,369	
T-31 2ND PP EV	48.3	506	
T-36 PEXOIL/TOL	100.0	0	NO VENT
T-40 PEX/TOL ST	99.4	1,138	
T-48 1ST MEL EV	48.3	46	
T-71 MEL SOLN	48.3	121	
T-80 40%ACD/TOL		479	ATM VENT
T-81 40%ACD/TOL		479	ATM VENT
T-83 DEC SEP	48.3	183	
T-84 40% AC/TOL		705	ATM VENT
T-85 FR TOL STG		358	ATM VENT
T-86 REC TOL	48.3	115	
T-88 PP HYDRO	100.0	0	
T-93 SLG DEC	48.3	141	
T-99 H2O/TOL SE	48.3	498	
T-101 MEL ACCU	48.3	73	
T-105 TOL FD MX	48.3	498	
T-108 MEL BLND	100.0	0	ATM VENT *
T-116 H2O/TOL S	48.3	1,301	
T-117 WASH FEE	86.7	1,155	
T-124 2ND MEL E	48.3	24	
T-131 PP HYDRO	100.0	0	NO VENT
T-139 SUMP		5,491	ATM VENT
T-201 RX #7	8.5	906	
T-202 RX #8	8.5	906	
T-203 RX #9	8.5	906	
TOTAL		29,707	

40	1	2FT	0.10
45	1	3FT	0.15
50	1	5FT	0.25
60	1	7.5FT	0.40
75	1	10FT	0.50
100	0	12.5FT	0.65
150	0	15FT	0.75
200	0	17.5FT	0.85
250	0	20FT	0.90
300	0	25FT	0.95
400	0	30FT	1.00

NOTE: *EMISSIONS IN T-108 ARE SHOWN IN FINISHED PRODUCT MELHI.

TOTAL TANKAGE CAPACITY = 128,668 GALLONS
TOTAL NITROGEN USAGE = 2,855 SCFH

FOR BREATHING DISPLACEMEI $\frac{P1\ V1}{T1} = \frac{P2\ V2}{T2}$

AVERAGE DAY TEMPERATURE(76.3 DEG F
AVERAGE NIGHT TEMPERATUR 52.9 DEG F

FOR NIGHT VOLUEME(V2) = 128,668 GALLONS OR 17,202 CU FT
THE DAY VOLUEME(V1) = 134,538 GALLONS OR 17,986 CU FT

BREATHING DISPLACEMENT 785 FT3/DAY
= 286,447 FT3/YEAR OR 33 SCFH
FOR WORKING DISPLACEMENT 86445373 GALLONS
= 11,556,868 FT3/YEAR OR 1319 SCFH
TOTAL DISPLACI 286,447 FT3/YR + 11,556,868 FT3/YR
= 11,843,316 FT3/YEAR
= 1,352 SCFH

NITROGEN VENT 2,855 SCFH - 1,352 SCFH = 1,503 SCFH
(MAX) = 2,832 SCFH (SEE NOTE BELOW)

NOTE: FOR POLY-PALE PRODUCTION IS CONTINUEOUS/"STEADY-STATE"/LEVEL CONTROL

THEREFORE, BATCH VOLUMETRIC DISPLACEMENT IS MINIMAL. (EMPTY TANKS EACH RUN.)

ASSUME, TANKAGE VOLUMETRIC DISPLACEMENT (12 TIMES A YEAR) IS ACTUAL DISPLACEMENT

TANKAGE VOLUI 128,668 GALLONS = 17,202 CU FT

VOLUME DISPLA 17,202 CU FT * 12 TIMES/YR % 8,760 HRS/YR = 24 SCFH

THEREFORE, MAXIMUM VENTIN 2,855 SCFH - 24 SCFH = 2,832 SCFH

FOR NITROGEN DISTRIBUTION BASED ON THRUPUT AND BREATHING VOLUEME
CONDENSER EXIT TEMPERATU 75.0 DEG F = 23.9 DEG C
"cond. Exit temp. = cell C29

NOTE: MUST MANUALLY ADJUST "COND. TEMP." FOR TANKS THAT VENT TO ATMOSPHERE

ANTOINE EMISSI 97 SCFH AND 100.0 DEG F OR 37.8 DEG C

EQUAL = 7,990 LBS/YEAR

TABLE BELOW BREAKS DOWN THE TOTAL ANTOINE EMISSIONS INTO INDIVIDUAL TANKS
(IT HAS TO BE CALCULATED FOR EACH INDIVIDUAL TANK NITROGEN FLOW)

