ANHEUSER-BUSCH COMPANIES

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August 29, 1990

Mr. C. H. Fancy, P.E.
Chief-Bureau of Air Regulation
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Fancy:

Enclosed please find ten copies of an Application to Construct for a modernization project for the Gainesville Lid Plant. The project will increase the facility's lid production capacity and subsequently will increase potential annual emissions of volatile organic compounds 241 tons above the currently permitted 323 tons. These emissions will be minimized by the use of low solvent/high solids compounds.

The copy of the document in the binder includes the signed and sealed copies of the application form. A check in the amount of $5,000 is enclosed to cover the application fee.

Please call me at 314-577-4162 with any and all questions. As the permit is the critical path for construction, anything that can be done to expedite review would be appreciated.

Sincerely,

ANHEUSER-BUSCH COMPANIES, INC.

Dean E. Pusch

Dean E. Pusch
Sr. Environmental Scientist
Enclosure
DEP:cd
DEP82990

S. Pusch, DER Gainesville - 11-7-94

1990 AUG 31 AM 11:50
DEP - AIR PROGRAM

Executive Offices

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2. Complete applicable unshaded areas.
3. Instructions to fill on reverse.
4. Call us if you have any questions.

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614910308	164-1907-162

ORIGIN	DESTINATION
STL	TLH
3 PIECES	WEIGHT
1	13

16

4 SENT BY (COMPANY NAME)

ANHEUSER BUSCH INCORPORATED
Mr. Dean E. Pusch
ONE BUSCH PLACE
ST LOUIS, MO
63118

5 RECIPIENT (COMPANY NAME)

Florida Dept. of Env. Regulation
Chief Bureau of Air Regulation
Mr. C. H. Fancy, P.E-
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida
32399-2400

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Metal Container Corporation

ONE OF THE ANHEUSER-BUSCH COMPANIES

000265

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1201 Market Street
Wilmington, Delaware 19801

62-26
311

-09
2338

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$ ****5,000.00****

TO THE ORDER OF: Florida Department of Environmental Regulation

METAL CONTAINER CORPORATION

AUTHORIZED SIGNATURE

AUTHORIZED SIGNATURE

⑈000002 65⑈ ⑆031100267⑆ 630142338 4 509⑈

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

$5,000 pd. 8-31-90 Recpt. #151159

AC01-165835
PSD-FL-153

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

RECEIVED
AUG 31 1990
DER BAQM

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Aluminum Lid Manufacturing [ ] New[1] [X] Existing[1]

APPLICATION TYPE: [X] Construction [ ] Operation [ ] Modification

COMPANY NAME: Metal Container Corporation COUNTY: Alachua

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) Lid Modules No. 1 thru No. 4

SOURCE LOCATION: Street 5909 N.W. 18th Drive City Gainesville

UTM: East 369.38 Km North 3287.23 Km

Latitude 29 ° 42 ' 5 "N Longitude 82 ° 20 ' 53 "W

APPLICANT NAME AND TITLE: Joseph J. Waters, Plant Manager

APPLICANT ADDRESS: 5909 N.W. 18th Drive, Gainesville, FL 32606

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Metal Container Corporation

I certify that the statements made in this application for a construction permit permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: Joseph J. Waters

Joseph J. Waters, Plant Manager
Name and Title (Please Type)

Date: 8/17/90 Telephone No. 904/378-8800

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that

[1] See Florida Administrative Code Rule 17-2.100(57) and (104)

the pollution control facilities, when properly maintained and operated, will discharge effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed _____

John H. Schamburg, P.E.
Name (Please Type)

Metal Container Corporation
Company Name (Please Type)

3636 S. Geyer Road, Suite 400
St. Louis, MO 63127
Mailing Address (Please Type)

Florida Registration No. 29984 Date: 8/29/90 Telephone No. 314/577-9556

SECTION II: GENERAL PROJECT INFORMATION

4. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

The project will consist of modernization of the facility. Two existing lid modules (2 shell presses, 5 conversion presses &11 liners) will remain. Other existing equipment will be replaced by two new shell presses, 7 conversion presses and 3 liners. See Attachment II for a detailed description of the project.

3. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction 4-1-91 Completion of Construction 8-1-92

Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

3. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

Permit No. AC 01-159304 issued 9/25/89 expires 7/31/91; permit No. A001-144728 issued 4/20/89 expires 5/1/93.

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ;

if power plant, hrs/yr_____; if seasonal, describe:_____

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? No

   a. If yes, has "offset" been applied? _____

   b. If yes, has "Lowest Achievable Emission Rate" been applied? _____

   c. If yes, list non-attainment pollutants. _____

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. Yes

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? No

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? No

   a. If yes, for what pollutants?_____

   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram see Attachment V.6
	Type	% Wt		
end sealant	VOC	40.5	201.0	3
tab lube	VOC	94.5	45.8	4
solvent	VOC	100.0	18.9[a]	5
mineral spirits	VOC	100.0	1.8	5
aluminum	--	--	9510	1, 2

[a]represents 77.7% of total usage; 22.3% is recovered for recycle.

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 9510 lb/hr aluminum shell and tab stock

2. Product Weight (lbs/hr): 7030 lb/hr finished lids

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
VOC	145.0	563.8	N/A		145.0	563.8	8, 9, 10

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard.

[4]Emission, if source operated without control (See Section V, Item 3).

D[redacted]ontrol Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
[redacted]			

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis:

Percent Sulfur: _____ Percent Ash: _____

Density: _____ lbs/gal Typical Percent Nitrogen: _____

Heat Capacity: _____ BTU/lb _____ BTU/gal

Other Fuel Contaminants (which may cause air pollution): _____

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average _____ Maximum _____

G. Indicate liquid or solid wastes generated and method of disposal.

aluminum scrap and waste compound, solvent, and mineral spirits to recycle.

[redacted]

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: _____ ft. Stack Diameter: _____ ft.

Gas Flow Rate: _____ ACFM _____ DSCFM Gas Exit Temperature: _____ °F.

Water Vapor Content: _____ % Velocity: _____ FPS

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

Description of Waste _____

Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr) _____

Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____

Manufacturer _____

Date Constructed _____ Model No. _____

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diamter: _____ Stack Temp. _____

Gas Flow Rate: _____ ACFM _____ DSCFM* Velocity: _____ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) _____

Brief description of operating characteristics of control devices: _____

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]

2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.

3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).

4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.)

5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency).

6. An 8 1/2" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.

7. An 8 1/2" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).

8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

[ ] Yes [X] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy)

[X] Yes [ ] No

Contaminant	Rate or Concentration
volatile organic compounds	3.7 lb/gal

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration
volatile organic compounds	3.2 lb/gal

D. Describe the existing control and treatment technology (if any).

1. Control Device/System: low solvent/high solids compound
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters n/a

a. Height: ft.

b. Diameter: ft.

c. Flow Rate: ACFM

d. Temperature: °F.

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary). see Attachment VI

1.

a. Control Device: water-base end sealant

b. Operating Principles:

c. Efficiency:[1] 56 % reduction from proposed level

d. Capital Cost: $4.5 million

e. Useful Life: 10 yr

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:) $1,339,460 per year

i. Availability of construction materials and process chemicals: good

j. Applicability to manufacturing processes: operational & technical restrictions

k. Ability to construct with control device, install in available space, and operate within proposed levels: operational & technical restrictions necessitate additional equipment to meet committed production levels.

2.

a. Control Device: thermal oxidizer

b. Operating Principles: incineration

c. Efficiency:[1] 50% reduction from proposed level

d. Capital Cost: $1.8 million

e. Useful Life: 10 yr

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:) $774,715 per yr

i. Availability of construction materials and process chemicals: good

[1] Explain method of determining efficiency.

[2] Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes: Capture methods have never been successfully demonstrated

k. Ability to construct with control device, install in available space, and operate within proposed levels: very difficult

3.

a. Control Device: high solids/low solvent end sealant

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals: good

j. Applicability to manufacturing processes: good

k. Ability to construct with control device, install in available space, and operate within proposed levels: currently in use

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

. Describe the control technology selected:

1. Control Device: high solids/low solvent end sealant

2. Efficiency:[1]

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:[2]

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company: Metal Container Corporation

(2) Mailing Address: 3713 Harmon Avenue

(3) City: Oklahoma City

(4) State: OK

[1] [illegible]in method of determining efficiency.
[2] [illegible]y to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager: Marlene M. Accardo

(6) Telephone No.: 314/957-9529

(7) Emissions:[1]

Contaminant	Rate or Concentration
volatile organic compounds	3.4 lb/gal

(8) Process Rate:[1] 1989 production - 6.9 billion lids

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems: efficiency, quality of product, cost effectiveness

[1]Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data

1. _____no. sites _____ TSP _____( ) SO^{2}* _____ Wind spd/dir

Period of Monitoring ____/____/____ to ____/____/____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.
See Attachment VII.A

*Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. _____ Year(s) of data from _____/_____/_____ to _____/_____/_____
month day year month day year

2. Surface data obtained from (location)_____

3. Upper air (mixing height) data obtained from (location)_____

4. Stability wind rose (STAR) data obtained from (location)_____

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate
TSP	_____ grams/sec
SO^2	_____ grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

APPLICATION TO CONSTRUCT AN AIR POLLUTION SOURCE

METAL CONTAINER CORPORATION

GAINESVILLE LID PLANT MODERNIZATION

Submitted to:

Florida Department of Environmental Regulation

Tallahassee, Florida

August 15,1990

INTRODUCTION

Metal Container Corporation intends to modernize the Gainesville Lid Plant. The modernization will result in an increase in the facility's annual production, based on shell press capacity, from an existing 6.528 billion lids to 11.445 billion lids. This project will result in an annual potential increase of 241 tons of volatile organic compound emissions above the currently permitted 323 tons. Potential VOC emissions will be minimized through the use of low-solvent, high solids compounds.

The following pages present the application form and supporting information for a permit to construct an air pollution source as required by the Florida Department of Environmental Regulation.

November 30, 1989

DELEGATION OF AUTHORITY FORM

Joseph Waters

Pursuant to authority conferred by the Board of Directors of Metal Container Corporation as set out in resolutions adopted on November 7, 1989 a copy of which is attached hereto, I hereby delegate to you authority to sign, in the name and on behalf of this corporation, in your capacity as Plant Manager at Gainesville Lid Plant reports or routine documents required to be filed by this corporation under or by virtue of any environmental law or regulation of any nature whatsoever whether of the United States or of any of the sundry states.

Barry H. Beracha

Barry H. Beracha
President

MA/1114SR.FRM

Metal Container Corporation

WHEREAS, it has been determined that it is in the best interests of this corporation to specify those individuals who are authorized to sign any documents required by state and federal environmental laws and regulations.

NOW, THEREFORE IT IS

RESOLVED, that effective as of November 7, 1989, the President or any Vice Presidents of this corporation be and he is hereby authorized to sign, and also, in writing, to delegate to any other officers, employees or agents of this corporation the authority to sign in the name and on behalf of this corporation reports or routine documents required to be filed by this corporation under or by virtue of any environmental law or regulation of any nature whatsoever whether of the United States or of any of the sundry states. Any delegation of authority made pursuant to this resolution shall be in writing, and a copy thereof filed with the Vice President and Secretary, the Vice President and General Counsel and the Director of Environmental Engineering & Site Services Department of Anheuser-Busch Companies, Inc.

76721

ATTACHMENT II.A

PROJECT DESCRIPTION

PROJECT DESCRIPTION

Metal Container Corporation intends to modernize its Gainesville Lid Center. This modernization will increase the facility's annual shell press production capacity to 11.445 billion lids from the existing 6.528 billion lids.

The modernization project will consist of:

1) the removal of all existing shell presses and conversion presses with the exception of:

   a) the shell press, two conversion presses, and two liners currently permitted as Module 4,

   b) the shell press, three conversion presses, and three liners permitted as Module 6,

   c) the six additional existing liners.

2) the addition of the following new equipment:

   a) two shell presses,

   b) seven conversion presses,

   c) three liners, and

   d) a shell press scrap cyclone, and]

   e) supporting equipment, e.g., balancers and baggers.

A list of the production equipment which will be in-place at the facility after the modernization is presented in Table II.A-1.

TABLE II.A-1
GAINESVILLE LID CENTER MODERNIZATION -
EQUIPMENT LIST

IDENTIFICATION	MANUFACTURER	COMMENTS
SHELL PRESS		
SP-1	Minster/Redicon End Level II	New
SP-2	"	"
SP-3	"	Existing a)
SP-4	Minster/Redicon DAS-100-72	" b)
CONVERSION PRESS		
CP- 1	Minster/Stolle	New
CP- 2	"	"
CP- 3	"	"
CP- 4	"	"
CP- 5	"	"
CP- 6	Bruderer/Stolle	Existing b)
CP- 7	"	" b)
CP- 8	Minster/Stolle	" a)
CP- 9	"	" a)
CP-10	"	" a)
CP-11	"	New
CP-12	"	"
END LINER		
EL-1	Preferred	Existing a)
EL-2	"	" a)
EL-3	"	" a)
EL-4	"	" b)
EL-5	"	" b)
EL-6	"	"
EL-7	"	"
EL-8	"	"
EL-9	"	"
EL-10	"	"
EL-11	"	"
EL-12	"	New
EL-13	"	"
EL-14	"	"

a) Currently identified/permitted as Module 6 by Florida DER.
b) Currently identified/permitted as Module 4 by Florida DER.

PROCESS DESCRIPTION

Aluminum stock is stamped into lid "shells" by the shell presses. The rims of these shells are curled in the presses, and end sealant is applied in the curl by the liners. The lids are "finished" by the conversion presses which emboss the lids, score the openings, and fabricate and attach the tabs.

EMISSIONS

Emissions of volatile organic compounds occur from the use of end sealant, tab lube, and clean-up solvents. After modernization, the facility will have the potential to emit 563.8 tons per year of VOC. This represents an increase of 240.8 tons above the currently permitted annual rate of 323 tons.

Emissions from the facility will be controlled by the use of low solvent compound and through optimization of production operation to minimize usage of the compounds.

ATTACHMENT V.2

EMISSION ESTIMATES

EMISSION ESTIMATES

Estimates of emissions of volatile organic compounds due to operation of the Gainesville plant after the modernization project are presented in the attached spreadsheet. These emissions are based on the compositions of compounds that are currently used at the plant. VOC data sheets and Material Safety Data Sheets for these compounds are attached.

The estimates are based on shell press capacity, which assumes that all shells produced are lined and converted. Compound usage rates are based on 1989 operations. Short-term emissions are calculated assuming that all shell presses operate simultaneously at 100 percent capacity. Annual emissions assume a 90 percent shell press operating efficiency.

The maximum hourly VOC emission from the facility after the project will be 144.3 pounds per hour. Annual emission from the facility will be 563.8 tons of VOC.

Attachment VIII presents a speciation of these VOC emissions by their potentially toxic constituents.

METAL CONTAINER CORPORATION
GAINESVILLE LID PLANT
MODERNIZATION PROJECT

VOC Emissions Basis

estimates based on shell press capacity
(assumes all shells produced are lined)

press operating efficiency	90	%
annual operation	360	days
usage rates	1989	actual

Shell Press Specifications

machine	speed	stations	shells/min	annual production	
1	275	27	7425	3.464	billion
2	275	27	7425	3.464	billion
3	275	24	6600	3.079	billion
4	140	22	3080	1.437	billion
			total	11.445	billion

Coating/Solvent Specifications

compound	typical mfg ident	density [lb/gal]	VOC content [wt frax]	usage rate [gal/1000lids]	
end sealant	DM 2140	7.82	0.405	0.0174	
tab lube	J-G 3810	6.35	0.945	0.0049	
solvents	Amsco 1487	5.58	1.000	0.0023	a)
	Amsco 1241	6.32	1.000	0.00019	

VOC Emissions (by shell press production)

		pounds/hr	tons/yr
Machine 1			
	end sealant	24.5	95.4
	tab lube	13.1	50.9
	Amsco 1487	5.7	22.2
	Amsco 1241	0.5	2.1
	total	43.9	170.6

		pounds/hr	tons/yr
Machine 2			
	end sealant	24.5	95.4
	tab lube	13.1	50.9
	Amsco 1487	5.7	22.2
	Amsco 1241	0.5	2.1
	total	43.9	170.6
Machine 3			
	end sealant	21.8	84.8
	tab lube	11.6	45.3
	Amsco 1487	5.1	19.8
	Amsco 1241	0.5	1.8
	total	39.0	151.7
Machine 4			
	end sealant	10.2	39.6
	tab lube	5.4	21.1
	Amsco 1487	2.4	9.2
	Amsco 1241	0.2	0.9
	total	18.2	70.8
Entire Facility			
	end sealant	81.1	315.2
	tab lube	43.3	168.3
	Amsco 1487	18.9	73.4
	Amsco 1241	1.8	6.9
	total	145.0	563.8

a) Represents 77.7% of total usage; 22.3% is recovered for recycle.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

VOC DATA SHEET

PROPERTIES OF THE COATING 'AS SUPPLIED' BY THE MANUFACTURER

Coating Manufacturer: DEXTER PACKAGING PRODUCTS

Coating Identification: 0612A110 DM 2140M

Batch Identification:

Supplied To: Metal Container

==========

Properties of the coating as supplied(1) to the customer:

A. Coating Density (Dc)s : 7.822 lb/gal .937 kg/l

___ ASTM D1475 _X_ Other(2)

B. Total Volatiles (Wv)s : 40.48 Weight Percent

___ ASTM D2369 _X_ Other(2)

C. Water Content: 1. (Ww)s: .00 Weight Percent

___ ASTM D3792 ___ ASTM D4017 _X_ Other(2)

2. (Vw)s: .00 Volume Percent

___ Calculated _X_ Other(2)

D. Organic Volatiles (Wo)s : 40.48 Weight Percent

E. Nonvolatiles Content (Vn)s: 44.92 Volume Percent

F. VOC Content (VOC)s: 1. 3.166 lb/gal coating less water

or .379 kg/l coating less water

2. 7.049 lb/gal solids

or .845 kg/l solids

---

(1) The subscript 's' denotes each value is for the coating 'as supplied' by the manufacturer.

(2) The Other method used is a theoretical calculation based on available data.

