105 0250-003-AC
004-AV

TomJohn Engineering, Inc.

8424 4th St. N. Suite G
St. Petersburg, FL 33702
(727) 579-0403
Fax (727) 579-0205

May 5, 2000

Mr. Jerry Kissel
Air Section
FL Dept. of Environmental Protection
3804 Coconut Palm Drive
Tampa, FL 33619

re: American Environmental Container Corporation - Title V Air Permit Modification

Dear Mr. Kissel:

As the environmental professional engineer of record for American Environmental Container Corporation, I am submitting the enclosed set of three applications for an air construction/modification permit. This application request an increase in the number of lamination/gelcoating bays and total facility emissions. Each application has original signatures and seals, and the package is not accompanied by a check for the processing fee since a final Title V permit has been issied fore this facility. Additional copies of the application are available at Department request.

This source will be subject to requirements of Title V of the CAAA of 1990 due to estimated maximum emissions of an individual Title III species (styrene) greater than ten tons per year.

Thank you for your attention to this matter. If you have any additional questions or if I can be of further assistance, please contact me at my office.

Sincerely,

Tom T. John, P.E.

enclosures

TTJ:dj

Tom John Engineering
8424 4th Street N. Suite K
St. Petersburg, FL 33702
(727) 579 - 0403

Title V
Air Permit
Modification Application

AMERICAN ENVIRONMENTAL
CONTAINER CORPORATION
Lakeland, Florida

May 1, 2000

Table Of Contents

Title V Air Permit Modification Application

American Environmental Container Corporation

Application Information

Application Information

Department of Environmental Protection

Division of Air Resources Management

APPLICATION FOR AIR PERMIT - TITLE V SOURCE

See Instructions for Form No. 62-210.900(1)

I. APPLICATION INFORMATION

Identification of Facility

1. Facility Owner/Company Name: American Environmental Container Corporation	
2. Site Name: American Environmental Container Corporation	
3. Facility Identification Number: 1050250 [ ] Unknown	
4. Facility Location: Street Address or Other Locator: 2302 Lasso Lane City: Lakeland County: Polk Zip Code: 33801	
5. Relocatable Facility? [ ] Yes [X] No	6. Existing Permitted Facility? [X] Yes [ ] No

Application Contact

1. Name and Title of Application Contact: Tom T. John, P.E.
2. Application Contact Mailing Address: Organization/Firm: Tom John Engineering, Inc. Street Address: 8424 4th Street North Suite K City: St. Petersburg State: Florida Zip Code: 33702
3. Application Contact Telephone Numbers: Telephone: (727) 579 - 0403 Fax: (727) 579 - 0205

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	
2. Permit Number:	
3. PSD Number (if applicable):	
4. Siting Number (if applicable):	

Purpose of Application

Air Operation Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

[ ] Initial Title V air operation permit for an existing facility which is classified as a Title V source.

[ ] Initial Title V air operation permit for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.

Current construction permit number:_____

[ ] Title V air operation permit revision to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number:_____

Operation permit number to be revised:_____

[X] Title V air operation permit revision or administrative correction to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. (Also check Air Construction Permit Application below.)

Operation permit number to be revised/corrected: 1050250-001-AV

[ ] Title V air operation permit revision for reasons other than construction or modification of an emissions unit. Give reason for the revision; e.g., to comply with a new applicable requirement or to request approval of an "Early Reductions" proposal.

Operation permit number to be revised:_____

Reason for revision:_____

Air Construction Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

[X] Air construction permit to construct or modify one or more emissions units.

[ ] Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.

[ ] Air construction permit for one or more existing, but unpermitted, emissions units.

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official: Mr. Kirk Sullivan, Vice President
2. Owner/Authorized Representative or Responsible Official Mailing Address: Organization/Firm: American Environmental Container Corporation Street Address: 2302 Lasso Lane City: Lakeland State: Florida Zip Code: 33801
3. Owner/Authorized Representative or Responsible Official Telephone Numbers: Telephone: (863) 666 - 3020 Fax: (863) 666 - 5211
4. Owner/Authorized Representative or Responsible Official Statement: *I, the undersigned, am the owner or authorized representative*(check here [ ], if so) or the responsible official (check here [X], if so) of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.* Signature 5-10-00 Date

* Attach letter of authorization if not currently on file.