TANK NO	ANNUAL THRUPUT GAL/YR	TANK BREATHING GAL/YR	TOTAL GALS/YR	NITROGEN SCFH	TEMP DEG F	ANTOINE EMISSIONS LBS/YEAR	
T-3 FD SOLN	2,947,218	701	2,947,919	97	100	7,990	
T-7 #1 SEP	1,637,343	18	1,637,361	54	70	4,448	
T-8 #1 POLYZ	1,637,343	44	1,637,388	54	70	4,448	
T-9 #2 SEP	0	18	18	0	MTY	0	OUT
T-10 #2 POLYZ	0	44	44	0	MTY	0	OUT
T-11 #3 SEP	1,637,343	18	1,637,361	54	70	4,448	
T-12 #3 POLYZ	1,637,343	44	1,637,388	54	70	4,448	
T-13 #5 SEP	1,637,343	18	1,637,361	54	70	4,448	
T-14 #5 POLYZ	1,637,343	44	1,637,388	54	70	4,448	
T-15 #6 SEP	1,637,343	18	1,637,361	54	70	4,448	
T-16 #6 POLYZ	1,637,343	44	1,637,388	54	70	4,448	
T-17 #4 SEP	1,637,343	18	1,637,361	54	70	4,448	
T-18 #4 POLYZ	1,637,343	44	1,637,388	54	70	4,448	
T-21 PZD SOLN	3,110,952	410	3,111,361	102	80	8,402	
T-22 PZD SEP	155,548	137	155,684	5	85	0	NO VENT
T-23 PZD SURGE	2,955,404	239	2,955,643	97	80	7,990	
T-24 HYZ SOLN	4,666,428	401	4,666,829	153	150	12,603	
T-25 WASH TK	5,812,568	1,423	5,813,991	190	115	15,650	
T-26 WASHD SOI	4,666,428	703	4,667,131	153	100	12,603	
T-27 EVAP FD	4,666,428	703	4,667,131	153	100	12,603	
T-30 1ST PP EV	4,666,428	143	4,666,571	153	100	12,603	
T-31 2ND PP EV	1,719,210	143	1,719,354	56	100	4,613	
T-36 PEXOIL/TOL	7,409	65	7,474	0	222	0	NO VENT
T-40 PEX/TOL ST	18,993	3,088	22,082	1	222	82	
T-48 1ST MEL EV	147,361	172	147,533	5	100	412	
T-71 MEL SOLN	147,361	921	148,282	5	100	412	
T-80 40%ACD/TO	110,521	6,825	117,346	4	100	680	ATM VENT
T-81 40%ACD/TO	110,521	6,825	117,346	4	100	680	ATM VENT
T-83 DEC SEP	368,402	1,177	369,580	12	100	988	
T-84 40% AC/TOL	221,041	5,801	226,843	7	100	1,189	ATM VENT
T-85 FR TOL STG	49,120	4,641	53,761	2	100	340	ATM VENT
T-86 REC TOL	114,614	921	115,535	4	100	329	
T-88 PP HYDRO	1,473,609	478	1,474,087	48	185	3,954	
T-93 SLG DEC	368,402	580	368,982	12	100	988	
T-99 H2O/TOL SE	1,555,476	705	1,556,181	51	100	4,201	
T-101 MEL ACCU	73,680	358	74,039	2	100	165	
T-105 TOL FD MX	1,555,476	705	1,556,181	51	100	4,201	
T-108 MEL BLND	73,680	365	74,046	2	222	28,733	ATM VENT
T-116 H2O/TOL S	4,257,092	1,194	4,258,287	139	100	11,450	
T-117 WASH FEE	4,666,428	819	4,667,247	153	150	12,603	
T-124 2ND MEL E	81,867	24	81,891	3	100	247	
T-131 PP HYDRO	1,473,609	478	1,474,087	48	185	0	NO VENT
T-139 SUMP	8,964,454	853	8,965,307	294	100	49,947	ATM VENT
T-201 RX #7	2,955,404	512	2,955,916	97	80	7,990	
T-202 RX #8	2,955,404	512	2,955,916	97	80	7,990	
T-203 RX #9	2,955,404	512	2,955,916	97	80	7,990	
TOTAL (LBS/YR)	86,445,373	43,909	86,489,282	2832		285,108	

FOR 0.5 % NITROGEN SWEEP EFFICIENCY = 142,554

Antoine vapor pressure equation for TOLUENE

LOG(P)= A-(B/(t+C))

A = 7

B = 1,345

C = 219 oC

Nitrogen = 97 SCFH = 0.270 #moles/Hr

T1(Centigrade) 37.8 100.0 oF

T1(Centigrade) 23.9 75.0 oF

	Vap Press mm Hg	Par Press mm Hg	Vapor Mol Fr	Vapor #moles/Hr	Vap Press mm Hg	Vapor Mol Fr	Vapor #moles/Hr	Vapor #/Hr	Liq Cond #/Hr
Nitrogen		707	0.930	0.2702	733	0.965	0.2702	7.5698	
Toluene	53	53	0.070	0.0204	27	0.035	0.0099	0.9121	0.9691
Total		760.00	1.000	0.2906	760.00	1.000	0.2801	8.4819	0.9691

Toluene (% Recovered) = 51.51 %

Mol Wt. (Toluene) = 92.134
Mol Wt. (Nitrogen) = 28.016
Volume of 1 # mole of Nitrogen at Standard Conditions = 359 cuft

EMISSIONS (I1178 * 8,760 HRS/YR) = 7,990 LBS/YEAR

ASSUME HYDROLYSIS TOTAL SOLIDS IS 40 % AVERAGE (60% TOLUENE)