Signed: _____ Date: 06-OCT-89

(FOR340)

Material Safety Data Sheet

Date Prepared: 06/06/89 Prepared By: L R CRUZ

SECTION I

MANUFACTURER'S NAME: Dexter Coatings
STREET ADDRESS : 90 Carson Road Birmingham, Alabama 35215
TELEPHONE : (205) 854-5454 Night: (205) 854-5454
MANUFACTURER'S CODE: 0612A110
TRADE NAME : DM 2140M

SECTION II - HAZARDOUS INGREDIENTS

Ingredient(s)	Weight Percent	Toxicity Data			Vapor Press. mm Hg @ 20C
HEPTANE CAS: 142-82-5	10 - 20	TWA: STEL: TLV-C: PEL: Other:	400 500 UK 500 UK	(ppm) (ppm) (ppm)	100.0
HEXANE CAS: 110-54-3	20 - 30	TWA: STEL: TLV-C: PEL: Other:	50 UK UK 500 UK	(ppm) (ppm)	180.0

SECTION III - PHYSICAL PROPERTIES + FIRE AND EXPLOSION HAZARDS

FLASHPOINT FOR 0612A110 = 15 Deg. F Setaflash CC LEL: 1.20
BOILING RANGE = 149 to 210 Deg. F.
DOT CATEGORY = Flammable Liquid
OSHA Classification = Flammable Liquid - Class IB
VAPOR DENSITY: Heavier than air.
EXTINGUISHING MEDIA: Use water fog, foam, dry chemical, or carbon dioxide.
VOLATILE ORGANIC CONTENT: 3.111 pounds per gallon less water.

SECTION IV - HEALTH INFORMATION

ACUTE: Over exposure by inhalation may cause irritation of the respiratory tract, headache, dizziness, or drowsiness.
SKIN OR EYE CONTACT: Irritant to the eyes and skin.
EMERGENCY AND FIRST AID PROCEDURES: INHALATION: Remove from exposure. EYE CONTACT: Flush immediately with large amounts of running water for at least 15 minutes. SKIN CONTACT: Remove contaminated clothing and wash skin with soap and water. INGESTION: Drink water.
If necessary, consult a physician for any of these conditions.
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Unknown at this time.
CHRONIC HEALTH EFFECTS: Those hazardous materials listed in Section II may affect the following organs: -Central nervous system-

SECTION V - REACTIVITY DATA

STABILITY: Stable. HAZARDOUS DECOMPOSITION BY-PRODUCTS: Fumes may contain carbon monoxide and oxides of nitrogen. May produce hazardous fumes when subjected to decomposition as in welding.

SECTION VI - SPILL OR LEAK PROCEDURES

Remove all sources of ignition, avoid breathing vapors, ventilate area, and remove with inert absorbant and non-sparking tools. Dispose of in accordance with local, state, and federal regulations. Before attempting to clean up, see Section II.

SECTION VII - PRECAUTIONS IN HANDLING

VENTILATION: Provide general dilution or local exhaust ventilation to keep TWA and LEL below acceptable limits and to remove decomposition products.

RESPIRATORY PROTECTION: Where general dilution or local exhaust fails to adequately dilute the TWA/PEL of the material, then respiratory protection should be used as follows: In accord with 29CFR 1910.134, use NIOSH/MSHA approved air line type respirators or hoods for enclosed and confined areas. Air purifying respirators may be used for other areas.

PROTECTIVE EQUIPMENT: Chemical resistant gloves are required for prolonged or repeated contact. Use safety eyeware designed to protect against splash of liquids.

Do not take internally. Containers should be grounded when pouring. Avoid free fall of liquid in excess of a few inches. Make sure the drum is completely empty before attempting to weld or braze. The drum should be industrially cleaned prior to reuse. Do not flame cut, braze, or weld without a NIOSH approved respirator or appropriate ventilation.

SECTION VIII - ENVIRONMENTAL DATA

SARA Title III Information and Proposition 65

CAS Number	Chemical Name	SARA 302 % by Wt. (1)	SARA 313 % by Wt. (2)	Prop. 65 % by Wt. (3)
71-43-2	BENZENE	---	---	.00118

FOOTNOTES
(1) Extremely hazardous substance, Sec. 302
(2) Toxic Chemical, Sec. 313
(3) State of California Safe Drinking Water and Toxic Enforcement Act of 1986, Proposition 65 (Prop. 65)

SECTION IX - ADDITIONAL INFORMATION

Those materials listed in Section II with an asterisk have been listed by one of the following testing agencies: National Toxicology Program, International Agency for Research and Cancer, or OSHA.

KEEP CONTAINER CLOSED WHEN NOT IN USE!

NPCA HMIS CLASSIFICATION: Health- 1 Flammability- 3 Reactivity- 0
See Section VII for personal protection equipment.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

VOC DATA SHEET:

PROPERTIES OF THE COATING "AS SUPPLIED" BY THE MANUFACTURER

Coating Manufacturer: JENKIN-GUERIN, INC.

Coating Identification: ANCHOR #3810 TAB LUBE

Batch Identification: 063089

Supplied To: METAL CONTAINER CORPORATION

Properties of the coating as supplied[1] to the customer:

A. Coating Density $(D_C)_s$: 6.35 lb/gal _____ kg/l

[ ] ASTM D1475 [X] Other[2] ASTM D1475-85

B. Total Volatiles $(W_V)_s$: 94.5 Weight Percent

[X] ASTM D2369 [ ] Other[2]

C. Water Content: 1. $(W_W)_s$ .0073 Weight Percent

[ ] ASTM D3792 [X] ASTM D4017 [ ] Other[2]

2. $(V_W)_s$ _____ Volume Percent

[ ] Calculated [ ] Other[2]

D. Organic Volatiles $(W_O)_s$: 94.5 Weight Percent

E. Nonvolatiles Content $(V_n)_s$: 5.5 Volume Percent

F. VOC Content $(VOC)_s$: 1. 6.0008 lb/gal coating less water

or _____ kg/l coating less water

2. _____ lb/gal solids

or _____ kg/l solids

Remarks: (use reverse side)

---

[1]The subscript "s" denotes each value is for the coating "as supplied" by the manufacturer.

[2]Explain the other method used under "Remarks".

Signed: J C Smith Date 8/8/89

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY *(As Used on Label and List)*
ANCHOR #3810 TAB LUBE

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name JENKIN-GUERIN, INC.	Emergency Telephone Number 1-800-424-9300
Address *(Number, Street, City, State, and ZIP Code)* 4480 HUNT AVENUE	Telephone Number for Information 314-652-2905
ST. LOUIS, MO 63110-2182	Date Prepared REVISED 2/24/89
	Signature of Preparer *(optional)*

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity: Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% *(optional)*
ISOPARAFFIN SOLVENT	NE	2100 mg/m³	400 PPM	

SPECIAL NOTE: ALL INGREDIENTS COMPLY WITH THE FEDERAL FOOD & DRUG ADMINISTRATION REGULATIONS. (1) REGULATION 178.3910, SURFACE LUBRICANTS USED IN MANUFACTURE OF METALLIC ARTICLES. THESE REGULATIONS APPEARED IN THE FEDERAL REGISTER OF APRIL 1, 1979, PAGES 700 THRU 705.

THE SOLVENT USED AS A DILUENT FOR THE ABOVEMENTIONED ITEM (REGULATION #1) HAS BEEN CLASSIFIED BY THE FEDERAL DRUG ADMINISTRATION UNDER REGULATION 178.3910. THE SOLVENT IS USED MERELY AS A DILUENT AND SHOULD BE ALLOWED TO EVAPORATE SO THAT THE RESIDUE COATING LEFT ON THE CAN PARTS CONSISTS ONLY OF ITEM I.

ANCHOR #3810 TAB LUBE MEETS RULE 66 AND SCAQMD RULE 102.

Section III — Physical/Chemical Characteristics

Boiling Point INITIAL	350°	Specific Gravity (H_2O = 1) @ 60/60° F.	(6.3) 0.757
Vapor Pressure (mm Hg.) '2 psia @ 70° F.	0.27mm	Melting Point	0° F
Vapor Density (AIR = 1) @ 230° F.	> 1	Evaporation Rate (Butyl Acetate = 1)	0.7

Solubility in Water
NIL

Appearance and Odor
WATER WHITE COLOR WITH MILD MINERAL OIL ODOR

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used) 141° F. C.O.C.	Flammable Limits	LEL 0.6%	UEL 7%

Extinguishing Media
DRY CHEMICAL, FOAM, CARBON DIOXIDE

Special Fire Fighting Procedures
SHUT OFF SOURCE. USE WATER FOG OR SPRAY TO COOL EXPOSED EQUIPMENT AND CONTAINERS.

WEAR SELF-CONTAINED BREATHING APPARATUS.

Unusual Fire and Explosion Hazards VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL ALONG THE GROUND, OR BE MOVED BY VENTILATION AND IGNITED BY HEAT, PILOT LIGHTS, OTHER FLAMES AND IGNITION SOURCES AT LOCATIONS DISTANT FROM MATERIAL HANDLING POINT. NEVER USE WELDING OR CUTTING TORCH ON OR NEAR DRUM, PRODUCT CAN IGNITE EXPLOSIVELY.

Section V — Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable	X	STRONG OXIDIZING AGENTS

Incompatibility (*Materials to Avoid*)
STRONG OXIDIZING AGENTS SUCH AS LIQUID CHLORINE, CONCENTRATED OXYGEN, SODIUM OR CALCIUM HYPOCHLORITE.

Hazardous Decomposition or Byproducts
FUMES, SMOKE AND CARBON MONOXIDE IN THE CASE OF INCOMPLETE COMBUSTION.

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	YES	YES	YES

Health Hazards (*Acute and Chronic*)
HIGH VAPOR CONCENTRATION (GREATER THAN 1000 PPM) ARE IRRITATING TO THE EYES, AND RESPIRATORY TRACT. MAY CAUSE HEADACHES AND DIZZINESS IN EXTREMELY HIGH CONCENTRATIONS.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	NO	NO	NO

Signs and Symptoms of Exposure
DIZZINESS, DROWSINESS

Medical Conditions Generally Aggravated by Exposure
DIZZINESS, DROWSINESS

Emergency and First Aid Procedures **INGESTION:** DO **NOT** INDUCE VOMITING: CALL PHYSICIAN. **SKIN CONTACT:** REMOVE ANY CONTAMINATED CLOTHING, AND WASH SKIN WITH SOAP AND WARM WATER. **EYES:** FLUSH WITH CLEAR WATER FOR 15 MINUTES OR UNTIL IRRITATION SUBSIDES. IF IRRITATION PERSISTS, CALL A PHYSICIAN. **INHALATION:** REMOVE FROM EXPOSURE AND CALL A PHYSICIAN IMMEDIATELY.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled
RECOVER FREE LIQUID. ADD ABSORBENT (SAND, EARTH, SAWDUST, ETC.) MINIMIZE BREATHING VAPORS. OPEN ALL WINDOWS AND DOORS. KEEP PETROLEUM PRODUCTS OUT OF SEWERS AND WATERCOURSES BY DIKING OR IMPOUNDING. ADVISE AUTHORITIES IF PRODUCT HAS ENTERED OR MAY ENTER SEWERS, WATERCOURSES, OR EXTENSIVE LAND AREAS.

Waste Disposal Method
DISPOSE OF ABSORBENT AT AN APPROVED DISPOSAL FACILITY ACCORDING TO FEDERAL, STATE, & LOCAL REGULATIONS.

Precautions to Be Taken in Handling and Storing
KEEP CONTAINERS CLOSED WHEN NOT IN USE. DO NOT HANDLE OR STORE NEAR HEAT, SPARKS, FLAME OR STRONG OXIDANTS.

Other Precautions AVOID BREATHING OIL MIST. AVOID PROLONGED OR REPEATED CONTACT WITH SKIN, REMOVE CONTAIMINATED CLOTHING, LAUNDER BEFORE REUSE. DISCARD OIL-SOAKED SHOES. WASH SKIN THOROUGHLY WITH SOAP AND WATER AFTER CONTACT, BEFORE BREAKS AND MEALS, BEFORE APPLYING COSMETICS, AND END OF WORK PERIOD.

Section VIII — Control Measures

Respiratory Protection (*Specify Type*)
NORMALLY NONE NEEDED

Ventilation	Local Exhaust USE LOCAL EXHAUST TO CAPTURE FUMES AND VAPORS	Special	PROVIDE ADEQUATE VENTILATION
	Mechanical (*General*) NORMAL SHOP VENTILATION	Other	SEE LOCAL EXHAUST

Protective Gloves RUBBER	Eye Protection SPLASH GOGGLES OR FACE SHIELD

Other Protective Clothing or Equipment
USE CHEMICAL-RESISTANT APRON OR OTHER CLOTHING TO AVOID REPEATED SKIN CONTACT.

Work/Hygienic Practices
WORK SKIN THOROUGHLY WITH SOAP AND WATER AFTER CONTACT, BEFORE BREAKS, MEALS, AND END OF WORK PERIOD.

* U.S.G.P.O.: 1986-491-529/45775

Supplied by Appleson Chems. Inc.

MATERIAL SAFETY DATA SHEET

Unocal Corporation
1201 West 5th Street, P.O. Box 7600
Los Angeles, California 90051

Product Name: HEXANE
Product Code No: 11487

Issue Date: 12/01/89

MANUFACTURER

UNOCAL CHEMICALS DIVISION - PETROCHEM. GROUP
UNION OIL COMPANY OF CALIFORNIA
1345 NORTH MEACHAM ROAD
SCHAUMBURG, ILLINOIS 60196

CONTACT FOR FURTHER INFORMATION:
YOUR LOCAL SALES OFFICE (LAST PAGE)

Transportation Emergencies:
CHEMTREC
(800) 424-9300 Cont. U.S.
(202) 483-7616 (Collect)
from Alaska & Hawaii
Health Emergencies:
Call LOS ANGELES POISON
INFORMATION CENTER (24 hrs)
1-(800)-356-3129

PRODUCT IDENTIFICATION

PRODUCT NAME: HEXANE

SYNONYMS: AMSCO SOLV 1487
C6H14
ISOHEXANE
PCN UCD 11487
PCN UCD 1487
UCD 871 A
UCD 871A

GENERIC NAME: VOLATILE SOLVENT

CHEMICAL FAMILY: HYDROCARBON MIXTURE

DOT PROPER SHIPPING NAME: HEXANE

ID NUMBER: UN1208

DOT HAZARD CLASSIFICATION: FLAMMABLE LIQUID

SECTION I - COMPONENTS	PERCENT	EXPOSURE LIMIT	UNITS	AGENCY	TYPE
HAZARDOUS COMPONENTS					
N-HEXANE					
CAS #: 110-54-3		50.000	ppm	ACGIH	TWA
		500.000	ppm	MSHA	TWA
		50.000	ppm	OSHA	TWA
		50.000	ppm	CAL OSHA	TWA
OTHER HEXANE ISOMERS					
CAS #: VARIES		500.000	ppm	ACGIH	TWA
		1000.000	ppm	ACGIH	STEL
		500.000	ppm	MSHA	TWA
		500.000	ppm	OSHA	TWA
		1000.000	ppm	OSHA	STEL
		500.000	ppm	CAL OSHA	TWA
OTHER COMPONENTS					
--NONE--					

SECTION I

THIS PRODUCT CONTAINS THE FOLLOWING CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SARA 313 AND 40 CFR 372: CAS NUMBER WEIGHT %

--NONE--

SECTION II - EMERGENCY AND FIRST AID PROCEDURES ***EMERGENCY***
Have physician call LOS ANGELES POISON INFORMATION CENTER (24 hrs) (800) 356-3129

EYE CONTACT:

IF IRRITATION OR REDNESS DEVELOPS, MOVE VICTIM AWAY FROM EXPOSURE AND INTO FRESH AIR. FLUSH EYES WITH CLEAN WATER. IF SYMPTOMS PERSIST, SEEK MEDICAL ATTENTION.

SKIN CONTACT:

REMOVE CONTAMINATED SHOES AND CLOTHING AND CLEANSE AFFECTED AREA(S) THOROUGHLY BY WASHING WITH MILD SOAP AND WATER. IF IRRITATION OR REDNESS DEVELOPS AND PERSISTS, SEEK MEDICAL ATTENTION.

INHALATION (BREATHING):

IF RESPIRATORY SYMPTOMS DEVELOP, MOVE VICTIM AWAY FROM SOURCE OF EXPOSURE AND INTO FRESH AIR. IF SYMPTOMS PERSIST, SEEK MEDICAL ATTENTION. IF VICTIM IS NOT BREATHING, IMMEDIATELY BEGIN ARTIFICIAL RESPIRATION. IF BREATHING DIFFICULTIES DEVELOP, OXYGEN SHOULD BE ADMINISTERED BY QUALIFIED PERSONNEL. SEEK IMMEDIATE MEDICAL ATTENTION.

INGESTION (SWALLOWING):

ASPIRATION HAZARD: DO NOT INDUCE VOMITING OR GIVE ANYTHING BY MOUTH BECAUSE THIS MATERIAL CAN ENTER THE LUNGS AND CAUSE SEVERE LUNG DAMAGE. IF VICTIM IS DROWSY OR UNCONSCIOUS, PLACE ON THE LEFT SIDE WITH THE HEAD DOWN. IF POSSIBLE, DO NOT LEAVE VICTIM UNATTENDED. SEEK MEDICAL ATTENTION.

COMMENTS:

NOTE TO PHYSICIANS: EXPOSURE TO HIGH CONCENTRATIONS OF THIS MATERIAL (E.G., IN ENCLOSED SPACES OR WITH DELIBERATE ABUSE) MAY BE ASSOCIATED WITH CARDIAC ARRHYTHMIAS. EPINEPHRINE AND OTHER SYMPATHOMIMETIC DRUGS MAY INITIATE CARDIAC ARRHYTHMIAS IN PERSONS EXPOSED TO THIS MATERIAL. OTHER DRUGS WITH LESS ARRHYTHMOGENIC POTENTIAL SHOULD BE CONSIDERED. IF SYMPATHOMIMETIC DRUGS ARE ADMINISTERED, OBSERVE FOR THE DEVELOPMENT OF CARDIAC ARRHYTHMIAS.

SECTION III - HEALTH HAZARDS/ROUTES OF ENTRY

EYE CONTACT:

THIS MATERIAL MAY CAUSE MILD EYE IRRITATION. DIRECT CONTACT WITH THE LIQUID OR EXPOSURE TO VAPORS OR MISTS MAY CAUSE STINGING, TEARING AND REDNESS.