Professional Engineer Certification

1. Professional Engineer Name: Tom T. John, P.E Registration Number: 33157
2. Professional Engineer Mailing Address: Organization/Firm: Tom John Engineering, Inc Street Address: 8424 4th Street North, Suite K City: St. Petersburg State: Florida Zip Code: 33702
3. Professional Engineer Telephone Numbers: Telephone: (727) 579 - 0403 Fax: (727) 579 - 0205

4. **Professional Engineer Statement:**

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [NA], if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [X], if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [X], if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature

5 May 2000

Date

(seal)

* Attach any exception to certification statement.

Scope of Application

Emissions Unit ID	Description of Emissions Unit	Permit Type	Processing Fee
001	Fiberglass swimming pools and related structures - resin and gelcoat application, mold care, and related assembly and cleanup activities - increase in number of lamination bays and permitted emissions	AC1B	$NA

Application Processing Fee

Check one: [ ] Attached - Amount: $ _____ [X] Not Applicable

Construction/Modification Information

1. Description of Proposed Project or Alterations: This project is for an increase in permitted emissions and the concomitant increase in material usages for a fiberglass swimming pool manufacturer. The styrene emissions will make the facility subject to Title III and Title V, CAAA (1990).
2. Projected or Actual Date of Commencement of Construction: permit receipt
3. Projected Date of Completion of Construction: one year from permit receipt

Application Comment

Activities and record keeping will be in accordance with permit conditions as required to provide reasonable assurance of compliance with emission limitations.

Facility Information

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates: Zone: 17 East (km): 413.4 North (km): 3090.0			
2. Facility Latitude/Longitude: Latitude (DD/MM/SS): 028/00/53 Longitude (DD/MM/SS): 081/52/52			
3. Governmental Facility Code: 0	4. Facility Status Code: O, C	5. Facility Major Group SIC Code: 30	6. Facility SIC(s): 3089
7. Facility Comment (limit to 500 characters): The construction application requests and increase in the allowable VOC emissions (principally styrene). These emissions will make the facility subject to CAAA (1990) Title III and Title V.			

Facility Contact

1. Name and Title of Facility Contact: Kirk Sullivan, Vice President
2. Facility Contact Mailing Address: Organization/Firm: American Environmental Container Corporation Street Address: 2302 Lasso Lane City: Lakeland State: Florida Zip Code: 33801
3. Facility Contact Telephone Numbers: Telephone: (863)666- 3020 Fax: (863) 665- 5211

Facility Regulatory Classifications

Check all that apply:

1. [ ] Small Business Stationary Source?	[X] Unknown
2. [X] Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?	
3. [ ] Synthetic Minor Source of Pollutants Other than HAPs?	
4. [X] Major Source of Hazardous Air Pollutants (HAPs)?	
5. [ ] Synthetic Minor Source of HAPs?	
6. [ ] One or More Emissions Units Subject to NSPS?	
7. [ ] One or More Emission Units Subject to NESHAP?	
8. [ ] Title V Source by EPA Designation?	
9. Facility Regulatory Classifications Comment (limit to 200 characters): Monthly record keeping of materials used and calculation of emissions is proposed as demonstration of compliance with permit conditions.	

List of Applicable Regulations

62-296.320(1), F.A.C.	General VOC Standards
62-296.320(2), F.A.C.	Objectionable Odor Prohibition
62-296.320(4)(b), F.A.C.	General Visible Emission Standard
62-296.320(4)(c), F.A.C.	Unconfined Emissions of Particulate Matter
62-297, F.A.C.	Testing, Reporting and Record Keeping
Title V Core List, following	

[Note: The Title V Core List is meant to simplify the completion of the "List of Applicable Regulations" for DEP Form No. 62-210.900(1), Application for Air Permit - Long Form. The Title V Core List is a list of rules to which all Title V Sources are presumptively subject. The Title V Core List may be referenced in its entirety, or with specific exceptions. The Department may periodically update the Title V Core List.]