THEREFORE TOLUENE USAGE 17,192,103 LBS

PERCENT SOLVENT LOSSES = 2.06 % (BASED ON COST SHEET LOSSES AND TOTAL USAGE)
PERCENT SOLVENT LOSSES = 1.91 % (BASED ON CALCULATED LOSSES AND TOTAL USAGE)

FOR SOLVENT RECYCLE ASSUME SOLUTION IS 50 % TOTAL SOLIDS

THEREFORE SOLVENT IN SOLU 11,461,402 LBS

SOLVENT RECY(11,461,402 LBS LESS THE "LOSSES" (353,976 LBS) = 11,107,426 LBS/YEAR RECYCLED

164 MG/L*3.785 L/GAL*4 CUYD/DAY*365DAY/YR*202GAL/YD*1LB/454G*1G/1000MG = 404 LBS/YR

TOLUENE SURFACE IMPOUNDMENT (ON-SITE) = 404 LBS/YR

ETHYLENE OXIDE

With 1999 LDAR update for NON-LEAKING factors

INPUT	**INPUT**
CALANDER YEAR	2,002
E.O. USAGE IN POLYDAD	51,884 LBS
E.O. USAGE IN E.O.D	30,758 LBS
TOTAL E.O. USAGE (CALC)	82,642 LBS
POLYRAD 0515	0 LBS
POLYRAD 0515A	23,650 LBS

POLYRAD 1110	73,790	LBS	
POLYRAD 1110A	17,200	LBS	
SURFACTANT AR150	38,245	LBS	
SURFACTANT AR160	0	LBS	
# DAYS OPERATION (CAN USE NA)	28	DAYS (manual input required "F132")	
SCRUBBER EFFICIENCY	98.0	% ASSUME	

OUTPUT	*OUTPUT*		
E.O. "LOSSES"(USAGE-THEORY)	4,249	LBS	
FUGITIVE EMISSIONS	1,127	LBS	R(II / 5.1)
POINT SOURCE EMISSIONS	62	LBS	R(II / 5.2)
E.O. TO ETHYLENE GLYCOL	3,060	LBS	R(II / 8.6)
ETHYLENE GLYCOL PRODUCED	4,312	LBS	
QUANTITY RELEASED	1,189	LBS	R(II / 8.1)
FOR ETHYLENE GLYCOL :			
ETHYLENE GLYCOL DISCHARGED	0	LBS	R(II / 5.3.1)
ETHYLENE GLYCOL TREATED ON-SITE	0	LBS	R(II/8.6)
ETHYLENE GLYCOL TO POTW	4,312	LBS	R(II/6.1A.1
E.O. USAGE/ 1,000 LBS PRODUCT	541	LBS	
E.O. "LOSSES"/ 1,000 LBS PRODUCT	28	LBS	

FOR POLYRADS: ASSUME

ROSIN AMINE MOL. WT.	285	
ROSIN AMINE PURITY	94	%
ADJUSTED MOL WT.	303	

POLYRAD 0515	0	* .85 =	0
POLYRAD 0515A	23,650	* 7 * .85=	14,072
POLYRAD 0500 =			14,072
POLYRAD 1110	73,790	* .90 =	66,411
POLYRAD 1110A	17,200	* 7 * .9=	10,836
POLYRAD 1100 =			77,247

FOR 0500::: 1 MOLE AMINE + 5 MOLES E.O. = 0500
303 + 5(44) =523
E.O = 5(44)/523 * LBS OF 0500 = 5,919 LBS

FOR 1100::: 1 MOLE AMINE + 11 MOLES E.O. = 1100
303 + 11(44) =787
E.O.= 11(44)/787 * LBS 1100 = 47,506 LBS

FOR SURFACTANTS: ASSUME

WOOD ROSIN MOL. WT.	302	
WOOD ROSIN ACID NO.	160	
THEROETICAL ACID NO.	186	
WOOD ROSIN PURITY	86	%
ADJUSTED MOL. WT.	351	

SURFACTANT AR150	38,245	* 1.0 =	38,245
SURFACTANT AR160	0	* 1.0 =	0

FOR AR150::: 1 MOLE ROSIN + 15 MOLES E.O. = AR150
351 + 15(44) =1011
E.O = 15(44) * LBS OF AR150 = 24,967 LBS

FOR AR160::: 1 MOLE ROSIN + 16 MOLES E.O. = AR160
351 + 16(44) = 1055
E.O = 16(44) * LBS OF AR160 = 0 LBS

THEROETICAL E.O.	78,393	LBS
E.O. "LOSSES"(USAGE-THEORY)	4,249	LBS
E.O. USAGE = LBS OF E.O./(8.34*.85)	11,658	GALLONS
DAYS OF OPERATION FROM LOG SHEETS =	28	DAYS
TOTAL E.O. ADDUCTS =	129,564	LBS
TYPICAL PRODUCTION = LBS % DAYS =	4,627	LBS/DAY
BASE YR 1993 TYP PROD = 5,470LBS/DAY		
DAYS OPERATION =	24	DAYS