SKIN CONTACT:

THIS MATERIAL MAY CAUSE MILD SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY CAUSE REDNESS, BURNING, AND DRYING AND CRACKING OF THE SKIN. CONTACT MAY RESULT IN SKIN ABSORPTION BUT SYMPTOMS OF TOXICITY ARE NOT ANTICIPATED BY THIS ROUTE ALONE UNDER NORMAL CONDITIONS OF USE. PERSONS WITH PRE-EXISTING SKIN DISORDERS MAY BE MORE SUSCEPTIBLE TO THE EFFECTS OF THIS MATERIAL.

INHALATION (BREATHING):

WHILE THIS MATERIAL HAS A LOW DEGREE OF TOXICITY, BREATHING HIGH CONCENTRATIONS OF VAPORS OR MISTS MAY CAUSE IRRITATION OF THE NOSE AND THROAT, NAUSEA AND SIGNS OF NERVOUS SYSTEM DEPRESSION (E.G., HEADACHE, DROWSINESS, DIZZINESS, LOSS OF COORDINATION, AND FATIGUE). PROLONGED OR REPEATED EXPOSURE TO VAPORS OR MISTS MAY

SECTION III - HEALTH HAZARDS/ROUTES OF ENTRY

CAUSE DAMAGE TO PERIPHERAL NERVES. RESPIRATORY SYMPTOMS ASSOCIATED WITH PRE-EXISTING LUNG DISORDERS (E.G., ASTHMA-LIKE CONDITIONS) MAY BE AGGRAVATED BY EXPOSURE TO THIS MATERIAL.

INGESTION (SWALLOWING):

WHILE THIS MATERIAL HAS A LOW DEGREE OF TOXICITY, INGESTION OF EXCESSIVE QUANTITIES MAY CAUSE IRRITATION OF THE DIGESTIVE TRACT, NAUSEA, AND SIGNS OF NERVOUS SYSTEM DEPRESSION (E.G., HEADACHE, DROWSINESS, DIZZINESS, LOSS OF COORDINATION, AND FATIGUE). ASPIRATION HAZARD - THIS MATERIAL CAN ENTER LUNGS DURING SWALLOWING OR VOMITING AND CAUSE LUNG INFLAMMATION AND DAMAGE.

COMMENTS:

THIS MATERIAL HAS NOT BEEN IDENTIFIED AS A CARCINOGEN BY NTP, IARC OR OSHA. PRE-EXISTING PERIPHERAL NERVE DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS MATERIAL. PERSONS WITH PRE-EXISTING HEART DISORDERS MAY BE MORE SUSCEPTIBLE TO IRREGULAR HEARTBEATS (ARRHYTHMIAS) IF EXPOSED TO HIGH CONCENTRATIONS OF THIS MATERIAL (SEE SECTION II - NOTE TO PHYSICIANS). REPORTS HAVE ASSOCIATED REPEATED AND PROLONGED OCCUPATIONAL OVEREXPOSURE TO SOLVENTS WITH PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE (SOMETIMES REFERRED TO AS SOLVENT OR PAINTERS' SYNDROME). INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THIS PRODUCT MAY BE HARMFUL OR FATAL.

SECTION IV - SPECIAL PROTECTION INFORMATION

VENTILATION:

IF CURRENT VENTILATION PRACTICES ARE NOT ADEQUATE TO MAINTAIN AIRBORNE CONCENTRATIONS BELOW THE ESTABLISHED EXPOSURE LIMITS (SEE SECTION I), ADDITIONAL VENTILATION OR EXHAUST SYSTEMS MAY BE REQUIRED. WHERE EXPLOSIVE MIXTURES MAY BE PRESENT, ELECTRICAL SYSTEMS SAFE FOR SUCH LOCATIONS MUST BE USED.

RESPIRATORY PROTECTION:

IF AIRBORNE CONCENTRATIONS EXCEED ESTABLISHED EXPOSURE LIMITS (SEE SECTION I), USE A SUPPLIED AIR RESPIRATOR. DO NOT USE A CHEMICAL CARTRIDGE RESPIRATOR.

PROTECTIVE GLOVES:

THE USE OF GLOVES IMPERMEABLE TO THE SPECIFIC MATERIAL HANDLED IS ADVISED TO PREVENT SKIN CONTACT AND POSSIBLE IRRITATION.

EYE PROTECTION:

APPROVED EYE PROTECTION TO SAFEGUARD AGAINST POTENTIAL EYE CONTACT, IRRITATION OR INJURY IS RECOMMENDED.

OTHER PROTECTIVE EQUIPMENT:

IT IS SUGGESTED THAT A SOURCE OF CLEAN WATER BE AVAILABLE IN THE WORK AREA FOR FLUSHING EYES AND SKIN. IMPERVIOUS CLOTHING SHOULD BE WORN AS NEEDED.

SECTION V - REACTIVITY DATA

STABILITY:

STABLE UNDER NORMAL CONDITIONS OF STORAGE AND HANDLING.

CONDITIONS TO AVOID (STABILITY):

AVOID ALL POSSIBLE SOURCES OF IGNITION (SEE SECTIONS VII AND VIII).

SECTION V - REACTIVITY DATA

INCOMPATIBILITY (MATERIALS TO AVOID):

THIS PRODUCT IS INCOMPATIBLE WITH STRONG ACIDS OR BASES, OXIDIZING AGENTS AND SELECTED AMINES.

HAZARDOUS DECOMPOSITION PRODUCTS:

COMBUSTION MAY YIELD CARBON MONOXIDE AND/OR CARBON DIOXIDE. DO NOT BREATHE SMOKE OR FUMES. WEAR APPROPRIATE PROTECTIVE EQUIPMENT.

HAZARDOUS POLYMERIZATION:

WILL NOT OCCUR

POLYMERIZATION CONDITIONS TO AVOID:

NONE KNOWN

SECTION VI - SPILL AND LEAK PROCEDURES ***HIGHWAY OR RAILWAY SPILLS***
Call CHEMTREC (800) 424-9300 Cont. U.S.
(Collect) (202) 483-7616 from Alaska & Hawaii

PRECAUTIONS IN CASE OF RELEASE OR SPILL:

EXTREMELY FLAMMABLE. KEEP ALL SOURCES OF IGNITION AND HOT METAL SURFACES AWAY FROM SPILL/RELEASE. STAY UPWIND AND AWAY FROM SPILL/RELEASE. ISOLATE HAZARD AREA AND LIMIT ENTRY TO EMERGENCY CREW. STOP SPILL/RELEASE IF IT CAN BE DONE WITHOUT RISK. WEAR APPROPRIATE PROTECTIVE EQUIPMENT INCLUDING RESPIRATORY PROTECTION AS CONDITIONS WARRANT (SEE SECTION IV). PREVENT SPILLED MATERIAL FROM ENTERING SEWERS, STORM DRAINS, OTHER UNAUTHORIZED TREATMENT DRAINAGE SYSTEMS AND NATURAL WATERWAYS. DIKE FAR AHEAD OF SPILL FOR LATER RECOVERY OR DISPOSAL. SPILLED MATERIAL MAY BE ABSORBED INTO AN APPROPRIATE ABSORBENT MATERIAL. NOTIFY FIRE AUTHORITIES AND APPROPRIATE FEDERAL, STATE AND LOCAL AGENCIES. IMMEDIATE CLEANUP OF ANY SPILL IS RECOMMENDED.

EPA REPORTABLE QUANTITY:

NONE

WASTE DISPOSAL METHOD:

DISPOSE OF PRODUCT IN ACCORDANCE WITH LOCAL, COUNTY, STATE, AND FEDERAL REGULATIONS.

SECTION VII - STORAGE AND SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS:

KEEP CONTAINER(S) TIGHTLY CLOSED. USE AND STORE THIS MATERIAL IN COOL, DRY, WELL VENTILATED AREAS AWAY FROM HEAT, DIRECT SUNLIGHT, HOT METAL SURFACES AND ALL SOURCES OF IGNITION. POST AREA "NO SMOKING OR OPEN FLAME." BOND AND GROUND ALL EQUIPMENT WHEN TRANSFERRING FROM ONE VESSEL TO ANOTHER. STORE ONLY IN APPROVED CONTAINERS. KEEP AWAY FROM INCOMPATIBLE MATERIALS (SEE SECTION V). PROTECT CONTAINER(S) AGAINST PHYSICAL DAMAGE. THE USE OF EXPLOSION-PROOF EQUIPMENT IS RECOMMENDED AND MAY BE REQUIRED (SEE APPROPRIATE FIRE CODES). DO NOT ENTER CONFINED SPACES SUCH AS TANKS OR PITS WITHOUT FOLLOWING PROPER ENTRY PROCEDURES SUCH AS ASTM D-4276. OUTDOOR OR DETACHED STORAGE IS PREFERRED. INDOOR STORAGE SHOULD MEET OSHA STANDARDS AND APPROPRIATE FIRE CODES. THE USE OF RESPIRATORY PROTECTION IS ADVISED WHEN CONCENTRATIONS EXCEED THE ESTABLISHED EXPOSURE LIMITS (SEE SECTIONS I AND IV). WASH THOROUGHLY AFTER HANDLING. DO NOT WEAR CONTAMINATED CLOTHING OR SHOES. USE GOOD PERSONAL HYGIENE PRACTICE. "EMPTY" CONTAINERS RETAIN RESIDUE (LIQUID AND/OR VAPOR) AND CAN BE DANGEROUS. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. "EMPTY" DRUMS SHOULD BE COMPLETELY DRAINED, PROPERLY BUNGED AND PROMPTLY SHIPPED TO THE SUPPLIER OR A DRUM RECONDITIONER. ALL OTHER CONTAINERS SHOULD BE DISPOSED OF IN AN ENVIRONMENTALLY SAFE MANNER AND IN ACCORDANCE

UNION OIL CO.

Product Name: HEXANE
Product Code No: 11487

Issue Date: 12/01/89

SECTION VII - STORAGE AND SPECIAL PRECAUTIONS

WITH GOVERNMENTAL REGULATIONS. BEFORE WORKING ON OR IN TANKS WHICH CONTAIN OR HAVE CONTAINED THIS PRODUCT, REFER TO OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS, ANSI Z49.1, AND OTHER GOVERNMENTAL AND INDUSTRIAL REFERENCES PERTAINING TO CLEANING, REPAIRING, WELDING, OR OTHER CONTEMPLATED OPERATIONS.

SECTION VIII - FIRE AND EXPLOSION HAZARD DATA

NFPA HAZARD CLASS	HEALTH HAZARD:	1
	FLAMMABILITY:	3
	REACTIVITY:	0
	OTHER:	
HMIS HAZARD CLASS	HEALTH HAZARD:	1*
	FLAMMABILITY:	3
	REACTIVITY:	0
	PPE:	

HAZARD RANKING
0 = LEAST
1 = SLIGHT
2 = MODERATE
3 = HIGH
4 = EXTREME
* = CHRONIC HEALTH EFFECTS

FLASH POINT
-20 F TCC

LOWER EXPLOSIVE LIMIT (% VOL.)	UPPER EXPLOSIVE LIMIT (% VOL.)
1.0	8.0

EXTINGUISHING MEDIA:

DRY CHEMICAL, CARBON DIOXIDE, HALON, FOAM OR WATER SPRAY IS RECOMMENDED. WATER MAY BE INEFFECTIVE.

UNUSUAL FIRE & EXPLOSION HAZARDS:

THIS MATERIAL IS EXTREMELY FLAMMABLE AND MAY BE IGNITED BY HEAT, SPARKS, FLAME OR OTHER SOURCES OF IGNITION (e.g. STATIC ELECTRICITY, PILOT LIGHTS, MECHANICAL/ELECTRICAL EQUIPMENT). VAPORS MAY TRAVEL CONSIDERABLE DISTANCES TO A SOURCE OF IGNITION WHERE THEY MAY IGNITE, FLASHBACK OR EXPLODE. VAPOR/AIR EXPLOSION HAZARD INDOORS/OUTDOORS OR IN SEWERS. VAPORS ARE HEAVIER THAN AIR AND MAY ACCUMULATE IN LOW AREAS. IF CONTAINER IS NOT PROPERLY COOLED, IT MAY EXPLODE IN THE HEAT OF A FIRE.

SPECIAL FIRE FIGHTING PROCEDURES:

WEAR APPROPRIATE PROTECTIVE EQUIPMENT INCLUDING RESPIRATORY PROTECTION AS CONDITIONS WARRANT (SEE SECTION IV). STOP SPILL/RELEASE IF IT CAN BE DONE WITHOUT RISK. MOVE UNDAMAGED CONTAINERS FROM FIRE AREA IF IT CAN BE DONE WITHOUT RISK. WATER SPRAY MAY BE USEFUL IN MINIMIZING OR DISPERSING VAPORS AND COOLING EQUIPMENT EXPOSED TO HEAT AND FLAME. AVOID SPREADING BURNING LIQUID WITH WATER USED FOR COOLING PURPOSES.

SECTION IX - PHYSICAL DATA

***UNLESS OTHERWISE NOTED, VALUES ARE AT 20 C/68 F AND 760 mm Hg/1 atm.

APPROX BOILING POINT	(AIR = 1) VAPOR DENSITY	(N-BUTYL ACETATE = 1) EVAPORATION RATE	% VOLATILE
150-158 F	3.0	8.1	100

% SOLUBILITY IN WATER	VAPOR PRESSURE (mm Hg)
<5	140

SPECIFIC GRAVITY	APPROX. BULK DENSITY (lb/gal)
0.674 (60 F/60 F)	5.61 (60 F)

SECTION IX - PHYSICAL DATA

APPEARANCE

CLEAR, LITTLE IF ANY COLOR, LIQUID

ODOR

CHARACTERISTIC

SECTION X - PRECAUTIONARY WARNING

DANGER! EXTREMELY FLAMMABLE. OVEREXPOSURE TO VAPORS OR MISTS MAY CAUSE INJURY TO NERVOUS SYSTEM. ASPIRATION HAZARD IF SWALLOWED. CAN ENTER LUNGS AND CAUSE DAMAGE. KEEP AWAY FROM HEAT, SPARKS, FLAME OR OTHER SOURCES OF IGNITION (E.G., STATIC ELECTRICITY, PILOT LIGHTS OR MECHANICAL/ELECTRICAL EQUIPMENT). DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING. AVOID BREATHING VAPORS OR MISTS. DO NOT TASTE OR SWALLOW. KEEP CONTAINER CLOSED. USE WITH ADEQUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING. FIRST AID: DANGER - ASPIRATION HAZARD. IF SWALLOWED DO NOT INDUCE VOMITING. CALL A PHYSICIAN. IN CASE OF CONTACT, FLUSH EYES OR SKIN WITH PLENTY OF WATER. NOTE TO PHYSICIANS: EPINEPHRINE AND OTHER SYMPATHOMIMETIC DRUGS SHOULD BE USED CAUTIOUSLY, IF AT ALL. IF USED, OBSERVE FOR DEVELOPMENT OF CARDIAC ARRHYTHMIAS.

SECTION XI - DOCUMENTARY INFORMATION

ISSUE DATE: 12/01/89 PRODUCT CODE NO. 11487

PREV. DATE: 03/21/89 PREV. PROD. CODE NO. 11487

MSDS NO: N/A PREV. MSDS NO: N/A

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UNION OIL CO.

Product Name: HEXANE
Product Code No: 11487

Issue Date: 12/01/89

FOR FURTHER INFORMATION, CONTACT YOUR LOCAL SALES OFFICE

ATLANTA	(404) 934-0343 (800) 633-2362
BALTIMORE (Outside MD)	(301) 355-2737 (800) 638-7676
BIRMINGHAM (Outside AL) (Inside AL)	(205) 995-9776 (800) 328-1611 (800) 328-1610
CHARLOTTE (NC Only) (SC, GA, VA)	(704) 588-2633 (800) 532-6103 (800) 438-2968
CHICAGO	(312) 257-9300
CINCINNATI	(513) 422-0176
CLEVELAND	(216) 425-4600
DALLAS/FT.WRTH	(214) 298-8233
DETROIT	(313) 772-0870
HOUSTON	(713) 643-3517
KANSAS CITY	(816) 231-7600
LOS ANGELES	(714) 228-4700
MIAMI (FL Only) (FL Only)	(305) 634-2411 (800) 621-3841 (800) 282-0537
NASHVILLE (TN Only)	(615) 320-5474 (800) 325-7685
NY/NJ (NY Only)	(201) 574-9890 (800) 526-4376
PHILADELPHIA CONSHOHOCKEN	(215) 753-1903 (215) 828-1010
NEW ENGLAND	(401) 438-7240 (800) 523-0725
SAN FRANCISCO/ OAKLAND AREA	(415) 562-1976
TWIN CITIES	(612) 227-8020
WICHITA	(316) 838-3335

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MATERIAL SAFETY DATA SHEET

UNOCAL®

UNOCAL CHEMICALS DIVISION
PETROCHEMICALS GROUP

AUG 28 1989

MINERAL SPIRITS

Product Name: [redacted]
Product Code: NO [redacted]

Issue Date: [redacted]
Revised 12/0[redacted]

MANUFACTURER:

UNOCAL CHEMICALS DIVISION
UNION OIL COMPANY OF CALIFORNIA
1345 N. MEACHAM
SCHAUMBURG, ILLINOIS 60196

CONTACT FOR FURTHER INFORMATION:
MSDS COORDINATOR (312) 619-2644

Transportation Emergencies:
Call CHEMTREC
(800) 424-9300 Cont. U.S.
(202) 483-7616 (Collect)
from Alaska & Hawaii
Health Emergencies:
CALL LOS ANGELES POISON
INFORMATION CENTER (24 hrs.)
1-(800)-356-3129

PRODUCT IDENTIFICATION

PRODUCT NAME: ODORLESS MINERAL SPIRITS

SYNONYMS: AMSCO SOLV 1241
OMS

GENERIC NAME: VOLATILE SOLVENT

CHEMICAL FAMILY: HYDROCARBON MIXTURE

DOT PROPER SHIPPING NAME: PETROLEUM NAPHTHA

ID NUMBER: UN1255

DOT HAZARD CLASSIFICATION: COMBUSTIBLE LIQUID

CAS NUMBER: 64741-65-7

SECTION I - HAZARDOUS INGREDIENTS/EXPOSURE LIMITS	CAS NO	LIMITS	UNITS	AGENCY	TYPE
ODORLESS MINERAL SPIRITS (COMPARE TO STODDARD		100.0000	PPM	ACGIH	TWA
SOLVENT	8052-41-3)	200.0000	PPM	ACGIH	STEL
		500.0000	PPM	OSHA	TWA

SECTION II - EMERGENCY AND FIRST AID PROCEDURES

*****EMERGENCY*****
Have physician call LOS ANGELES POISON INFORMATION CENTER (24 hrs.) (800) 356-3129

EYE CONTACT:

IF IRRITATION OR REDNESS FROM EXPOSURE TO VAPORS DEVELOPS, MOVE VICTIM AWAY FROM EXPOSURE AND INTO FRESH AIR. IF IRRITATION OR REDNESS PERSISTS, SEEK MEDICAL ATTENTION. FOR DIRECT CONTACT, HOLD EYELIDS APART AND FLUSH THE AFFECTED EYE(S) WITH CLEAN WATER. SEEK MEDICAL ATTENTION.