Federal: ***(description)***

40 CFR 61: National Emission Standards for Hazardous Air Pollutants (NESHAP)
40 CFR 61, Subpart M: National Emission Standard for Asbestos.

40 CFR 82: Protection of Stratospheric Ozone.
40 CFR 82, Subpart B: Servicing of Motor Vehicle Air Conditioners (MVAC).
40 CFR 82, Subpart F: Recycling and Emissions Reduction.

State: ***(description)***

CHAPTER 62-4, F.A.C.: PERMITS, effective 10-16-95

62-4.030, F.A.C.: General Prohibition.
62-4.040, F.A.C.: Exemptions.
62-4.050, F.A.C.: Procedure to Obtain Permits; Application.
62-4.060, F.A.C.: Consultation.
62-4.070, F.A.C.: Standards for Issuing or Denying Permits; Issuance; Denial.
62-4.080, F.A.C.: Modification of Permit Conditions.
62-4.090, F.A.C.: Renewals.
62-4.100, F.A.C.: Suspension and Revocation.
62-4.110, F.A.C.: Financial Responsibility.
62-4.120, F.A.C.: Transfer of Permits.
62-4.130, F.A.C.: Plant Operation - Problems.
62-4.150, F.A.C.: Review.
62-4.160, F.A.C.: Permit Conditions.
62-4.210, F.A.C.: Construction Permits.
62-4.220, F.A.C.: Operation Permit for New Sources.

CHAPTER 62-103, F.A.C.: RULES OF ADMINISTRATIVE PROCEDURE, effective 12-31-95

62-103.150, F.A.C.: Public Notice of Application and Proposed Agency Action.
62-103.155, F.A.C.: Petition for Administrative Hearing; Waiver of Right to Administrative Proceeding.

CHAPTER 62-210, F.A.C.: STATIONARY SOURCES - GENERAL REQUIREMENTS, effective 03-21-96

62-210.300, F.A.C.: Permits Required.
62-210.300(1), F.A.C.: Air Construction Permits.
62-210.300(2), F.A.C.: Air Operation Permits.
62-210.300(3), F.A.C.: Exemptions.
62-210.300(3)(a), F.A.C.: Full Exemptions.
62-210.300(3)(b), F.A.C.: Temporary Exemption.

62-210.300(5), F.A.C.: Notification of Startup.
62-210.300(6), F.A.C.: Emissions Unit Reclassification.

62-210.350, F.A.C.: Public Notice and Comment.
62-210.350(3), F.A.C.: Additional Public Notice Requirements for Facilities Subject to Operation Permits for Title V Sources.

62-210.360, F.A.C.: Administrative Permit Corrections.

62-210.370(3), F.A.C.: Annual Operating Report for Air Pollutant Emitting Facility.

62-210.650, F.A.C.: Circumvention.

62-210.900, F.A.C.: Forms and Instructions.
62-210.900(1) Application for Air Permit - Long Form, Form and Instructions.
62-210.900(5) Annual Operating Report for Air Pollutant Emitting Facility, Form and Instructions.

CHAPTER 62-213, F.A.C.: OPERATION PERMITS FOR MAJOR SOURCES OF AIR POLLUTION, effective 03-20-96

62-213.205, F.A.C.: Annual Emissions Fee.
62-213.400, F.A.C.: Permits and Permit Revisions Required.
62-213.410, F.A.C.: Changes Without Permit Revision.
62-213.412, F.A.C.: Immediate Implementation Pending Revision Process.
62-213.420, F.A.C.: Permit Applications.
62-213.430, F.A.C.: Permit Issuance, Renewal, and Revision.
62-213.440, F.A.C.: Permit Content.
62-213.460, F.A.C.: Permit Shield.