FOR P,V,F

Pumps/liq=	3	*	0.0260	0.08	LBS/HR
Valves/liq=	73	*	0.0038	0.28	LBS/HR

Valves/Vap=	21	*	0.0011	0.02	LBS/HR
Flg&con/liq=	231	*	0.0001	0.03	LBS/HR
Flg&con/Vap=	44	*	0.0001	0.01	LBS/HR
RELIEF =	16	*	0.0980	1.57	LBS/HR
				1.98	LBS/HR

ON A CONTINUEOUS BASIS = 17,365 LBS/YR

SINCE WE BLOW THE LINES WE ONLY HAVE
E.O. IN THE P.V.F SERVICE THE ACTUAL
DAYS OF OPERATION = 24 DAYS

THEREFORE P.V.F FUGITIVE EMISSIONS = 1,127 LBS/YR

THEREFORE E.O. TO SCRUBBER = 3,122 LBS/YR

ASSUME SCRUBBER EFFICIENCY = 98.0
E.O. TO ETHLYENE GLYCOL = 3,060 LBS/YR
E.O. VENTED FROM SCRUBBER STACK = 62 LBS/YR

ETHYLENE GLYCOL PRODUCED
LBS E.O. * 62/44 = 4,312 LBS/YR

FOR 98 % REMOVAL

TREATED = 0.98 * 0 LBS = 0 LBS

DISCHARGE= 0 - 0 = 0 LBS

DISCHARGE TO POTW 4,312 LBS

calander year	lbs NH3 usage	lbs 731-D feed	lbs NH3 / M lbs feed	lbs EO usage	lbs product	lbs E.O. / M lbs Prod
87	195,829	1,403,869	139	1,442,191	1,999,020	721
88	231,231	1,999,100	116	1,508,355	2,119,510	712
89	127,840	1,254,044	102	490,301	824,720	595
90	122,926	1,465,446	84	275,339	435,640	632
91	154,160	1,614,772	95	244,077	502,906	485
92	128,821	1,611,607	80	270,067	437,822	617
93	98,645	1,194,184	83	246,553	431,490	571
94	195,096	2,198,972	89	257,031	465,003	553
95	137,304	1,166,265	118	233,440	364,498	640
			#DIV/0!			#DIV/0!
			#DIV/0!			#DIV/0!
			#DIV/0!			#DIV/0!
			#DIV/0!			#DIV/0!
JAN-YTD	15,470	120,822	128	46,820	11,882	3940
FEB-YTD	35,982	198,483	181	65,161	135,082	482
MAR-YTD	35,982	258,169	139	69,076	135,082	511
APR-YTD	60,930	303,856	201	55,699	198,532	281
MAY-YTD	82,436	467,130	176	99,656	228,062	437
JUN-YTD	94,657	575,616	164	119,995	277,902	432
JUL-YTD	110,156	699,975	157	120,145	287,272	418
AUG-YTD	110,156	699,975	157	135,619	329,552	412
SEP-YTD	121,250	928,428	131	158,995	359,192	443
OCT-YTD			#DIV/0!			#DIV/0!
NOV-YTD			#DIV/0!			#DIV/0!
DECYTD			#DIV/0!			#DIV/0!

EPICHLOROHYDRIN

(1999 LDAR UPDATE WITH NON-LEAKING FACTORS)

INPUT	***INPUT***	
CALANDER YEAR	2002	
KYMENE 557H	46,648,810	LBS
KYMENE 557LX	24,100,813	LBS
KYMENE 736	1,868,409	LBS
KYMENE 1022	344,421	LBS
KYMENE MXC	101,480	
KYMENE 621	351,410	
KYMENE 625LX	47,340	

TOTAL KYMENE **CALC**	73,462,683	LBS
EPI IN 557H	2,121,156	LBS
EPI IN 557LX	760,599	LBS
EPI IN 736	468 099	LBS
EPI IN 1022	47,718	LBS
EPI IN MCX	4 330	
EPI IN 621	25 645	
EPI IN 625LX	6,368	
TOTAL EPI **CALC**	3,433,915	LBS
NITROGEN USAGE	1,688	MCF
NITROGEN SWEEP EFFICIENCY	0.2	
2001 PRODUCTION	62,497,806	
PRODUCTION/ACTIVITY INDEX	1 18	
SCRUBBER EFFICIENCY	98 0	% ASSUME

OUTPUT

FIGITIVE EMISSIONS	2,998	LBS/YEAR	R(II / 5 1)
POINT SOURCE EMISSIONS	828	LBS/YEAR	R(II / 5.2)
TO WWT	8,669	LBS/YEAR	
WWT VENTING	0	LBS/YEAR	
WWT TO SLUDGE	173	LBS/YEAR	
WWT BIOLOGICAL	1,127	LBS/YEAR	R(II / 8.6)
WWT ADSORB. / INCIN	0	LBS/YEAR	
WWT EFF. DISCHARGE	0	LBS/YEAR	R(II / 5.3 1)
QUANTITY RELEASED	4,000	LBS/YEAR	R(II / 8.1)
QUANTITY TREAT ON-SITE	1 127	LBS/YEAR	R(II / 8.6)
QUANTITY ON-SITE IMPOUND	173	LBS/YEAR	R(II/ 5.5 3)
WWT DISCHARGE TO POTW	7,369	LBS/YEAR	R(II/8 7)