SECTION II - EMERGENCY AND FIRST AID PROCEDURES

****EMERGENCY****
Have physician call LOS ANGELES POISON INFORMATION CENTER (24 hrs.) (800) 356-3129

SKIN CONTACT:

REMOVE CONTAMINATED CLOTHING. CLEANSE AFFECTED AREA(S) THOROUGHLY BY WASHING WITH MILD SOAP AND WATER. IF IRRITATION OR REDNESS DEVELOPS AND PERSISTS, SEEK MEDICAL ATTENTION.

INHALATION (BREATHING):

IF IRRITATION OF NOSE OR THROAT DEVELOPS, MOVE VICTIM AWAY FROM SOURCE OF EXPOSURE AND INTO FRESH AIR. IF SYMPTOMS PERSIST, SEEK MEDICAL ATTENTION. IF VICTIM IS NOT BREATHING, ARTIFICIAL RESPIRATION SHOULD BE ADMINISTERED. IF BREATHING DIFFICULTIES DEVELOP, OXYGEN SHOULD BE ADMINISTERED BY QUALIFIED PERSONNEL. SEEK IMMEDIATE MEDICAL ATTENTION.

INGESTION (SWALLOWING):

ASPIRATION HAZARD: DO NOT INDUCE VOMITING OR GIVE ANYTHING BY MOUTH BECAUSE THIS MATERIAL CAN ENTER THE LUNGS AND CAUSE SEVERE LUNG DAMAGE. IF VICTIM IS DROWSY OR UNCONSCIOUS, PLACE ON THE LEFT SIDE WITH THE HEAD DOWN. IF POSSIBLE, DO NOT LEAVE VICTIM UNATTENDED. SEEK MEDICAL ATTENTION.

SECTION III - HEALTH HAZARDS/ROUTES OF ENTRY

EYE CONTACT:

THIS MATERIAL MAY CAUSE EYE IRRITATION. DIRECT CONTACT WITH THE LIQUID OR EXPOSURE TO VAPORS OR MISTS MAY CAUSE STINGING, TEARING AND REDNESS.

SKIN CONTACT:

THIS MATERIAL MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY CAUSE REDNESS, BURNING, AND DRYING AND CRACKING OF THE SKIN. NO HARMFUL EFFECTS HAVE BEEN DEMONSTRATED IN SKIN ABSORPTION STUDIES. PERSONS WITH PRE-EXISTING SKIN DISORDERS MAY BE MORE SUSCEPTIBLE TO THE EFFECTS OF THIS MATERIAL.

INHALATION (BREATHING):

WHILE THIS MATERIAL HAS A LOW DEGREE OF TOXICITY, BREATHING HIGH CONCENTRATIONS OF VAPORS OR MISTS MAY CAUSE IRRITATION OF THE NOSE, THROAT AND SIGNS OF NERVOUS SYSTEM DEPRESSION (E.G., DROWSINESS, DIZZINESS, LOSS OF COORDINATION, AND FATIGUE). RESPIRATORY SYMPTOMS ASSOCIATED WITH PRE-EXISTING LUNG DISORDERS (E.G., ASTHMA-LIKE CONDITIONS) MAY BE AGGRAVATED BY EXPOSURE TO THIS MATERIAL.

INGESTION (SWALLOWING):

WHILE THIS MATERIAL HAS A LOW DEGREE OF TOXICITY, INGESTION OF EXCESSIVE QUANTITIES MAY CAUSE IRRITATION OF THE DIGESTIVE TRACT AND SIGNS OF NERVOUS SYSTEM DEPRESSION (E.G., DROWSINESS, DIZZINESS, LOSS OF COORDINATION, AND FATIGUE). ASPIRATION HAZARD - THIS MATERIAL CAN ENTER LUNGS DURING SWALLOWING OR VOMITING AND CAUSE LUNG INFLAMMATION AND DAMAGE.

COMMENTS:

THIS SUBSTANCE HAS NOT BEEN IDENTIFIED AS A CARCINOGEN OR PROBABLE CARCINOGEN BY NTP, IARC OR OSHA.
REPORTS HAVE ASSOCIATED REPEATED AND PROLONGED OCCUPATIONAL OVEREXPOSURE TO SOLVENTS WITH PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE (SOMETIMES REFERRED TO AS SOLVENT OR PAINTERS' SYNDROME). INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THIS PRODUCT MAY BE HARMFUL OR FATAL.

Product Name: ODORLESS MINERAL SPIRITS
Product Code No: 11201
Issue Date: 10/12/88

SECTION IV - SPECIAL PROTECTION INFORMATION

VENTILATION:

IF CURRENT VENTILATION PRACTICES ARE NOT ADEQUATE TO MAINTAIN AIRBORNE CONCENTRATIONS BELOW ESTABLISHED EXPOSURE LIMITS (SEE SECTION I), ADDITIONAL VENTILATION OR EXHAUST SYSTEMS MAY BE REQUIRED. WHERE EXPLOSIVE MIXTURES MAY BE PRESENT, ELECTRICAL SYSTEMS SAFE FOR SUCH LOCATIONS MUST BE USED.

RESPIRATORY PROTECTION:

THE USE OF RESPIRATORY PROTECTION IS ADVISED WHEN CONCENTRATIONS EXCEED THE ESTABLISHED EXPOSURE LIMITS (SEE SECTION I). DEPENDING ON THE AIRBORNE CONCENTRATION, USE A RESPIRATOR OR GAS MASK WITH APPROPRIATE CARTRIDGES AND CANNISTERS (NIOSH APPROVED, IF AVAILABLE) OR SUPPLIED AIR EQUIPMENT.

PROTECTIVE GLOVES:

THE USE OF GLOVES IMPERMEABLE TO THE SPECIFIC MATERIAL HANDLED IS ADVISED TO PREVENT SKIN CONTACT AND POSSIBLE IRRITATION.

EYE PROTECTION:

APPROVED EYE PROTECTION TO SAFEGUARD AGAINST POTENTIAL EYE CONTACT, IRRITATION OR INJURY IS RECOMMENDED.

OTHER PROTECTIVE EQUIPMENT:

IT IS SUGGESTED THAT A SOURCE OF CLEAN WATER BE AVAILABLE IN WORK AREA FOR FLUSHING EYES AND SKIN. IMPERVIOUS CLOTHING SHOULD BE WORN AS NEEDED.

SECTION V - REACTIVITY DATA

STABILITY:

STABLE

INCOMPATIBILITY (MATERIALS TO AVOID):

THIS PRODUCT IS INCOMPATIBLE WITH STRONG ACIDS OR BASES, OXIDIZING AGENTS AND SELECTED AMINES.

HAZARDOUS DECOMPOSITION PRODUCTS:

COMBUSTION MAY YIELD CARBON MONOXIDE AND/OR CARBON DIOXIDE.

HAZARDOUS POLYMERIZATION:

WILL NOT OCCUR

SECTION VI - SPILL OR LEAK PROCEDURES

HIGHWAY OR RAILWAY SPILLS
Call CHEMTREC (800) 424-9300 Cont. U.S.
(Collect) (202) 483-7616 from Alaska & Hawaii

PRECAUTIONS IN CASE OF RELEASE OR SPILL:

STAY UPWIND AND AWAY FROM SPILL. KEEP ALL SOURCES OF IGNITION AWAY FROM SPILL. IF SPILL IS INDOORS, VENTILATE AREA OF SPILL. KEEP OUT OF DRAINS, SEWERS OR WATERWAYS. USE SAND OR OTHER INERT MATERIAL TO DAM AND CONTAIN SPILL. DO NOT FLUSH AREA WITH WATER. FOR SMALL SPILLS, DO NOT FLUSH WITH WATER; USE ABSORBANT PADS. CONTACT FIRE AUTHORITIES AND APPROPRIATE FEDERAL, STATE OR LOCAL AGENCIES.

WASTE DISPOSAL METHOD:

IN ACCORDANCE WITH LOCAL, COUNTY, STATE, AND FEDERAL REGULATIONS.

Product Name: ODORLESS MINERAL SPIRITS
Product Code No: 11291

Issue Date: 10/12/88

SECTION VII - STORAGE AND SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS:

KEEP CONTAINERS TIGHTLY CLOSED. KEEP CONTAINERS COOL, DRY, AND AWAY FROM SOURCES OF IGNITION. USE AND STORE THIS PRODUCT WITH ADEQUATE VENTILATION. AVOID INHALATION OF VAPORS AND PERSONAL CONTACT WITH THE PRODUCT. USE GOOD PERSONAL HYGIENE PRACTICE. "EMPTY" CONTAINERS RETAIN RESIDUE (LIQUID AND/OR VAPOR) AND CAN BE DANGEROUS. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. "EMPTY" DRUMS SHOULD BE COMPLETELY DRAINED, PROPERLY BUNGED AND PROMPTLY SHIPPED TO THE SUPPLIER OR A DRUM RECONDITIONER. ALL OTHER CONTAINERS SHOULD BE DISPOSED OF IN AN ENVIRONMENTALLY SAFE MANNER AND IN ACCORDANCE WITH GOVERNMENTAL REGULATIONS. BEFORE WORKING ON OR IN TANKS WHICH CONTAIN OR HAVE CONTAINED THIS PRODUCT, REFER TO OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS, ANSI Z49.1, AND OTHER GOVERNMENTAL AND INDUSTRIAL REFERENCES PERTAINING TO CLEANING, REPAIRING, WELDING, OR OTHER CONTEMPLATED OPERATIONS.

SECTION VIII - FIRE AND EXPLOSION HAZARD DATA

HAZARD RANKING

NFPA HAZARD CLASS	HEALTH HAZARD: 1	0 = LEAST	HMIS HAZARD CLASS	HEALTH: 1		
	FLAMMABILITY: 2	1 = SLIGHT		FLAM: 2		
	REACTIVITY: 0	2 = MODERATE		REACT: 0		
	OTHER: -	3 = HIGH		P.P.E.: -		
		4 = EXTREME				

LOWER EXPLOSIVE LIMIT (% VOL.)	UPPER EXPLOSIVE LIMIT (% VOL.)
1.0	6.0

FLASH POINT

125, TCC F

EXTINGUISHING MEDIA:

EXTINGUISH WITH DRY CHEMICAL, CO2 OR FOAM.

FIRE & EXPLOSION HAZARDS:

THIS MATERIAL IS COMBUSTIBLE AND MAY BE IGNITED BY HEAT OR FLAME. THIS MATERIAL WILL BURN, BUT WILL NOT IGNITE READILY.

FIRE FIGHTING PROCEDURES:

THE USE OF A SCBA IS RECOMMENDED FOR FIRE FIGHTERS. WATER SPRAY MAY BE USEFUL IN MINIMIZING VAPORS AND COOLING CONTAINERS EXPOSED TO HEAT AND FLAME. AVOID SPREADING BURNING LIQUID WITH WATER USED FOR COOLING PURPOSES.

SECTION IX - PHYSICAL DATA

APPROX. BOILING POINT	VAPOR DENSITY (AIR = 1)	VAPOR PRESSURE
346 TO 406 F	5.2	1.2 MM HG @ 20C

EVAPORATION RATE (N-BUTYL ACETATE = 1)	% VOLATILE	% SOLUBILITY IN WATER
0.17	100%	NEGLIGIBLE (< 5%)

SPECIFIC GRAVITY (TEMP/TEMP)	APPEARANCE	ODOR
0.759 (60F/60F)	CLEAR, LITTLE IF ANY COLOR	CHARACTERISTIC

SECTION XI - DOCUMENTARY INFORMATION

* Revised 12/01/88
ISSUE DATE: 10/12/88 PRODUCT CODE NO. 11291
PREV. DATE: 7/ 1/88 PREV. PROD. CODE NO. 1291
MSDS NO: 6293 PREV. MSDS NO: 841

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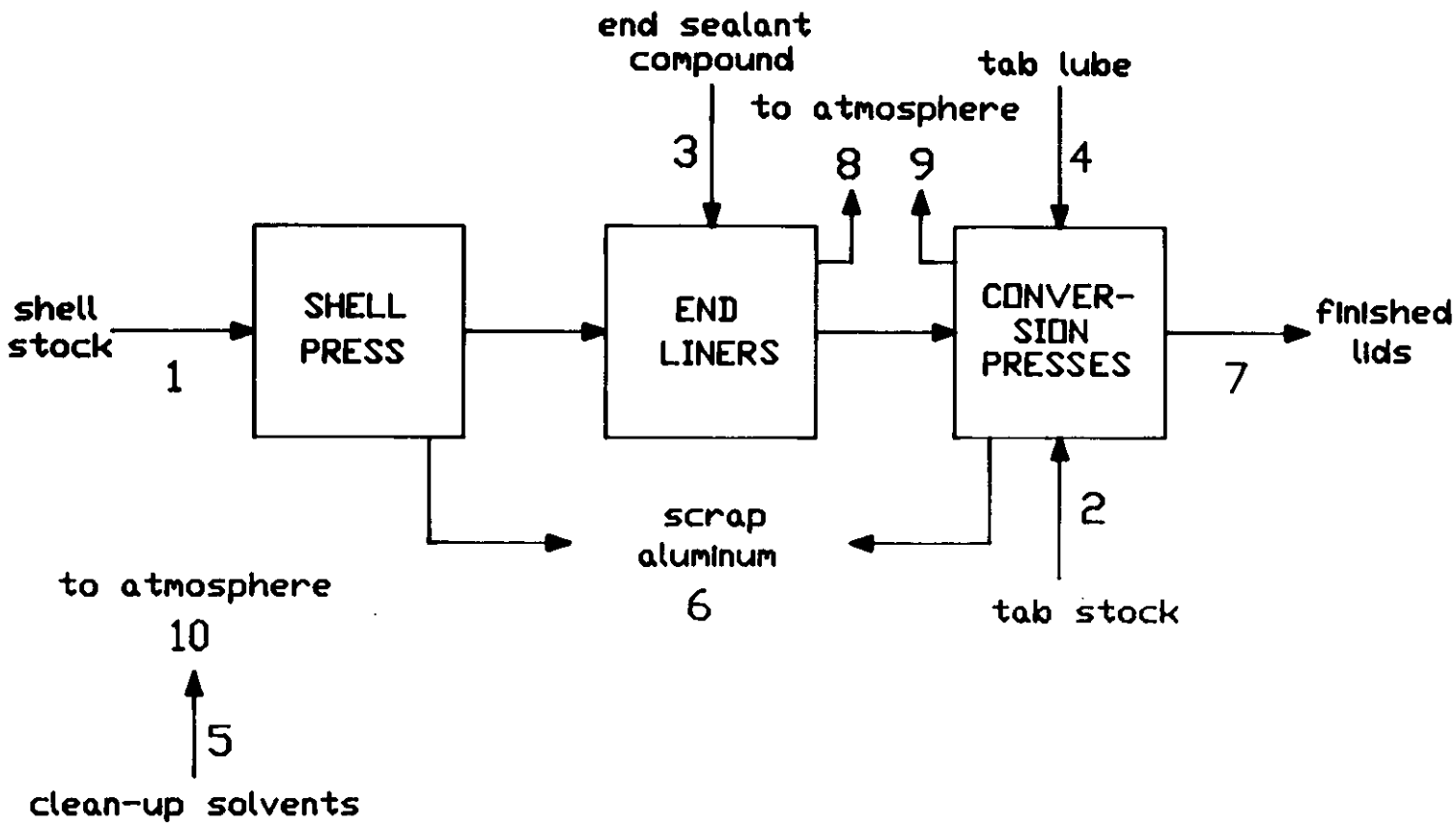
ATTACHMENT V.6

FLOW DIAGRAM & MATERIAL BALANCE



GAINESVILLE MODERNIZATION - FLOW DIAGRAM

TYPICAL MODULE BASED ON SHELL PRESS - ONE OF FOUR

METAL CONTAINER CORPORATION - GAINESVILLE LID PLANT

MODENIZATION PROJECT - MATERIAL BALANCE (ENTIRE FACILITY)

	ID No. From Flow Diagram	Hourly Maximum		Annual Average	
Raw Materials Input					
aluminum (shell stock)	1	8250	pounds	83151	pounds x 1000
aluminum (tab stock)	2	1260	pounds	11198	pounds x 1000
end sealant	3	201	pounds	1563.3	pounds x 1000
tab lube	4	45.8	pounds	356.1	pounds x 1000
clean-up solvents	5	20.7	pounds	160.6	pounds x 1000
Materials Output					
scrap aluminum	6	1880	pounds	16215	pounds x 1000
finished lids	7	7030	pounds	60771	pounds x 1000
Emissions (VOC)					
end sealant	8	81.1	pounds	315.2	tons
tab lube	9	43.3	pounds	168.3	tons
clean-up solvents	10	20.7	pounds	80.3	tons

ATTACHMENT V.7

LOCATION MAP AND PLOT PLAN

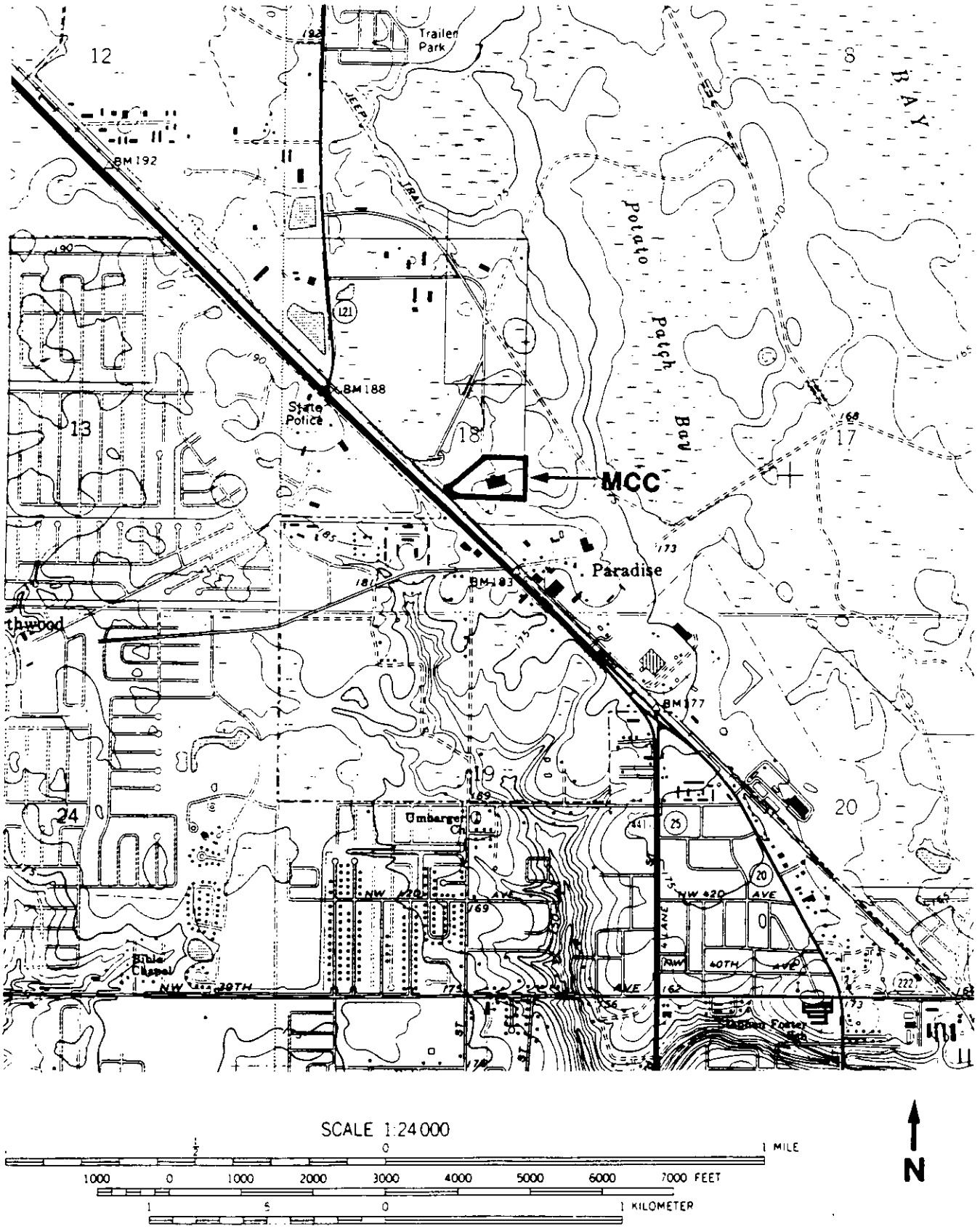


FIGURE 1-1.