62-213.900, F.A.C.: Forms and Instructions.
62-213.900(1) Major Air Pollution Source Annual Emissions Fee Form, Form and Instructions.

CHAPTER 62-256, F.A.C.: OPEN BURNING AND FROST PROTECTION FIRES, effective 11-30-94

CHAPTER 62-257, F.A.C.: ASBESTOS NOTIFICATION AND FEE, effective 03/24/96

CHAPTER 62-281, F.A.C.: MOTOR VEHICLE AIR CONDITIONING REFRIGERANT RECOVERY AND RECYCLING, effective 03-07-96

CHAPTER 62-296, F.A.C.: STATIONARY SOURCES - EMISSION STANDARDS, effective 03-13-96

62-296.320(2), F.A.C.: Objectionable Odor Prohibited.
62-296.320(3), F.A.C.: Industrial, Commercial, and Municipal Open Burning Prohibited.
62-296.320(4)(c), F.A.C.: Unconfined Emissions of Particulate Matter.

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B. FACILITY POLLUTANTS

List of Pollutants Emitted

1. Pollutant Emitted	2. Pollutant Classif.	3. Requested Emissions Cap lb/hour	3. Requested Emissions Cap tons/year	4. Basis for Emissions Cap	5. Pollutant Comment
Individual HAP (styrene, H163)	M	Not Applicable	180	other	styrene is anticipated to be dominant HAP species
total HAP	M	Not Applicable	180	other	includes styrene and other HAP species
total VOC	M	Not Applicable	180	other	includes all HAP species

MMA?

C. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements

1. Area Map Showing Facility Location:
   [X] Attached, Document ID: 1 [ ] Not Applicable [ ] Waiver Requested

2. Facility Plot Plan:
   [X] Attached, Document ID: 1 [ ] Not Applicable [ ] Waiver Requested

3. Process Flow Diagram(s):
   [X] Attached, Document ID: 2 [ ] Not Applicable [ ] Waiver Requested

4. Precautions to Prevent Emissions of Unconfined Particulate Matter:
   [X] Attached, Document ID: 2 [ ] Not Applicable [ ] Waiver Requested

5. Fugitive Emissions Identification:
   [X] Attached, Document ID: 2 [ ] Not Applicable [ ] Waiver Requested

6. Supplemental Information for Construction Permit Application:
   [X] Attached, Document ID: _____ [3,4,5,6] Not Applicable

7. Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

8. List of Proposed Insignificant Activities:
   [X] Attached, Document ID: 3 [ ] Not Applicable

9. List of Equipment/Activities Regulated under Title VI:
   [ ] Attached, Document ID:_____
   [ ] Equipment/Activities On site but Not Required to be Individually Listed
   [X] Not Applicable

10. Alternative Methods of Operation:
    [ ] Attached, Document ID:_____ [X] Not Applicable

11. Alternative Modes of Operation (Emissions Trading):
    [ ] Attached, Document ID:_____ [X] Not Applicable

12. Identification of Additional Applicable Requirements:
    [X] Attached, Document ID: 4 [ ] Not Applicable

13. Risk Management Plan Verification:
    [ ] Plan previously submitted to Chemical Emergency Preparedness and Prevention Office (CEPPO). Verification of submittal attached (Document ID:_____) or previously submitted to DEP (Date and DEP Office:_____)
    [ ] Plan to be submitted to CEPPO (Date required:_____)
    [X] Not Applicable

14. Compliance Report and Plan:
    [5] Attached, Document ID: 5 [ ] Not Applicable

15. Compliance Certification (Hard-copy Required):
    [5] Attached, Document ID: 5 [ ] Not Applicable

Emission Unit Information

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in This Section: (Check one)

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[X] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Regulated or Unregulated Emissions Unit? (Check one)

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
Manufacture of fiberglass swimming pools and related structures utilizing styrene based resins and gelcoats; includes assembly and cleanup materials.