WITH COMPLETION OF KYMENE PROJECT, EQUIPMENT UPDATE "DOUBLED"

	OLD(1987)	UPDATE1992	LDAR(1995)	LDAR(1999)	SOCMI FACTORS (LBS/HR) AVERAGE	NON-LEAKING
NUMBER PUMPS (+1 AGIT)	1	2	2	4	0.11	0 02600
NUMBER VALVES (LIQ)	13	26	34	49	0.016	0.00380
NUMBER VALVES (VAP)				8		0.00110
NUMBER FLANGES (+CONN)	56	112	222	333	0.0018	0.00013
LBS/HR =	0	1	1	**0**		
LBS/YEAR =	3,669	7 337	10,193	**2,998**		

FOR EPI, ASSUME WORST CASE FOR ALL EPI EXCECT 557LX
SINCE THE EPI "DROPS IN"
ASSUME ALL VAPOR SPACE DISPLACEMENT IS EPI

DISPLACEMENT = EPI* 1GAL/8.34*1.2 * 1FT/7.48GAL = 35,711 FT3
EPI TO SCRUBBER = EPI* 1MOLE/379FT3 * 92.5LBS/MOLE = 8,716 LBS

FOR 557LX WHICH IS PUMPED IN UNDERNEATH THE LIQUID
EPI VAPOR PRESSURE = 40 mm Hg
EPI MOLE FRACTION IN VAPOR, VP/760 = 0.0526

LX DISPLACEMENT= EPI* 1GAL/8 34*1.2 *1FT/7.48/GAL = 10,160 FT3
EPI TO SCRUBBER = EPI* 1MOLE/379FT3 *92.5LBS/MOLE = 131 LBS

TOTAL EPI(FROM RX) TO SCRUBBER = 8,846 LBS

ASSUME **98.0** PERCENT SCRUBBER EFFICIENCY
EPI IN SCRUBBER WATER TO WWT = **8,669** LBS
EPI FROM SCRUBBER VENT = **177** LBS

BREATHING LOSSES FROM K-110, 11 5FT DIA 22FT HT
BREATHING LOSSES (K-110) = 94 LBS/YR
BREATHING LOSSES (K-111) = 2 LBS/YR
BREATHING LOSSES TOTAL = **96**

ASSUME NUMBER OF BATCHES IS (LBS PRODUCTION / 107 000 LBS/BATCH)

NUMBER BATCHES = 73,462,683 DIVIDED BY 107,000 = 687 BATCHES

FOR 30 SCFM NITROGEN PURGE FOR 30 MINUTES PER BATCH (30*30=900CFM/BATCH)
TOTAL NITROGEN PURGE = 687 * 900 = 617,910 CF

NITROGEN LEFT FOR BLANKET OF EPICHLOROHYDRIN AND DETA & HMDA = 1,070,090 CF

ASSUME NITROGEN SPLIT BETWEEN THE TWO SERVICES

THEREFORE NITROGEN IN EPI SERVICE = 535,045 = 61 SCFM

Antoine vapor pressure equation for EPICHLOROHYDRIN

LOG(P)= A-(B/(t+C))
A =
B =
C = 22 oC

NOTE V.P. for EPI @ 22 oC = 15 mmHg

Nitrogen = 61 SCFH = 0.170 #moles/Hr

	T1(Centigrade) 22	72 oF		
	Vap Press mm Hg	Par Press mm Hg	Vapor Mol Fr	Vapor #moles/Hr
Nitrogen		745	0.980	0.1701
EPI	15	15	0.020	0.0034
Total		760.00	1.000	0.1736

T1(Centigrade) 22	72 oF			
Vap Press mm Hg	Vapor Mol Fr.	Vapor #moles/Hr	Vapor #/Hr	Liq Cond #/Hr
745	0.980	0.1701	4.7665	
15	0.020	0.0034	0.3170	0.0000
760.00	1.000	0.1736	5.0834	0.0000

Epichlorohydrin (% Recovered) = 0.00 %

Mol Wt (Epichlorohydrin) = 92.53
Mol. Wt (Nitrogen) = 28.016
Volume of 1 # mole of Nitrogen at Standard Conditions = 359 cuft

EMISSIONS (I19 * 8,760 HRS/YR) = 2777 LBS/YEAR

FOR A NITROGEN SWEEP EFFICIENCY OF 0.2

EMISSIONS = 2,777 * 0.2 = 555 LBS/YEAR

FUGITIVE EMISSIONS =	2,998 LBS/YR	(FROM LDAR P,V,F "F1236")
PT SOURCE =	828 LBS/YR	("D1257" + "D1262" + "H1341")
TO WWT =	8,669 LBS/YR	("E1256")

TOTAL = 12,496 LBS/YEAR

FOR WATERTREATMENT

BIOLOGICAL STUDIES @ 20 DAY RETENTION FOR UNACCUMULATED ARE
VOLATILIZED TO ATMOSPHERE = 0 %
PARTIONED TO THE SLUDGE = 6 %
BIOLOGICAL DEGRADED = 53 %