SITE LOCATION MAP

Source: ECT, 1990.

ECT

Environmental Consulting & Technology, Inc.

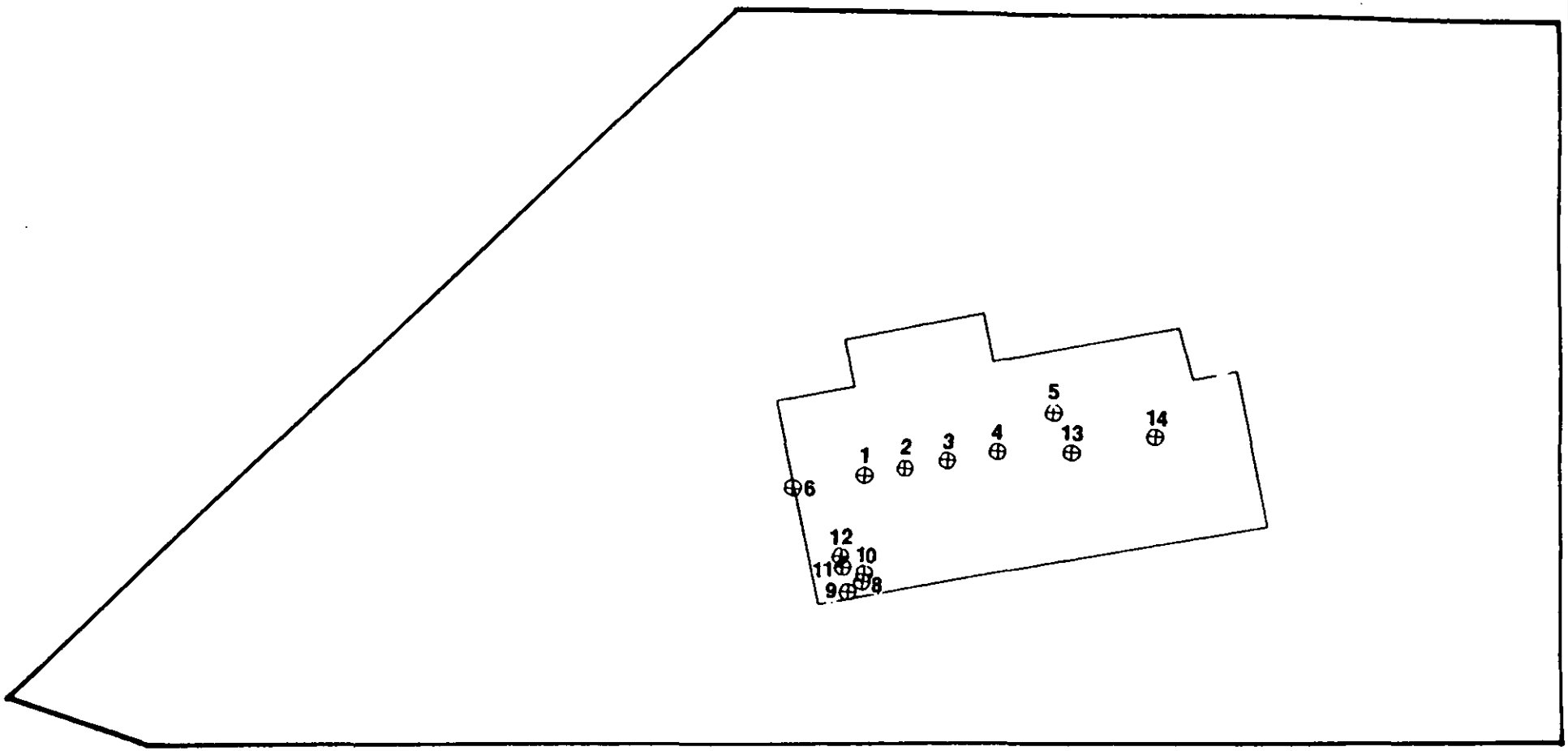


FIGURE 2-1.

FACILITY LAYOUT AND EMISSION POINT LOCATIONS

Source: ECT, 1990.

ECT

Environmental Consulting & Technology, Inc.

ATTACHMENT V.9

APPLICATION FEE

Metal Container Corporation

ONE OF THE ANHEUSER BUSCH COMPANIES

000265

CHECK DATE	CHECK NUMBER
8/22/90	000265

VOID 180 DAYS AFTER ISSUANCE

62-26
311

-09
2338

Manufacturers Hanover Bank (Delaware)
1201 Market Street
Wilmington, Delaware 19801

PAY THIS AMOUNT

$ ****5,000.00****

TO THE ORDER OF: Florida Department of Environmental Regulation

METAL CONTAINER CORPORATION

AUTHORIZED SIGNATURE

AUTHORIZED SIGNATURE

⑈00000265⑈ ⑆031600267⑆ 630644233845 09⑈

ATTACHMENT V1

BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS

BEST AVAILABLE CONTROL TECHNOLOGY

Metal Container Corporation (MCC) is proposing the use of high solid/low VOC end sealant compound as Best Available Control Technology (BACT). This analysis will show, through the use of recent BACT determinations and a review of other control technologies, that high solid/low VOC end sealant compound is BACT for an aluminum lid manufacturing facility.

A thorough review of the BACT/LAER Clearinghouse Document from 1986-1989 yielded two BACT determinations for a lid manufacturing process. Both determinations (copies attached) were made for Heekin Can, Inc. in Cincinnati, Ohio.

The first determination, made January 10, 1986, showed that BACT for a modified source was the use of an end sealant compound with a VOC content of 4.2 pounds/gallon minus water. The second, issued January 21, 1988, determined that BACT for a new source was the use of an end sealant compound with a VOC content of 3.7 pounds/gallon.

Due to advances in the formulation of end sealant compound, the formulation MCC is currently using and is proposing to use after the modernization has a VOC content of 3.2 pounds/gallon or a reduction of 14% over the most recent BACT determination.

In order to determine BACT for a specific application, the "top-down" approach is used. The technology which affords the greatest emission reduction is evaluated first, followed in descending order of control effectiveness by other technologies.

The technology MCC is proposing will be the basis for evaluation of the alternative control technologies. Two potentially viable technologies were identified:

1) the use of non-VOC (water-base) end sealant compound,

2) collection and destruction of VOC emissions through the use of thermal incineration.

These two technologies were assessed assuming application to the two new modules to be added as part of the modernization. The two existing modules which remain will continue to operate using the existing high solid/low-solvent compound as they are currently permitted.

WATER-BASE END SEALANT

There are both operational and technical difficulties associated with the use of water-base end sealant compound.

On an operational basis, water-base end sealant compound requires a longer curing time. In order to reduce the curing time, drying ovens must be added to drive off the water. The added capital cost of the drying ovens and the associated increase in utility costs have not proven to be cost effective.

Metal Container Corporation's experience with water-base end sealant has shown significantly lower production efficiency than with low solvent/high solids sealant due to equipment downtime from tooling build-up and high spoilage rates.

In order to meet committed production quotas from this facility, additional equipment would be required if water-base sealant was used. A liner, dryer, balancer, conversion press, counter/bagger, and conveying equipment would be the minimum additional equipment required, as well as a new additional water-base compound bulk storage and delivery system.

Table VI-1 details the emissions that would be generated by applying water-base compound on the shells produced by the two new shell presses. VOC emissions would be 150 tons per year, a reduction of 191 tons from the base case of 341 tons.

Table VI-2 presents the capital and annualized costs associated with use of a water-base compound. Total capital investment would be $4.5 million. Annualized costs would be $1,339,500, resulting in a cost effectiveness of $7013 per ton of VOC removed.

With this significant economic impact coupled with the technical and operational difficulties, a water-base system is not a viable alternative for this project.

Table VI-1

METAL CONTAINER CORPORATION - GAINESVILLE LID PLANT MODERNIZATION

BACT ANALYSIS

Water-base end sealant compound on shells from Machine 1 and 2

VOC Emissions Basis
based on shell press capacity
(assumes all shells produced are lined)

press operating efficiency	90	%
annual operation	360	days
usage rates	1989	actual

Shell Press Specifications

machine	speed	stations	shells/min	annual production	
1	275	27	7425	3.464	billion
2	275	27	7425	3.464	billion
3	275	24	6600	3.079	billion
4	140	22	3080	1.437	billion
			total	11.445	billion

Coating/Solvent Specifications
Machine 1 and 2

compound	typical mfg ident	density [lb/gal]	VOC content [wt frax]	usage rate [gal/1000lids]	
end sealant	DM 8028	9.30	0	0.0174	
tab lube	J-G 3810	6.35	0.945	0.0049	
solvents	Amsco 1487	5.58	1	0.0023	a)
	Amsco 1241	6.32	1	0.00019	

Machine 3 and 4

compound	typical mfg ident	density [lb/gal]	VOC content [wt frax]	usage rate [gal/1000lids]	
end sealant	DM 2140	7.82	0.4048	0.0174	
tab lube	J-G 3810	6.35	0.945	0.0049	
solvents	Amsco 1487	5.58	1	0.0023	a)
	Amsco 1241	6.32	1	0.00019	

Table VI-1 (cont.)

VOC Emissions (by shell press production)

		pounds/hr	tons/yr
Machine 1			
	end sealant	0.0	0.0
	tab lube	13.1	50.9
	Amsco 1487	5.7	22.2
	Amsco 1241	0.5	2.1
	total	19.4	75.2
Machine 2			
	end sealant	0.0	0.0
	tab lube	13.1	50.9
	Amsco 1487	5.7	22.2
	Amsco 1241	0.5	2.1
	total	19.4	75.2
Machine 3			
	end sealant	21.8	84.8
	tab lube	11.6	45.3
	Amsco 1487	5.1	19.8
	Amsco 1241	0.5	1.8
	total	39.0	151.7
Machine 4			
	end sealant	10.2	39.6
	tab lube	5.4	21.1
	Amsco 1487	2.4	9.2
	Amsco 1241	0.2	0.9
	total	18.2	70.8
Entire Facility			
	end sealant	32.0	124.4
	tab lube	43.3	168.3
	Amsco 1487	18.9	73.4
	Amsco 1241	1.8	6.9
	total	95.9	373.0

a) Represents 77.7% of total usage; 22.3% is recovered for recycle.

THERMAL INCINERATION

While the use of thermal incineration has been used to meet Lowest Achievable Emission Rate (LAER) in nonattainment areas at can manufacturing facilities, it has not been applied to the lid manufacturing process. Emission reductions are achieved through this method by capturing and ducting the VOCs which are "flashed-off" during the manufacturing process to an incinerator.

While the lid manufacturing process does not easily lend itself to the capture of VOC, the largest reductions could be achieved by ducting the scrap cyclones (VOC from tab lube) and the end liners and balancers (VOC from end sealant) to a regenerative natural gas-fired thermal oxidizer. Due to the nature of the compounds used and the speed at which the ends pass through the liners, it is estimated that 65% of the VOC from these materials can be captured and ducted to a thermal oxidizer with a 90% destruction efficiency. Table VI-3 summarizes emissions resulting from the thermal oxidation of the emissions from equipment associated with the two new presses. Emissions of VOC would be reduced to 170 tons per year, a reduction of 171 tons from the base case of 341 tons.

Data on the thermal oxidizer are presented in Table VI-4. The cost for these controls are high, as shown in the cost analysis represented in Table VI-5. Capital costs of a thermal oxidizer system would be $1.8 million, with annualized costs of $774,700. The resulting cost effectiveness of such a system would be $4560 per ton of VOC removed.

SUMMARY OF BACT ANALYSIS

Table VI-6 summarizes the cost-effectiveness of the two alternate technologies compared to the technology MCC is proposing as BACT. Comparison of the economics and technical viability of the alternate technologies, and review of recent BACT/LAER determinations shows that the use of high solids/low VOC compounds is BACT for the proposed lid plant modernization.

Table VI-3

METAL CONTAINER CORPORATION - GAINESVILLE LID PLANT MODERNIZATION

BACT ANALYSIS

Thermal Oxidizer - 65% capture efficiency, 90% destruction efficiency on equipment associated with Machine 1 and 2

VOC Emissions Basis

based on shell press capacity
(assumes all shells produced are lined)

press operating efficiency	90	%
annual operation	360	days
usage rates	1989	actual

Shell Press Specifications

machine	speed	stations	shells/min	annual production	
1	275	27	7425	3.464	billion
2	275	27	7425	3.464	billion
3	275	24	6600	3.079	billion
4	140	22	3080	1.437	billion
			total	11.445	billion

Coating/Solvent Specifications

compound	typical mfg ident	density [lb/gal]	VOC content [wt frax]	usage rate [gal/1000lids]	
end sealant	DM 2140	7.82	0.4048	0.0174	
tab lube	J-G 3810	6.35	0.945	0.0049	
solvents	Amsco 1487	5.58	1	0.0023	a)
	Amsco 1241	6.32	1	0.00019	

VOC Emissions (by shell press production)

		pounds/hr	tons/yr
Machine 1			
	end sealant	10.2	39.6
	tab lube	5.4	21.1
	Amsco 1487	5.7	22.2
	Amsco 1241	0.5	2.1
	total	21.9	85.0

Table VI-3 (cont.)

Machine 2			
	end sealant	10.2	39.6
	tab lube	5.4	21.1
	Amsco 1487	5.7	22.2
	Amsco 1241	0.5	2.1
	total	21.9	85.0
Machine 3			
	end sealant	21.8	84.8
	tab lube	11.6	45.3
	Amsco 1487	5.1	19.8
	Amsco 1241	0.5	1.8
	total	39.0	151.7
Machine 4			
	end sealant	10.2	39.6
	tab lube	5.4	21.1
	Amsco 1487	2.4	9.2
	Amsco 1241	0.2	0.9
	total	18.2	70.8
Entire Facility			
	end sealant	52.4	203.6
	tab lube	28.0	108.7
	Amsco 1487	18.9	73.4
	Amsco 1241	1.8	6.9
	total	101.0	392.5

a) Represents 77.7% of total usage; 22.3% is recovered for recycle.

Table VI-2

GAINESVILLE LID PLANT MODERNIZATION
WATER-BASE END SEALANT COST ANALYSIS

CAPITAL COSTS		
DIRECT COSTS		(1990 $)
PURCHASED EQUIPMENT COST		
TANKAGE AND PIPING		33,900
AUXILIARY EQUIPMENT		1,927,400
IN-LINE DRYERS		250,000
EQUIPMENT COST (EC)		2,211,300
INSTRUMENTS & CONTROLS (0.1EC)		221,130
TAXES (0.06EC)		132,678
FREIGHT (0.05EC)		110,565
PURCHASED EQUIPMENT COST (PEC)		2,675,673
DIRECT INSTALLATION COST		
FOUNDATIONS AND SUPPORTS (0.08PEC)		214,054
ERECTION AND HANDLING (0.14PEC)		374,594
ELECTRICAL (0.04PEC)		107,027
PIPING (0.02PEC)		0
INSULATION (0.01PEC)		26,757
PAINTING (0.01PEC)		26,757
SITE PREPARATION		0
BUILDINGS		0
DIRECT INSTALLATION COST (DIC)		749,188
TOTAL DIRECT COST (DC)		3,424,861
INDIRECT COSTS		
ENGINEERING AND SUPERVISION (0.10PEC)		267,567
CONSTRUCTION AND FIELD EXPENSES (0.05PEC)		133,784
CONSTRUCTION FEE (INCLUDED IN DC)		0
START-UP (0.02PEC)		53,513
PERFORMANCE TEST (0.01PEC)		26,757
CONSTRUCTION CONTINGENCY (0.15DIC)		112,378
EQUIPMENT CONTINGENCY (0.15PEC)		401,351
ENGINEERING CONTINGENCY (0.15(0.10PEC)		40,135
TOTAL INDIRECT COSTS (IC)		1,035,485
TOTAL CAPITAL INVESTMENT (TCI) = (DC+IC)	$	4,460,347

Table VI-2 (cont.)