4. Emissions Unit Identification Number:
ID: 001
[ ] No ID
[ ] ID Unknown

5. Emissions Unit Status Code:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
O, C	Permit Receipt	30	[X] No

9. Emissions Unit Comment: (Limit to 500 Characters)

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method): No controls for VOC emissions; see Attachment 2.
2. Control Device or Method Code(s):

Emissions Unit Details

1. Package Unit: **Not Applicable** Manufacturer: Not Applicable	Model Number:Not Applicable
2. Generator Nameplate Rating: **Not Applicable**	MW
3. Incinerator Information: **Not Applicable**	
Dwell Temperature:	°F
Dwell Time:	seconds
Incinerator Afterburner Temperature:	°F

B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate: **Not Applicable**				
2. Maximum Incineration Rate: **Not Applicable** lb/hr				tons/day
3. Maximum Process or Throughput Rate: **Not Applicable**				
4. Maximum Production Rate: approximately 2000* tons/year of VOC based raw materials				
5. Requested Maximum Operating Schedule:				
	24	hours/day	7	days/week
	52	weeks/year	8760	hours/year

6. Operating Capacity/Schedule Comment (limit to 200 characters):

*Annual material usages are a surrogate indicator of emissions, and should not be considered a permit limitation. See Attachment 2.

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

See Page 8 of Facility Information section	

D. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? See Attachment 1	2. Emission Point Type Code: 3

3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):
Eight exhaust fans, one in each lamination area, terminating 7 feet above roof peak (proposed)

4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:
Not Applicable

5. Discharge Type Code: V	6. Stack Height: 27 (est.) AGL feet	7. Exit Diameter: 4 (est.) feet
8. Exit Temperature: 77°F	9. Actual Volumetric Flow 15,000 each (Est.)	10. Water Vapor: negligible %

11. Maximum Dry Standard Flow Rate: Not Applicable	12. Nonstack Emission Point Height: Not Applicable feet

13. Emission Point UTM Coordinates: Not Applicable

Zone: East (km): North (km):

14. Emission Point Comment (limit to 200 characters):

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 1 of 3

1. Segment Description (Process/Fuel Type) (limit to 500 characters): Styrene based resin and catalyst, mechanically (non atomized) spray applied to forms and molds.		
2. Source Classification Code (SCC): 3-14-015-17 Open contact molding, Resin/Laminate application, spray layup	3. SCC Units: Tons applied	
4. Maximum Hourly Not Applicable	5. Maximum Annual Rate: 2000*	6. Estimated Annual Activity Factor: Not Applicable
7. Maximum % Sulfur: Not Applicable	8. Maximum % Ash: Not Applicable	9. Million Btu per SCC Unit: Not Applicable
10. Segment Comment (limit to 200 characters): * Individual limitations on resin usage are not required. Potentially all material used could be resin. Monthly record keeping is proposed as demonstration of compliance with emission limitations.		

Segment Description and Rate: Segment 2 of 3

1. Segment Description (Process/Fuel Type) (limit to 500 characters): Styrene based gelcoat and catalyst, spray applied to forms and molds		
2. Source Classification Code (SCC): 3-14-015-12	3. SCC Units: Tons of coating applied	
4. Maximum Hourly Rate: Not Applicable	5. Maximum Annual Rate: 1000*	6. Estimated Annual Activity Factor: Not Applicable
7. Maximum % Sulfur: Not Applicable	8. Maximum % Ash: Not Applicable	9. Million Btu per SCC Unit: Not Applicable
10. Segment Comment (limit to 200 characters): * Individual limitations on gelcoat usage are not required. Potentially all material used could be gelcoat. Monthly record keeping is proposed as demonstration of compliance with emission limits		