OUR HOLD-UP IS ONLY 1/4 TO 1/5 OF 20 DAY BIOLOGICAL THEREFORE

VOLATILIZED TO THE AIR = 0 * 1/4 = 0 %
PARTIONED TO THE SLUDGE = 6 * 1/4 = 2 %
BOILOGICAL DEGRADED = 53 * 1/4 = 13 %
THEREFORE AVAILABLE OF TREATMENT = 100 - 0 -2 - 13 = 85 %

FOR APPROXIMATELY 90 % TREATMENT:
TREATMENT = 85 * .90 = 77 %
DISCHARGED = 85 * .10 = 8 %

WASTEWATER TREATMENT (WWT) VENTING = 0 *	8669	LBS/YR =	0 LBS/YEAR
WWT PARTIONED TO THE SLUDGE = .02 *	8669	LBS/YR =	173 LBS/YEAR
WWT BIOLOGICAL TREATMENT = .13 *	8669	LBS/YR =	1127 LBS/YEAR
WWT ADSORBTION OR INCINERATION = .77 *	8669	LBS/YR =	0 LBS/YEAR
WWT EFFLUENT DISCHARGE = .08 *	8669	LBS/YR =	0 LBS/YEAR

WWT DISCHARGED TO POTW = 7,369 LBS/YEAR

AMMONIA

(WITHOUT LDAR COMPONENT UPDATE)

INPUT	**INPUT**		pH	Normality
CALANDER YEAR	2002		9.00	0.00010
AMMONIA USAGE	107,972	LBS	9.50	0.00050
NITRILE PRODUCTION	429,814	LBS OF 731-D FEED	10.00	0.00100
WASTEWATER FLOW AVERAGE	95,268	GPD	10.50	0.00500
AVERAGE WASTEWATER pH	10.0		11.00	0.01000
pH NORMALITY	0.00100		11.50	0.05000
I.B. SLUDGE GENERATION RATE	4	CU YD/DAY	12.00	0.10000

					12.50	0.50000
OUTPUT	*OUTPUT*				13	1.00000

NH3 "LOSSES"(USAGE-THEORY)	89,761	LBS		
FUGITIVE EMISSIONS	2,667	LBS		R(II / 5.1)
POINT SOURCE EMISSIONS	885	LBS		R(II / 5.2)
NH3 TO (NH4)2SO4 @ 90%, & 10% POTW	86,209	LBS		
AMMONIUM SULFATE PRODUCED	301,224	LBS	<?> 25,000LBS	
AMMONIA RECYCLE	462,727	LBS		R(II / 8.4)
NH3 "LOSSES"/ 1,000 LBS FEED	208.8	LBS/1,000 LBS FEED		
QUANTITY RELEASED	12,616	LBS		R(II / 8.1)
QUANTITY TO POTW	8,621	LBS		R(6.1A.1.)(R8.7)
QUANTITY ON SITE IMPOUNDMENT	443	LBS		(RII/ 5.5.3)

731-D MOLECULAR WEIGHT	302	
731-D THEROETICAL ACID NUMBER	186	
731-D TYPICAL ACID NUMBER	150	
731-D % PURITY (A.N.)	80.65	
AMMONIATION FINAL A.N	10	
% CONVERSION (A.N. DROP)	93.33	
ADJUSTED MOL WT	401.23	
THEROETICAL AMMONIA	18,211	
AMMONIA LOSSES	89,761	
NH3 % EXCESS	492.89	%

AVERAGE FUGITIVE EMISSION FACTORS, EPA-450/3-86-002

NUMBER PUMPS	3.00	0.11	0.33	
NUMBER VALVES	68.00	0.01	0.82	
NUMBER FLANGES	145.00	0.00	0.26	
RELIEF	4.00	0.23	0.92	
		TOTAL =	2.33	LBS/HR
		=	20,385	LBS/YEAR

FUGITIVE EMISSIONS (P, V, F) = 2,667 LBS/YEAR

WASTEWATER FLOW		95,268	GPD		
ASSUME pH OF	10.0	0.00100	N	=	0.01700 g/l
NH3 IN WASTEWATER		86,209	LBS		

AVG NH3 LOSS IN WASTEWATER = 1,805 LBS/DAY

AMMONIUM SULFATE PRODUCED 301,224 LBS

NH3 LIQ 300FT/2"LINE	245	LBS
NH3 VAP 300FT/1"LINE	1	LBS
LOSSES/TRUCK UNLOADING	246	LBS/TRUCK
TOTAL BLEED DOWN	885	LBS

AMMONIA FRESH USAGE	25	SCFM
AMMONIA RECYCLE USAGE	150	SCFM
TOTAL USE	175	SCFM
DAILY USE	11,303	LBS/DAY
TYPICAL 731-D FEED RATE	15,000	LBS/DAY
DAYS OPERATION(FEED)	28.65	
DAYS OPERATION(NH3)	66.87	
AVERAGE DAYS OPERATION	47.76	DAYS