GAINESVILLE LID PLANT MODERNIZATION
WATER-BASE END SEALANT COST ANALYSIS

ANNUAL COSTS			(1990 $)
COST DATA			
	ELECTRIC CHARGE ($/KW-HR)		0.066
	INTEREST		0.12
	USEFUL LIFE (YEARS)		10
	CAPITAL RECOVERY FACTOR (CRF)		0.1770
DIRECT ANNUAL COSTS			
	ANNUAL ELECTRICAL USAGE		59,875
	WATER-BASE END SEALANT	1,156,976	
	PROPOSED END SEALANT	845,216	
	DIFFERENTIAL		311,760
	DIRECT ANNUAL COST (DAC)		371,635
INDIRECT ANNUAL COSTS			
	CAPITAL RECOVERY (CRFxTCI)		789,411
	ADMINISTRATIVE CHARGES (0.02TCI)		89,207
	PROPERTY TAX (0.01TCI)		44,603
	INSURANCE (0.01TCI)		44,603
	INDIRECT ANNUAL COST (IAC)		967,825
TOTAL ANNUALIZED COST (DAC+IAC)		$	1,339,460
EMISSION REDUCTION			
	EMISSIONS WITH BACT (TONS/YEAR)		341
	EMISSIONS USING WATER-BASE END SEALANT (TONS/YEAR)		150
	NET REDUCTION (TONS/YEAR)		191
COST EFFECTIVENESS ($/TON OF VOC REMOVED)		$	7,013

Data Sources

OAQPS Control Cost Manual, USEPA, January,1990
Anheuser-Busch Companies, Inc., August, 1990

Table VI-4

GAINESVILLE LID PLANT MODERNIZATION
THERMAL OXIDIZER DATA SHEET

SPECIFICATIONS

TYPE	Thermal
SIZE (SCFM)	22,000
HEAT INPUT (MMBTU/HR)	7.15
BLOWER SIZE (H.P.)	275
COST	700,000
NUMBER REQUIRED	1
TOTAL COST	700,000
AUXILIARY EQUIPMENT (PER T.O.)	151,000
NATURAL GAS PIPELINE	250,000

CAPITAL RECOVERY

ELECTRIC CHARGE ($/KW-HR)	0.066
GAS CHARGE ($/MMBTU)	4.20
INTEREST (%)	0.12
USEFUL LIFE (YEARS)	10
FACTOR	0.1770

EMISSIONS REDUCTION

EMISSIONS WITH BACT (TONS/YEAR)	341
EMISSIONS USING THERMAL OXIDIZER (TONS/YEAR)	170
NET REDUCTION (TONS/YEAR)	171

Table VI-5

GAINESVILLE LID PLANT MODERNIZATION
THERMAL OXIDIZER COST ANALYSIS

CAPITAL COSTS		
DIRECT COSTS		(1990 $)
PURCHASED EQUIPMENT COST		
INCINERATOR		700,000
AUXILIARY EQUIPMENT		45,000
EQUIPMENT COST (EC)		745,000
INSTRUMENTS & CONTROLS (0.1EC)		74,500
TAXES (0.06EC)		44,700
FREIGHT (0.05EC)		37,250
PURCHASED EQUIPMENT COST (PEC)		901,450
DIRECT INSTALLATION COST		
FOUNDATIONS AND SUPPORTS (0.08PEC)		72,116
ERECTION AND HANDLING (0.14PEC)		126,203
ELECTRICAL (0.10PEC)		90,145
PIPING (0.02PEC)		18,029
INSULATION (0.01PEC)		9,015
PAINTING (0.01PEC)		9,015
SITE PREPARATION		0
DIRECT INSTALLATION COST (DIC)		324,522
GAS PIPELINE (INSTALLED)		250,000
TOTAL DIRECT COST (DC)		1,475,972
INDIRECT COSTS		
ENGINEERING AND SUPERVISION (0.10PEC)		90,145
CONSTRUCTION AND FIELD EXPENSES (0.05PEC)		45,073
CONSTRUCTION FEE (INCLUDED IN DC)		0
START-UP (0.02PEC)		18,029
PERFORMANCE TEST (0.01PEC)		9,015
CONSTRUCTION CONTINGENCY (0.15DIC)		48,678
EQUIPMENT CONTINGENCY (0.15PEC)		135,218
ENGINEERING CONTINGENCY (0.15(0.10PEC))		13,522
TOTAL INDIRECT COSTS (IC)		359,679
TOTAL CAPITAL INVESTMENT (TCI) = (DC+IC)	$	1,835,651

Table VI-5 (cont.)

GAINESVILLE LID PLANT MODERNIZATION
THERMAL OXIDIZER COST ANALYSIS

ANNUAL COSTS		(1990 $)
COST DATA		
ELECTRIC CHARGE ($/KW-HR)		0.066
GAS CHARGE ($/MMBTU)		4.2
INTEREST		0.12
USEFUL LIFE (YEARS)		10
CAPITAL RECOVERY FACTOR (CRF)		0.1770
DIRECT ANNUAL COSTS		
ANNUAL ELECTRICAL USAGE		116,949
ANNUAL GAS USAGE		259,459
DIRECT ANNUAL COST (DAC)		376,408
INDIRECT ANNUAL COSTS		
CAPITAL RECOVERY (CRFxTCI)		324,881
ADMINISTRATIVE CHARGES (0.02TCI)		36,713
PROPERTY TAX (0.01TCI)		18,357
INSURANCE (0.01TCI)		18,357
INDIRECT ANNUAL COST (IAC)		398,307
TOTAL ANNUALIZED COST (DAC+IAC)	$	774,715
EMISSION REDUCTION		
EMISSIONS WITH BACT (TONS/YEAR)		341
EMISSIONS USING THERMAL OXIDIZER (TONS/YEAR)		171
NET REDUCTION (TONS/YEAR)		170
COST EFFECTIVENESS ($/TON OF VOC REMOVED)	$	4,557

Data Sources

OAQPS Control Cost Manual, USEPA, January,1990
Anheuser-Busch Companies, Inc., August, 1990

Table VI-6

METAL CONTAINER CORPORATION
GAINESVILLE MODERNIZATION
COST SUMMARY

Control Scenario	Controlled Emissions (tons/year)	Capital Investment (a) ($)	Annualized Cost (a) ($)	Cost Effectiveness ($/ton removed)
Water-base end sealant	150	4,460,347	1,339,460	7,013
Capture and incineration	171	1,835,651	774,715	4,557
Low solvent/ high solids	341	Baseline	Baseline	Baseline

(a) In excess of baseline scenario.

PREVIOUS BACT DETERMINATIONS

APPENDIX -- DETAILED SOURCE LISTING

06/23/1988

SOURCE TYPE/SIZE: SURFACE COATING - CANS/COILS — 1051.00 MMCANS/YR

COMPANY NAME/SITE LOCATION: HEEKIN CAN, INC. 6200 BROADWELL RD. — CINCINNATI, OH

DETERMINATION IS BACT FOR A NEW SOURCE.
PERMIT NO. 14-1464
DETERMINATION MADE BY: SOUTHWESTERN OHIO APCA (AGENCY) — JIM SADELFELD (AGENCY CONTACT PERSON)

DATE OF PERMIT ISSUANCE-- 01/21/88
ESTIMATED DATE OF START-UP-- 1988
(513)-251-8777 (PHONE)

PROCESSES SUBJECT TO THIS PERMIT	THROUGHPUT CAPACITY	POLLUTANT EMITTED	EMISSION LIMITS	CONTROL EQUIPMENT OR PROCESS MODIFICATION	... & BASIS ... PCT EFF
APPLICATOR, COATER, END SEAL	50.00 MMCAN ENDS/*	VOC	3.7000 LB/GAL MINUS H2O	LOW SOLVENT COATINGS	BACT

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APPENDIX -- DETAILED SOURCE LISTING

06/05/1986

SOURCE TYPE/SIZE: SURFACE COATING - CANS/COILS — 1051.00 MM CAN/YR

COMPANY NAME/SITE LOCATION: HEEKIN CAN — CINCINNATI, OH

DETERMINATION IS BACT FOR A MODIFIED SOURCE.
PERMIT NO. 14-946
DETERMINATION MADE BY: SOUTHWEST OHIO APCA (AGENCY) — JIM SADELFELD (AGENCY CONTACT PERSON) — (513)-251-8777 (PHONE)

DATE OF PERMIT ISSUANCE-- 01/10/86
ESTIMATED DATE OF START-UP-- 1986

PROCESSES SUBJECT TO THIS PERMIT	THROUGHPUT CAPACITY	POLLUTANT EMITTED	EMISSION LIMITS	CONTROL EQUIPMENT OR PROCESS MODIFICATION	... & BASIS ... PCT EFF
LINERS, END SEAL COMPOUND, 2	674.00 MM CAN ENDS*	VOC	4.2000 LB/GAL MINUS H2O 77.8000 T/YR		BACT

NOTES --------
MODIFICATION TO EXISTING FACILITY "NETTED OUT" OF FED. OFFSET POLICY, LAER. PLANT USES 37044. GAL/YR

(*) INDICATES DATUM WAS TRUNCATED FOR THIS TABLE.

INITIAL REVIEW POST STARTUP
REVIEW STATUS:

ATTACHMENT VII.A

AMBIENT OZONE MONITORING DATA

AMBIENT MONITORING DATA

The modernization project will result in a net increase of over 100 tons per year of volatile organic compounds. As such, the existing ambient ozone level must be quantified per Florida Air Pollution Rule 17-2.500(50(f).

The Florida Electric Power Coordinating Group, as part of the Florida Acid Deposition Monitoring Program, has collected continuous ozone measurements in Gainesville. The location of the monitoring site is shown in Figure VII.A-1.

A summary of the data gathered in 1988 is presented in Table VII.A-1. These data indicate that ambient levels of ozone in the Gainesville area are well below the ambient one-hour standard of 120 ppb. The maximum measured hourly concentration was 92 ppb. Figure VII.A-2 graphically illustrates the area's compliance with the standard.

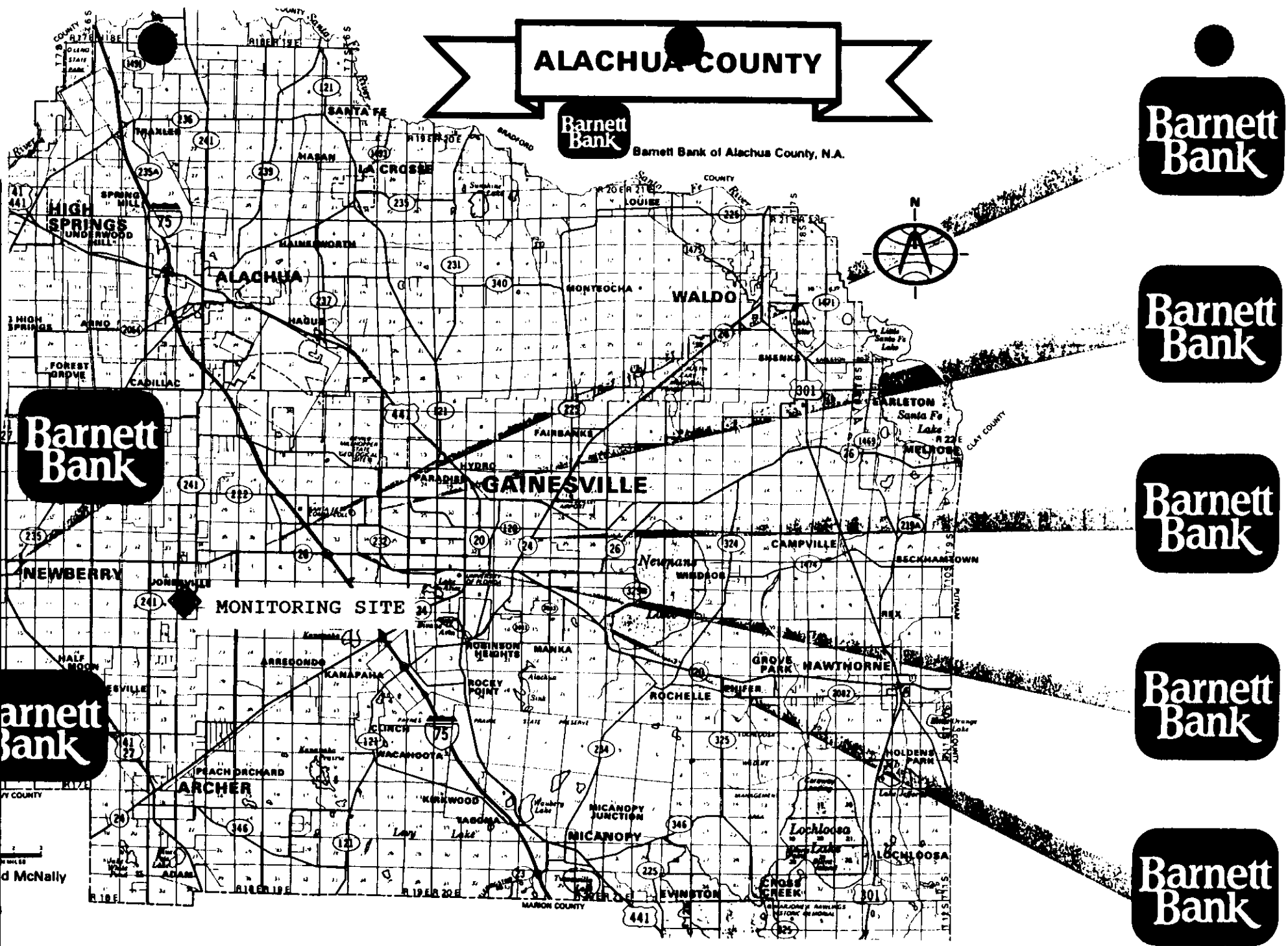


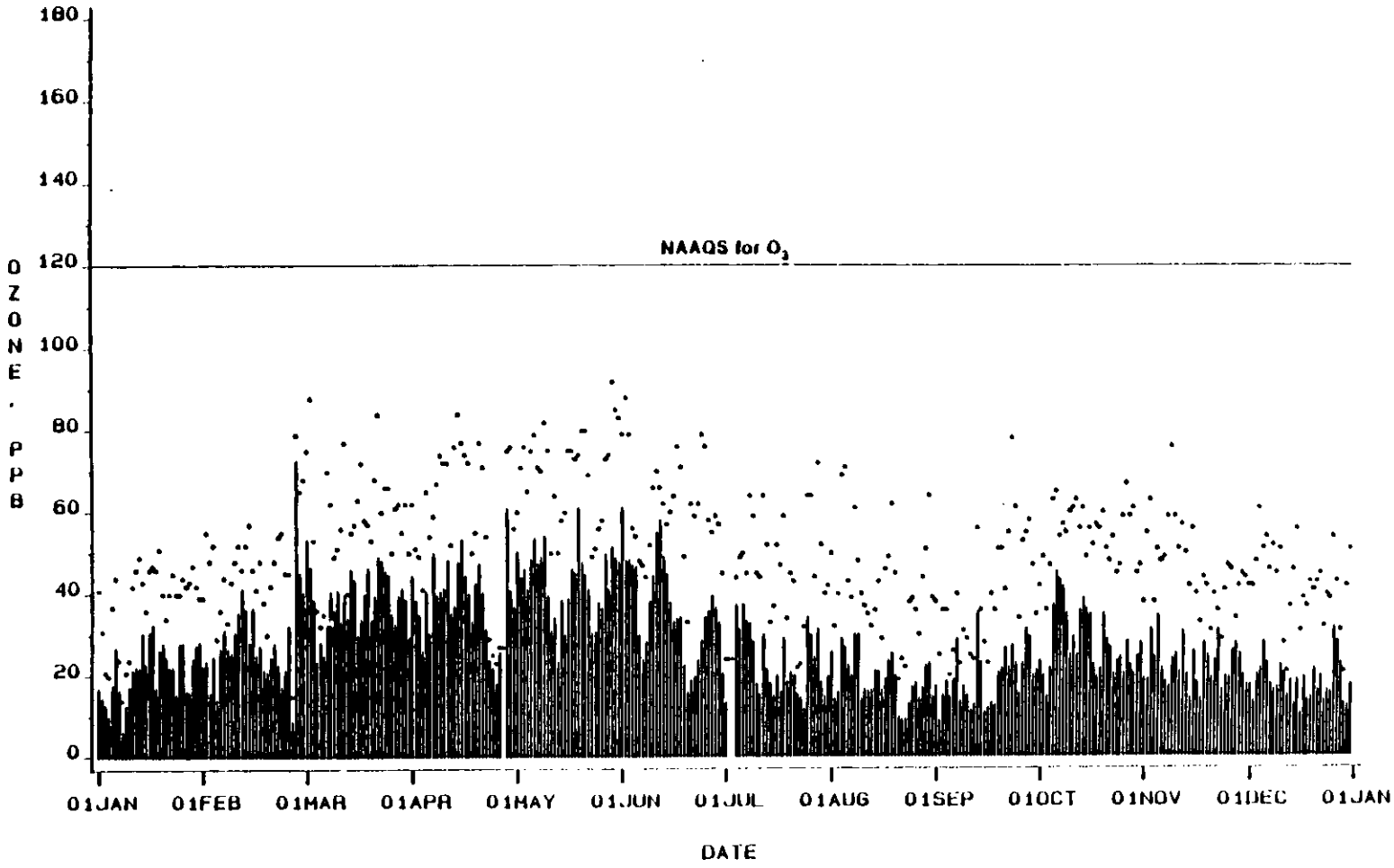
FIGURE VII.A-1. LOCATION OF AMBIENT OZONE MONITORING STATION

Table VII.A-1. 1988 Monthly Ozone Data From Gainesville

Month	Monthly Average Concentration (ppb)	Standard Deviation	Hourly Concentration (ppb) Minimum	Hourly Concentration (ppb) Maximum	Hour*/Date of Peak 1-Hour Concentration	Maximum Daily Average Concentration (ppb)	Data Capture (%)
1	21.5	12.9	0	51	1400/19	33	99
2	28.6	16.9	0	79	1600/27	45	93
3	38.5	17.9	0	88	1700/2	53	99
4	38.7	19.9	2	84	1800/14	53	92
5	43.2	23.5	0	92	1700/29	61	99
6	36.6	21.0	0	88	1400/2	61	99
7	23.5	17.6	0	72	1600/28	38	87
8	19.3	15.5	0	71	1100/5	30	99
9	19.6	14.7	0	78	1200/23	35	99
10	28.4	18.8	0	67	1600/27	45	99
11	23.0	15.9	0	76	1400/9	35	98
12	18.8	15.3	0	61	1400/4	32	99

*Beginning of hour.