Segment Description and Rate: Segment 3 of 3

1. Segment Description (Process/Fuel Type) (limit to 500 characters): Mold care, product assembly and acetone cleanup are included in this segment. Product is removed from the molds, trimmed and sanded as required, and assembled.		
2. Source Classification Code (SCC): 3-14-015-50 (-51, -52, -53, -60)	3. SCC Units: Tons of solvent	
4. Maximum Hourly Rate: Not Applicable	5. Maximum Annual Rate: 1000*	6. Estimated Annual Activity Factor: Not Applicable
7. Maximum % Sulfur: Not Applicable	8. Maximum % Ash: Not Applicable	9. Million Btu per SCC Unit: Not Applicable
10. Segment Comment (limit to 200 characters): * Individual limitations on putties, fillers, solvents, coatings and adhesives usage are not required. Potentially all material used could be solvents under this category. Monthly record keeping is proposed as demonstration of compliance with emission limits.		

Emissions Unit Information Section 1 of 1

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
individual HAP (styrene, H163)	**not applicable**	**not applicable**	**NS**
total HAP	**not applicable**	**not applicable**	**NS**
total VOC	**not applicable**	**not applicable**	**NS**

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: total VOC	2. Total Percent Efficiency of Control: **Not applicable**
3. Potential Emissions: **not applicable** Lb/hr **180** tons/yr	4. Synthetically Limited ? Y
5. Range of Estimated Fugitive Emissions: [X] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: see attached spreadsheet Reference: PERGEN37 Process Knowledge	7. Emissions Method Code: 5 (FDEP Guidance)
8. Calculation of Emissions (limit to 600 characters): See attachment 2 for calculation procedure and sample spreadsheet	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): Total VOC limitation includes total HAP species.	

Allowable Emissions Allowable Emissions _____ of _____ Not Applicable

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: total HAP	2. Total Percent Efficiency of Control: **Not applicable**
3. Potential Emissions: **not applicable** Lb/hr **180** tons/yr	4. Synthetically Limited ? Y
5. Range of Estimated Fugitive Emissions: [X] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: see attached spreadsheet Reference: PERGEN37 Process Knowledge	7. Emissions Method Code: 5 (FDEP Guidance)
8. Calculation of Emissions (limit to 600 characters): See attachment 2 for calculation procedure and sample spreadsheet	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions _____ of _____ Not Applicable

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: total HAP (principally Styrene H-163)	2. Total Percent Efficiency of Control: **Not applicable**
3. Potential Emissions: **not applicable** Lb/hr **180** tons/yr	4. Synthetically Limited ? Y
5. Range of Estimated Fugitive Emissions: [X] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: see attached spreadsheet Reference: PERGEN37	7. Emissions Method Code: 5 (FDEP Guidance)
8. Calculation of Emissions (limit to 600 characters): See attachment 2 for calculation procedure and sample spreadsheet	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions _____ of _____ Not Applicable

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

H. VISIBLE EMISSIONS INFORMATION

(Only Regulated Emissions Units Subject to a VE Limitation)

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: VE20	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: <20 % Exceptional Conditions: <20 % Maximum Period of Excess Opacity Allowed: 0 min/hour	
4. Method of Compliance: EPA Method 9 as required by Agency	
5. Visible Emissions Comment (limit to 200 characters):	

I. CONTINUOUS MONITOR INFORMATION

(Only Regulated Emissions Units Subject to Continuous Monitoring)

Continuous Monitoring System: Continuous Monitor _____ of _____ **NOT APPLICABLE**

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):	

J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements

1. Process Flow Diagram [X] Attached, Document ID: 1 [ ] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_____ [ ] Previously submitted, Date: _____ [X] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application [X] Attached, Document ID: 3,4,5,6 [ ] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:_____ [X] Not Applicable
10. Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [X] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [X] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID: _____ [X] Not Applicable

14. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID:_____ [X] Not Applicable

15. Acid Rain Part Application (Hard-copy Required)

[ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
Attached, Document ID:_____

[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
Attached, Document ID:_____

[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
Attached, Document ID:_____

[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
Attached, Document ID:_____

[ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
Attached, Document ID:_____