LBS RECYCLE 462,727 LBS

FOR
AQ AMMONIA AT DRESINOL

H2SO4 + 2NH4OH = (NH4)2SO4 +2H2O
98 70

(NH4)2SO4 = (NH4OH)
132 35

ASSUME 1 TOTE/YEAR OF 40% ACID USED IN EDUCTOR SCRUBBER

200GAL/TOTE * 1 TOTE/YR * 8.34LB/GAL *1.4 SP GR * 40(%) *70/98 = 6,672 LB/YR OF (NH4OH)

FROM FORM R, 10% OF (NH4OH) IS "REPORTABLE" = .10 * 6,672 = 667 LBS/YR

THEREFORE AMMONIA IS 17/35 * 667 = 324 LB/YR AS AMMONIA PER TOTE OF 40% ACID

NUMBER OF TOTES = 0

AMMONIA TO POTW = 0 LBS/YR (R6.1.A.1.)

FOR
AMMONIUM SULFATE FORMED AT RAD

86,209 LBS * 10(%) = 8,621 LBS/YR

AMMONIA TO POTW = 8,621 LBS/YR (R6.1.A.1.)

FOR
AMMONIA IN SLUDGE (BASIS = 4 CU YDS PER DAY OF SLUDGE GENERATION)

180 MG/L*3.785 L/GAL*4 CUYD/DAY*365DAY/YR*202GAL/YD*1LB/454G*1G/1000MG = 443 LBS/YR

AMMONIA SURFACE IMPOUNDMENT (ON-SITE) = 443 LBS/YR

SO2 (Sulfur Dioxide) FUGITIVES @ POLY-PALE

INPUT

CALANDER YEAR	2002	
POLY-PALE PRODUCTION	10,754,657	LBS
MELHI PRODUCTION	706,745	LBS
TOTAL PRODUCTION**CALC**	11,461,402	LBS
98% SULFURIC ACID	1,441,747	LBS
HISTORICAL NEUTRALIZATION	0.84	FACTOR
PPM SULFUR IN PPRODUCT	500	PPM
OTHER ALKALINE WASTEWATER	150,000	GPD
AVERAGE pH	~10.5	pH (>10 & <11)
AVERAGE NORMALITY	0.0050	eq/l (for ~ 10.5 pH)
TYPICAL PRODUCTION RATE	120,000	LBS/DAY
DAYS OPERATION**CALC**	96	DAYS
100% CAUSTIC	544,713	LBS
T/T WEAK ACID SOLD	0	NUMBER
AVERAGE T/T WEIGHT	42,000	LBS
AVERAGE % ACID STRENGTH	0.40	FRACTION

OUTPUT

	HISTORICAL		ACID BALANCE	
FUGITIVE SO2 =	63,027	LBS	313,211	LBS
	27	LBS/HR	136.64	LBS/HR
	32	TONS/YEAR	156.61	TONS/YEAR
AT CAPACITY =	346,443	LBS	1,721,630	LBS
	40	LBS/HR	196.53	LBS/HR
	173	TONS/YEAR	860.82	TONS/YEAR
RECYCLED OFF-SITE =	0	LBS/YEAR		
RECYCLED ON-SITE =	1,345,236	LBS/YEAR		

HISTORICAL DATA, ALONG WITH 1990 STUDY, SHOWS 84% OF ACID IS NEUTRALIZED

THEREFORE, 16% IS CONSUMED BY OTHER PLANT ALKALI SOURCES

(HERCLOR & RAD WASTEWATERS, PRODUCT, SO2 GENERATION, SO2, SO3, H2SO4 MIST, ..., ETC.)

ACID (100%) BASIS = 1,412,912 LBS

NEUTRALIZED = 0.84 * 1,412,912 = 1,186,846 LBS

THEREFORE REMAINDER = 1,412,912 - 1,186,846 = **226,066** LBS

"EXAMPLE"
ASSUME WW's FOR HERCLOR, RAD, ECT, ARE: 10 pH
0.001 eq/l
150,000 gpd

THEREFORE, LBS NAOH EQUIVALENTS ARE:
("example")
(0.040g / 2.2 lbs * 150,000gpd * 8.34 * 365days/yr) / 454g/lb = 18,287 lbs NaOH Eq

"ACTUAL"
LBS NaOH EQ (CALC)= 91,433 LBS NAOH EQ

THEREFORE, H2SO4 NEUTRALIZED = 98/80 * 91,433 LBS EQ = **112,005** LBS

ASSUME: 500 PPM SULFUR IN POLY-PALE AND MELHI @ 11,461,402 LBS PRODUCT

THEREFORE H2SO4= 98lb/32lb * 500 /1,000,000 * 11,461,402 = **17,550** LBS H2SO4

NUMBER OF TANK TRUCKS OF WEAK ACID SOLD = 0 TRUCKS

AVERAGE TANK TRUCK WEIGHT = 42,000 LBS

AVERAGE ACID CONCENTRATION = 0.40 % (FRACTION)

ACID = 0 * 42,000 * 0.40 = **0** LBS SOLD

THERE IS NO DATA FOR BREAKDOWN OF SO2,SO3,H2SO4 MIST, ETC...
THEREFORE, ASSUME "ALL" GOES TO "SO2"