Source: Hunter/ESE, 1989.



Note: Solid line represents 24-hour average concentrations, the dots represent peak 1-hour concentrations.

Figure VII.A-2

TIME SERIES OF DAILY AVERAGE AND PEAK HOURLY O_3 CONCENTRATIONS — GAINESVILLE (FADMP SITE 5)

SOURCE: HUNTER/ESE, 1988.

HUNTER/ESE

ATTACHMENT VIII

POTENTIAL TOXIC EMISSIONS ESTIMATES

AND IMPACT ASSESSMENT

TOXIC EMISSIONS ESTIMATES

Estimates of emissions of potential air toxics from the use of low solvent compounds at the Gainesville facility are shown in Table VIII-1. The estimates are based on maximum hourly and annual average production rates, 1989 usage rates at the facility, and compound composition information provided by the manufacturer.

IMPACT ASSESSMENT

The maximum hourly emissions of potential air toxics were modeled to determine the off-property ambient impacts for comparison to the no-threat levels established by the Florida Air Toxics Working Group. These no-threat levels include an ample margin of safety to ensure that public health effects are unlikely to occur at such levels. The attached report details the modeling analysis methodology and results.

Table VIII-2 summarizes the maximum predicted off-property impacts of each pollutant compared to the no-threat levels. With the exception of the 24-hour n-hexane impact, all predicted impacts are well below the applicable no-threat levels. The 24-hour no-threat level for n-hexane was predicted to be exceeded by less than three percent in nine non-residential areas. The probability of these impacts occurring is less than 0.1 percent. Therefore, emissions from the facility will not pose a threat to public health.

Table VIII-1

METAL CONTAINER CORPORATION – GAINESVILLE LID PLANT
MODERNIZATION PROJECT

POTENTIAL TOXIC EMISSIONS

Basis of Estimates

production 24530 lids/min; 11.445 billion lids/yr

	density [lb/gal]	usage rate [gal/1000 lids]	chemical	wt fraction
end sealant	7.82	0.0174	n-hexane	13
			n-heptane	3
			cyclohexane	2
			cyclohexylmethane	1
Amsco 1487	5.58	0.0023	n-hexane	53
			cyclohexane	1
			cyclohexylmethane	5

Emissions

	pounds/hr	tons/yr
n-hexane	35.9	139.5
n-heptane	6.0	23.3
cyclohexane	4.2	16.3
cyclohexylmethane	2.9	11.4

TABLE VIII-2

MAXIMUM PREDICTED OFF-PROPERTY IMPACTS COMPARED TO THE FATWG* NO-THREAT LEVELS

POLLUTANT	MAXIMUM IMPACT (ug/m^3) 8 HOUR	24-HOUR	NO-THREAT LEVELS (ug/m^3) 8-HOUR	24-HOUR
n-hexane	782	442	1,800	430
n-heptane	130	74	32,000	15,238
cyclohexane	91	52	1,000	238
cyclohexylmethane	63	36	32,000	7,619

*Florida Air Toxic Working Group

AIR QUALITY MODELING STUDY OF THE METAL CONTAINER CORPORATION LID MANUFACTURING FACILITY GAINESVILLE, FLORIDA

Prepared for:

ANHEUSER-BUSCH COMPANIES, INC.
St. Louis Missouri

Prepared by:

ECT
Environmental Consulting & Technology, Inc.

Gainesville, Florida

90-100-0100

July 27, 1990

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1.0 INTRODUCTION AND SUMMARY

Metal Container Corporation (MCC), an Anheuser-Busch company, owns and operates a lid manufacturing facility in Gainesville, Florida. The facility is located in a commercial area of northeast Gainesville, just southeast of the intersection of State Road 121 and US 441. The site location is shown in Figure 1-1.

MCC proposes to expand the production capability of the facility by adding to the existing building and adding new manufacturing equipment. Associated with the increase in production will be an increase in emissions of volatile organic compounds (VOCs) from building vents and exhausts. The principal VOC of interest is n-hexane, which is contained in solvents and end sealants used in the manufacturing process.

The compound n-hexane is considered by the Florida Department of Environmental Regulation (FDER) to have the potential to cause human health effects if present in high enough concentrations. As such, it is listed by FDER in their Air Toxics Permitting Strategy (Draft) (FDER, undated). In order to demonstrate that the increase in emissions will not pose a threat to public health, Anheuser-Busch has retained Environmental Consulting & Technology, Inc. to perform a dispersion modeling study, the results of which are contained herein.

The modeling study was performed using emission inputs that are described in Section 2.0 of this report. Maximum potential n-hexane emissions were used. The model and modeling methodologies used were those typically used by FDER. They are described in Section 3.0. The results, summarized in Section 4.0, showed that the facility will not pose a threat to public health. Two values that exceeded the Florida Department of Environmental Regulation (FDER) "no-threat level" for n-hexane by less than 3 percent were calculated, but, given the conservative nature of the modeling inputs, n-hexane concentrations above the no-threat level would not be expected in reality. These two potential impacts would be expected to

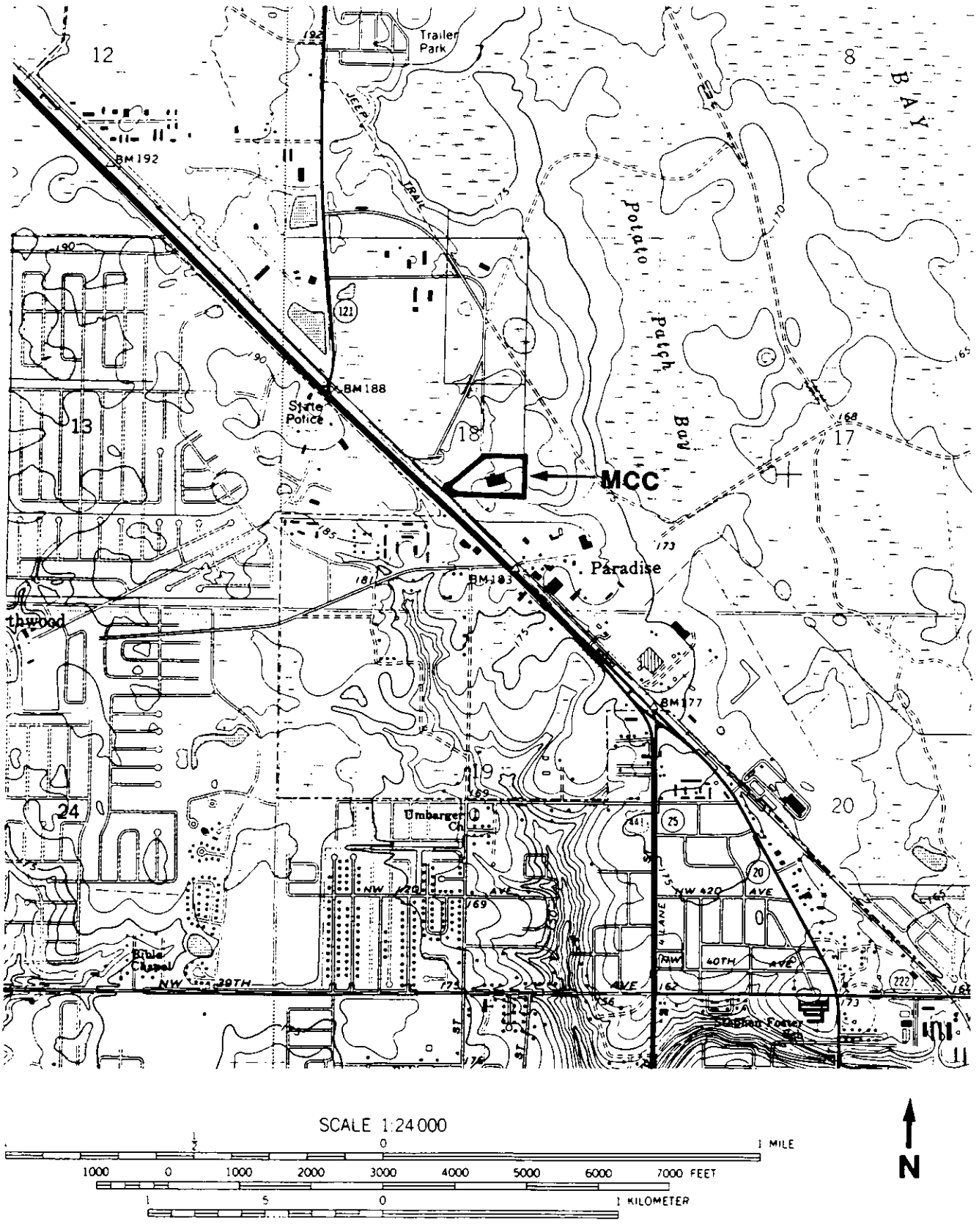

FIGURE 1-1.

SITE LOCATION MAP

Source: ECT, 1990.

ECT

Environmental Consulting & Technology, Inc.

occur less than 0.1 percent of the time. Furthermore, the two exceedances were predicted to occur in close proximity to the facility, at locations zoned for non-residential uses.

2.0 FACILITY LAYOUT AND EMISSION PARAMETERS

The layout of the expanded facility is provided in Figure 2-1. Also shown are the locations of all stacks, vents, or exhausts from which n-hexane will be emitted. Emission points numbered 10-14 will be added as a direct result of the expansion project. At the same time, the other vents will be modified to improve dispersion characteristics. The modifications involve raising stack heights by 15 feet (ft) for Sources 1-4 and 10 ft for Sources, 5, 8, and 9, and changing exhaust orientations from horizontal to vertical.

Due to their operating characteristics, the three scrap cyclones (Sources 10, 11, and 12) must have rain caps. Accordingly, they were modeled with no vertical momentum. The cyclone outlets were raised 10 ft above the roof to improve dispersion characteristics and reduce their impact.

Table 2-1 summarizes stack parameters and emission rates used in the modeling. Rates of n-hexane emissions from each individual vent or exhaust were calculated in proportion to exhaust flow rate. Total facility emissions of n-hexane, with the expansion, are projected to be 36 lb/hr (maximum), based on manufacturer's data on the solvents and end sealants. (Note that Source No. 7 is not used.)

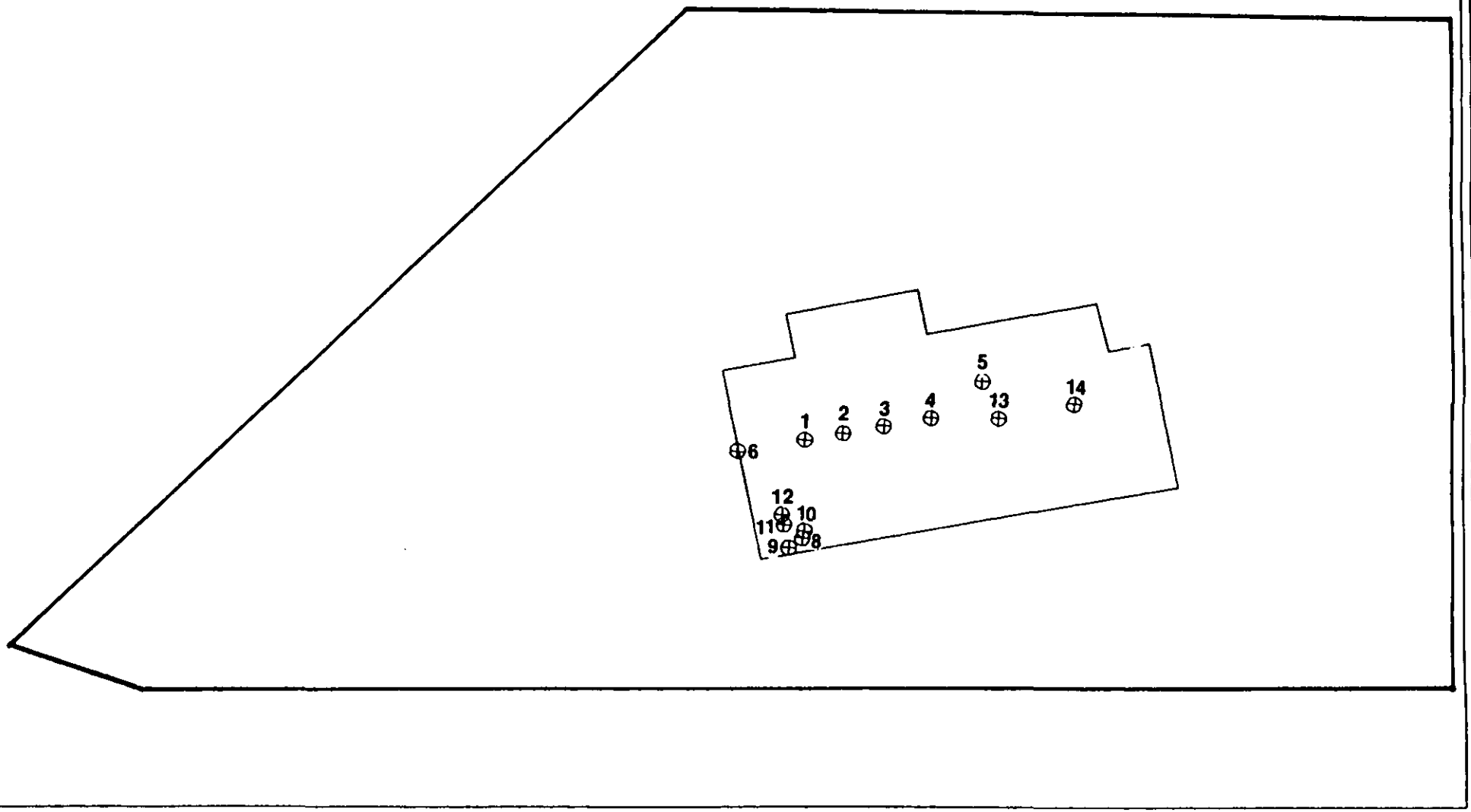

FIGURE 2-1.

FACILITY LAYOUT AND EMISSION POINT LOCATIONS

Source: ECT, 1990.

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Table 2-1. Summary of Stack Parameters and Emission Rates

Source No.	Exhaust Flow (acfm)	Emission Rate lb/hr	Emission Rate g/sec	Stack Ht. ft	Stack Ht. m	Exhaust Temp. °F	Exhaust Temp. °K	Exit Vel. ft/sec	Exit Vel. m/sec	Stack Diameter in	Stack Diameter m
1	10,750	3.42	0.43	41.7	12.7	80	300	41.9	12.8	28	0.71
2	10,750	3.42	0.43	41.7	12.7	80	300	41.9	12.8	28	0.71
3	10,750	3.42	0.43	41.7	12.7	80	300	41.9	12.8	28	0.71
4	10,750	3.42	0.43	41.7	12.7	80	300	41.9	12.8	28	0.71
5	21,450	6.83	0.86	36.7	11.2	80	300	83.6	25.5	28	0.71
6	6,000	1.91	0.24	26.7	8.13	80	300	--	0.01*	--	1.0*
8	5,900	1.88	0.24	36.7	11.2	80	300	55.6	17.0	18	0.46
9	6,750	2.15	0.27	36.7	11.2	80	300	63.7	19.4	18	0.46
10	6,000	1.91	0.24	36.7	11.2	80	300	--	0.01*	--	1.0*
11	7,000	2.23	0.28	36.7	11.2	80	300	--	0.01*	--	1.0*
12	7,000	2.23	0.28	36.7	11.2	80	300	--	0.01*	--	1.0*
13	5,000	1.59	0.20	36.7	11.2	80	300	19.5	5.9	28	0.71
14	5,000	1.59	0.20	36.7	11.2	80	300	19.5	5.9	28	0.71

*Artificial parameters to simulate a non-vertical exhaust orientation.

Source: A-B, 1990.
ECT, 1990.

3.0 MODELING APPROACH

Since the averaging times of interest for n-hexane are 8-hour and 24-hour, the Industrial Source Complex Short-Term (ISCST) model was selected. This model is classified by the U.S. Environmental Protection Agency (EPA) (1986) as a preferred model and is also recommended by FDER.

The ISCST model was used in the rural mode since the area surrounding the MCC facility is largely wooded and undeveloped. Also, since the terrain in the area is generally flat, no terrain elevations were used.

A receptor grid with 50-meter spacing between receptor points was used in the modeling study. The grid was placed to capture the highest off-property n-hexane concentrations resulting from the expanded operations. The orientation of the grid is illustrated in Figure 3-1.

All of the stacks and vents have heights less than 2.5 times the height of the building. Following EPA (1987) guidance, it was determined that direction-specific downwash parameters would apply to some stacks. Figure 3-2 illustrates that all of the stacks will fall within the potential zone of influence of the manufacturing building. Downwash parameters were calculated with the aid of the "GEP" program (BEE, undated).

One year of surface meteorological data and concurrent upper air data was used in the modeling study. Consistent with FDER practice, surface data from Tallahassee, Florida, and upper air data from Waycross, Georgia, were used. Data for the year 1986 were chosen since 1986 is the most recent year normally used by FDER.