THEREFORE SO2 = 64/98 * 96,511 = 63,027 LBS SO2
27.50 LBS/HR
31.51 TONS/YEAR

AT CAPACITY, SO2 = 346,443 LBS SO2
39.55 LBS/HR
173.22 TONS/YEAR

AMOUNT RECYCLED OFF-SITE = NUMBER OF TRUCKS SOLD TO G.P. = 0 LBS/YEAR

AMOUNT RECYCLED ON-SITE = USAGE - AMT SOLD - AMT TO SO2 = 1,345,236 LBS/YEAR

ACID / BASE BALANCE

POLY-PALE ACID (100% BASIS) = + 1,412,912 LBS

ACID NEUTRALIZED WITH CAUSTIC = - 667,273 LBS
ACID NEUTRALIZED WITH OTHER eq = - 248,484 LBS H2SO4 REACTING WITH NH3 LOSSES OF 86,209 LBS
ACID IN MELHI AND POLY-PALE = - 17,550 LBS
ACID SOLD = - 0 LBS

REMAINING ACIDITY = 479,604 LBS

THEREFORE SO2 = 64/98 * 479,604 = 313,211 LBS SO2
136.64 LBS/HR
156.61 TONS/YEAR

AT CAPACITY, SO2 = 1,721,630 LBS SO2
196.53 LBS/HR
860.82 TONS/YEAR

BIPHENYL ——— 2001

AREA	DOWTHERM(LBS)	NAT GAS(M CF)
AMINE	2,037	4,940
POLYRAD	0	0
DYMEREX	23,817	2,891
KETTLE	16,607	13,484
POLY-PALE	4,663	12,535
P-CYMENE	0	0

TOTAL	47,124 LBS	33,850 MCF

DOWTHERM IS 27 PERCENT BIPHENYL
BIPHENYL LOSS = 27*TOTAL= **12,723** LBS (LESS THAN 10,000 LBS ?)
NO REPORT REQUIRED

NEW PP BOILER DESIGN = 2 0 MM BTU/HR VAPOR OUTPUT / 3 19 MM BTU/HR BURNER OUTPUT = 627

OLDER BOILERS NOT AS EFFICIENT, USE AVERAGE PERCENT EFF = 6

THEREFORE VAPOR OUTPUT = 6*TOTAL(MCF) = 20,310 (MCF EQUIV)

ASSUME 1 0 MM BTU/MCF
DOWTHERM ENTHALAPHY @ 620F = 381 5 BTU/LB
DOWTHERM RECYCLE= 1 MM BTU/MCF * 1 MCF/381 5 BTU * NO MCF EQUIV
= 53,237,221 LBS

BIPHENYL RECYCLE= 27 * DOWTHERM RECYCLE = 14,374,050 LBS

LEAD

LEAD BARS 1/4"	70 LBS			
LEAD BARS 3/8"	44 LBS			
TOTAL BURNING BARS	114 LBS **> 100 REPORT !**	FUGITIVE EMISSIONS =	0.09 LBS/YEAR	(R5 1, R8 1)
SANDBLASTING SAND	1,000 LBS	RELEASED ONSITE =	0.20 LBS/YEAR	(R5 5 4 R8 1)
SAND TCLP LEAD	1,142 PPM	TRANSFER OFFSITE =	1.24 LBS/YEAR	(R6.2 R8.1)
TYVEX SUITS	295 LBS	RECYCLED OFFSITE =	0.00 LBS/YEAR	(R8.5)
TYVEX TCLP LEAD	344 PPM	ACTIVITY INDEX =	1 21	
LEAD EMISSION FACTOR	1 5 LB / TON			
LEAD SHEETS	4,960 LBS			

LEAD FUGITIVE EMISSIONS =	1 5 LBS/TON	*	0 057 TONS	=	0.09 LBS/YEAR
LEAD TYVEX SUITS =	344 PPM	*	295 LBS	=	0.10 LBS/YEAR
LEAD IN SANDBLAST =	1,142 PPM	*	1,000 LBS	=	1.14 LBS/YEAR

ASSUME: 1/16" THICKNESS SAW BLADE
1/8" THICKNESS FOR ALL CUTTINGS, SHEET, PIPE, GASKETS, ETC
1 LINEAR FOOT OF CUTTING FOR EVERY 10 LBS OF LEAD USED, COMPENSATES FOR THICKER PIPE/GASKETS/ETC.
(1/16 *1/12) * (1/8 * 1/12) * 1 FT * 62 4 * 11.95 = 0.04 LB LEAD / LINEAR FT OF CUTTING

LEAD CUTTINGS, ON FLOOR = 4,960 LBS * 0 04 LB/10 LBS = 20.1 LBS/YEAR

ASSUME: VACUUM UP 99 PERCENT OF CUTTINGS

CUTTINGS LOST = 0 20 LBS/YEAR

LEAD RECYCLED = 0 LBS SOLD TO SHEMPER

ACTIVITY INDEX = SAME AS POLY-PALE = 1 21