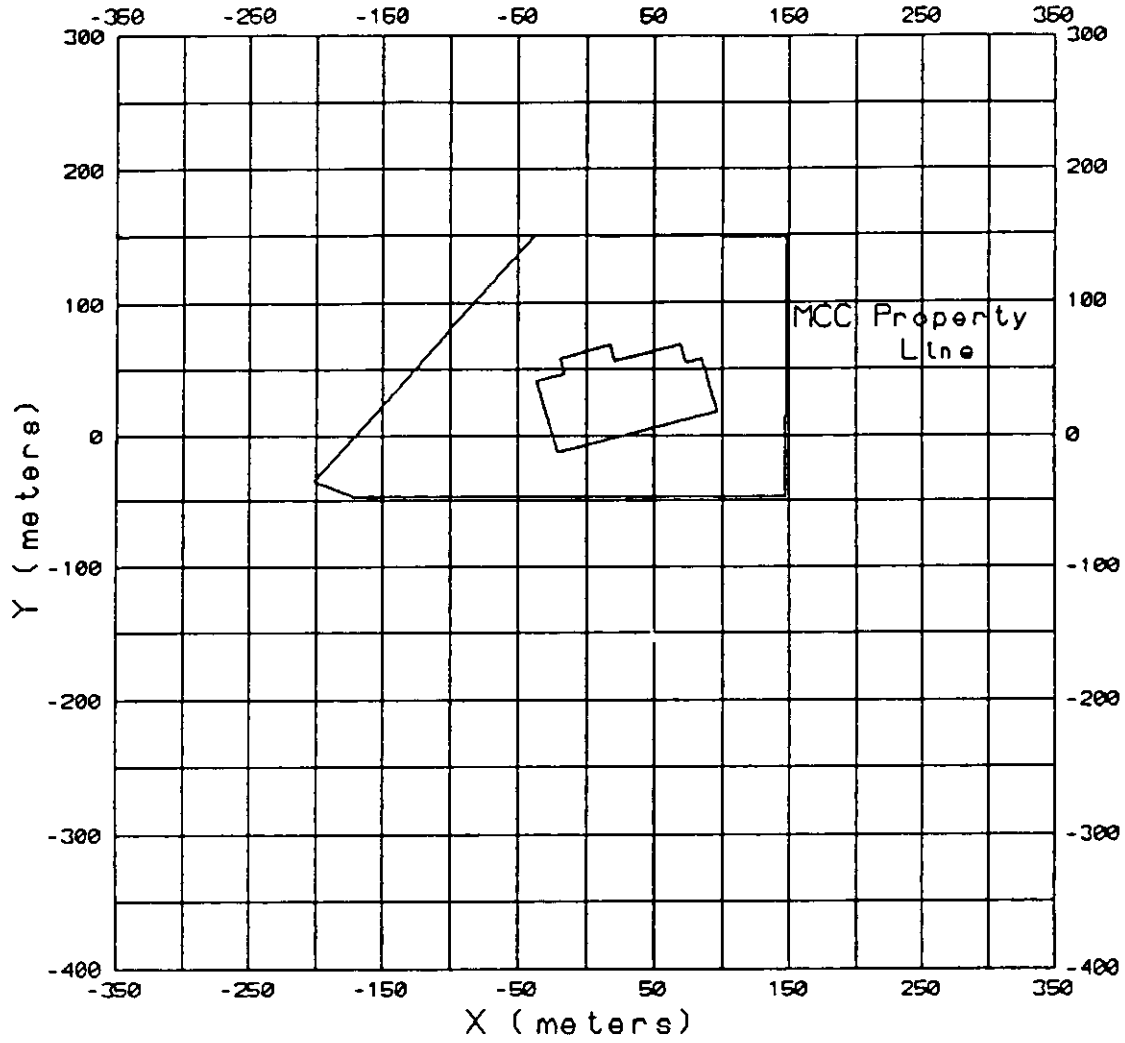

FIGURE 3-1.

MODELING RECEPTOR GRID
Source: ECT, 1990.

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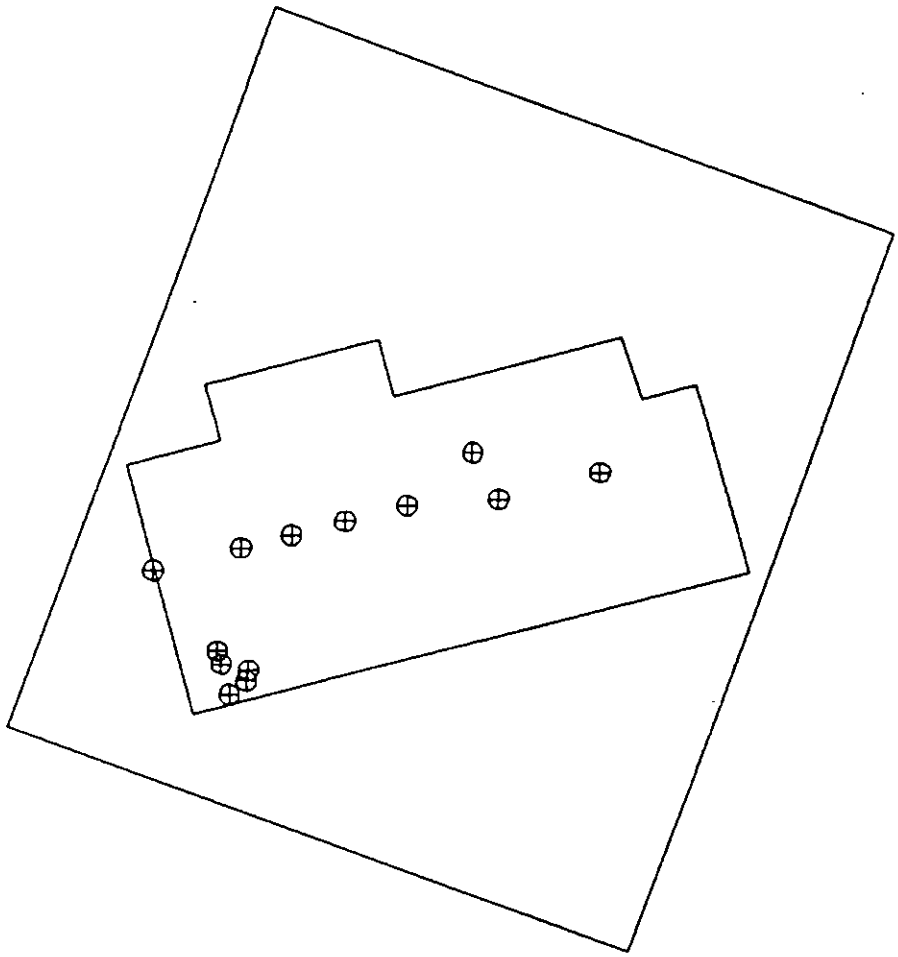

FIGURE 3-2.

DOWNWASH ZONE OF INFLUENCE (ILLUSTRATED WITH 20-DEGREE WIND DIRECTION)

Source: ECT, 1990.

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4.0 MODELING RESULTS

The results of the modeling study are summarized in Tables 4-1 and 4-2. (A diskette containing copies of the ISCST input and output files is appended to this report.) Table 4-1 lists the top five off-property 8-hour n-hexane concentrations, while Table 4-2 lists the top five off-property 24-hour concentrations. As shown, all of the top five 8-hour impacts were found to be less than half the no-threat level, which is 1,800 $\mu g/m^3$. In addition, all occurred within close proximity to the facility, in an area normally not occupied by potential human receptors. Figure 4-1 illustrates.

Two 24-hour concentrations slightly above the no-threat level (430 $\mu g/m^3$) were found, as given in Table 4-2. However, the locations of these values are in areas containing no sensitive receptors, as shown in Figure 4-2. The highest impact (441.6 $\mu g/m^3$) was predicted to occur on a parcel of land zoned non-residential. The next highest impact (437.9 $\mu g/m^3$) occurred within a railroad right-of-way.

Furthermore, the true likelihood of the occurrence of 24-hour impacts exceeding the no-threat level is quite small. Specifically, the total plant emission rate of 36 lb/hr, which was the basis for model inputs, assumes that all four shell presses are running at 100 percent efficiency (i.e., 100 percent of design capacity) over a full 24-hour period. In reality, each press is down roughly 15 percent of the time, one at a time. Therefore, 60 percent of the time only three presses would typically be in operation at the same time (i.e., all four presses in operation simultaneously would be expected only 40 percent of the time). In addition, of that 40 percent of the time, all presses operating at 100 percent efficiency would be expected no more than 25 percent of the time. All together, the worst-case emissions scenario would therefore be expected only 10 percent of the time (25 percent of 40 percent). Combined with the chance of worst-case meteorology (2 days out of 365), the total likelihood of an exceedance of the 24-hour no-threat level is less than 0.1 percent.

Table 4-1. Top 5 Off-Property N-Hexane Concentrations: 8-Hour Averaging Time

Rank	Concentration ($\mu g/m^3$)	Receptor Location (m)* X	Y	Day	Period
1	781.2	50	-50	141	3
2	637.6	0	-50	299	1
3	634.0	50	-50	65	3
4	614.2	50	-100	298	3
5	586.9	50	-50	75	3

*See Figure 3-1.

Note: FDER no-threat level = 1,800 $\mu g/m^3$.

Source: ECT, 1990.

Table 4-2. Top 5 Off-Property N-Hexane Concentrations: 24-Hour Averaging Time

Rank	Concentration ($\mu g/m^3$)	Receptor Location (m)* X	Y	Day
1	441.6	-50	-100	356
2	437.9	-50	-200	305
3	420.5	-50	-100	348
4	404.2	-50	-250	305
5	402.8	-50	-150	305

*See Figure 3-1.

Note: FDER no-threat level = 430 $\mu g/m^3$.

Source: ECT, 1990.

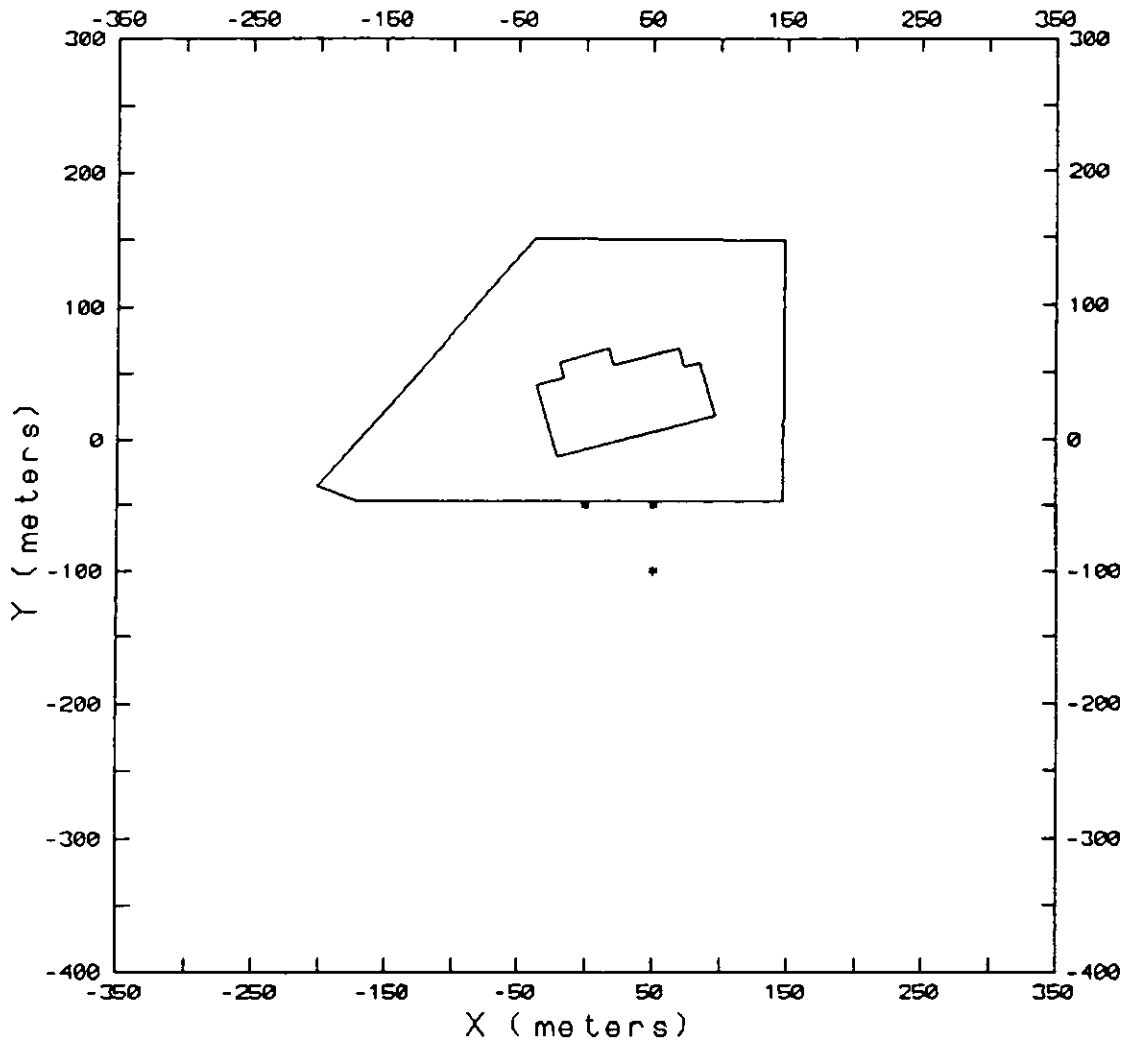

FIGURE 4-1.

LOCATIONS OF TOP FIVE 8-HOUR N-HEXANE IMPACTS GIVEN IN TABLE 4-1

Source: ECT, 1990.

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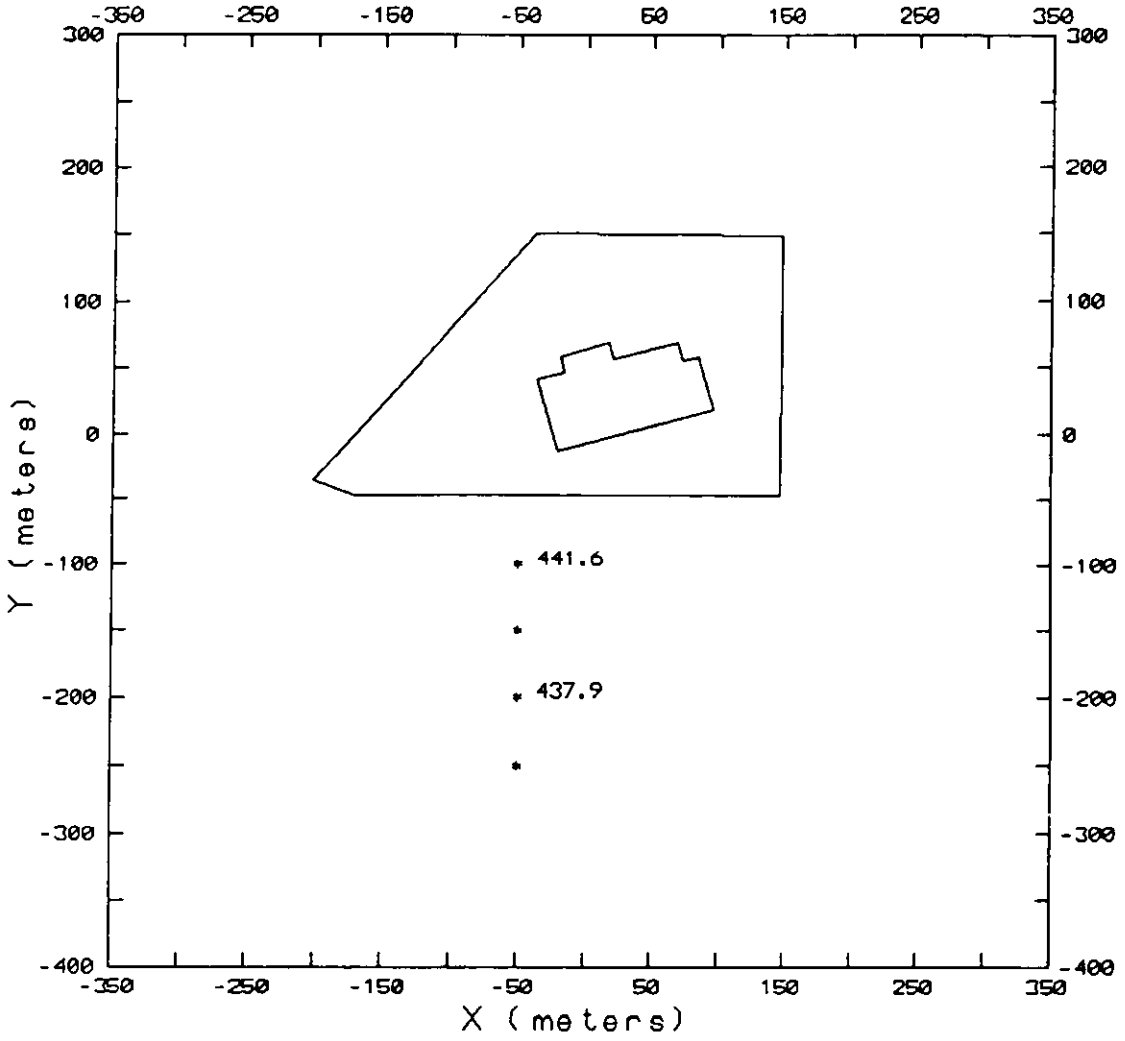

FIGURE 4-2.

LOCATIONS OF TOP FIVE 24-HOUR N-HEXANE IMPACTS GIVEN IN TABLE 4-2

Source: ECT, 1990.

ECT
Environmental Consulting & Technology, Inc.

It should also be noted that the scrap cyclones, Sources 10, 11, and 12, were found to contribute approximately 50 percent of the highest 24-hour concentrations. As previously mentioned, the operating requirements of these cyclones are such that no additional engineering can be done to improve the dispersion characteristics of these sources.

REFERENCES

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Florida Department of Environmental Regulation (FDER). Undated. The Florida Air Toxics Permitting Strategy (Draft). Tallahassee, FL.

U.S. Environmental Protection Agency (EPA). 1986. Guideline on Air Quality Models (Revised). EPA-450/2-78-027R. Research Triangle Park, NC.

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ATTACHMENT IX

ADDITIONAL IMPACT ANALYSIS

ADDITIONAL IMPACTS ANALYSIS

Growth

The workforce at the Gainesville Can Plant will increase by 12 employees due to the modernization project. Therefore, there will be no significant general residential, commerical, or industrial growth associated with the project and, as such, no significant growth related emissions.

Visibility

The increase in emissions from the proposed project are not anticipated to impair visibility, particularly in the Class 1 areas - Okefenokee National Wildlife Refuge, 60 miles north of the plant, and Chassahowitzka National Wildlife Refuge, 70 miles southwest.

Vegetation and Soils

Volatile Organic Compound emissions from the proposed facility can be expected to play some role in the local formation of ozone. Only extremely sensitive plants growing under the most ideal conditions are injured after exposure to 0.10 to 0.20 ppm ozone for one hour. Such ideal conditions rarely occur in the field. It would be unlikely, therefore, that injury from ozone would occur if the air quality standard of 0.12 ppm is not exceeded.

The primary commercial crops grown in Alachua County are corn, soybeans, tobacco, and peanuts. Natural timber found in the area consist of long leaf and slach pines, upland oak-hickory and wetland oak-gum-cypress.

The soils of the Gainesville area are typically sands, silts, clays overlying limestone formations.

The projected VOC emission increase from the modernization is not expected to participate in the ozone formation process to the extent that ambient levels will affect soils or the worst sensitive plant species.