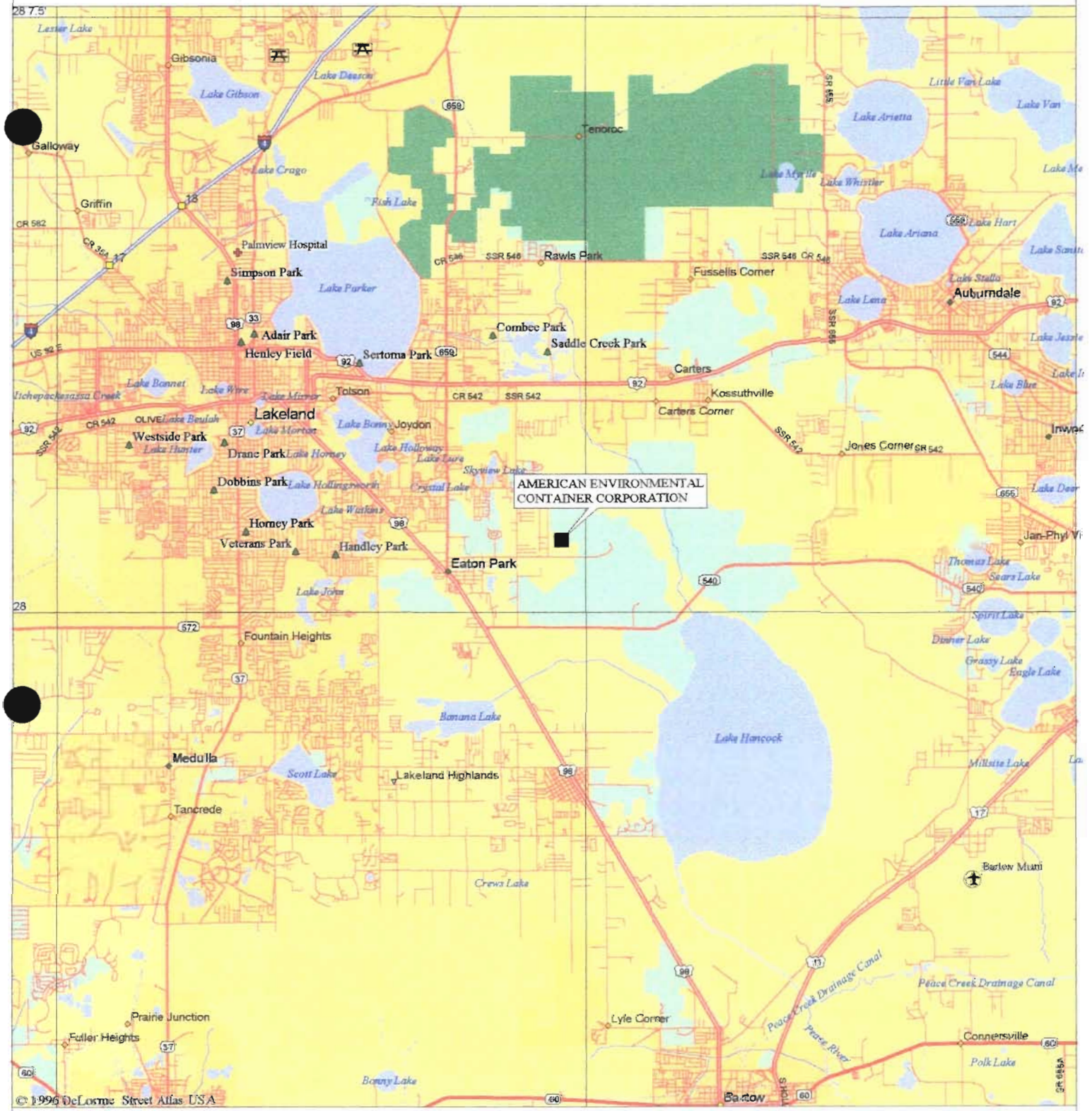
[ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
Attached, Document ID:_____

[X] Not Applicable

Site Location and Facility Layout

Attachment 1

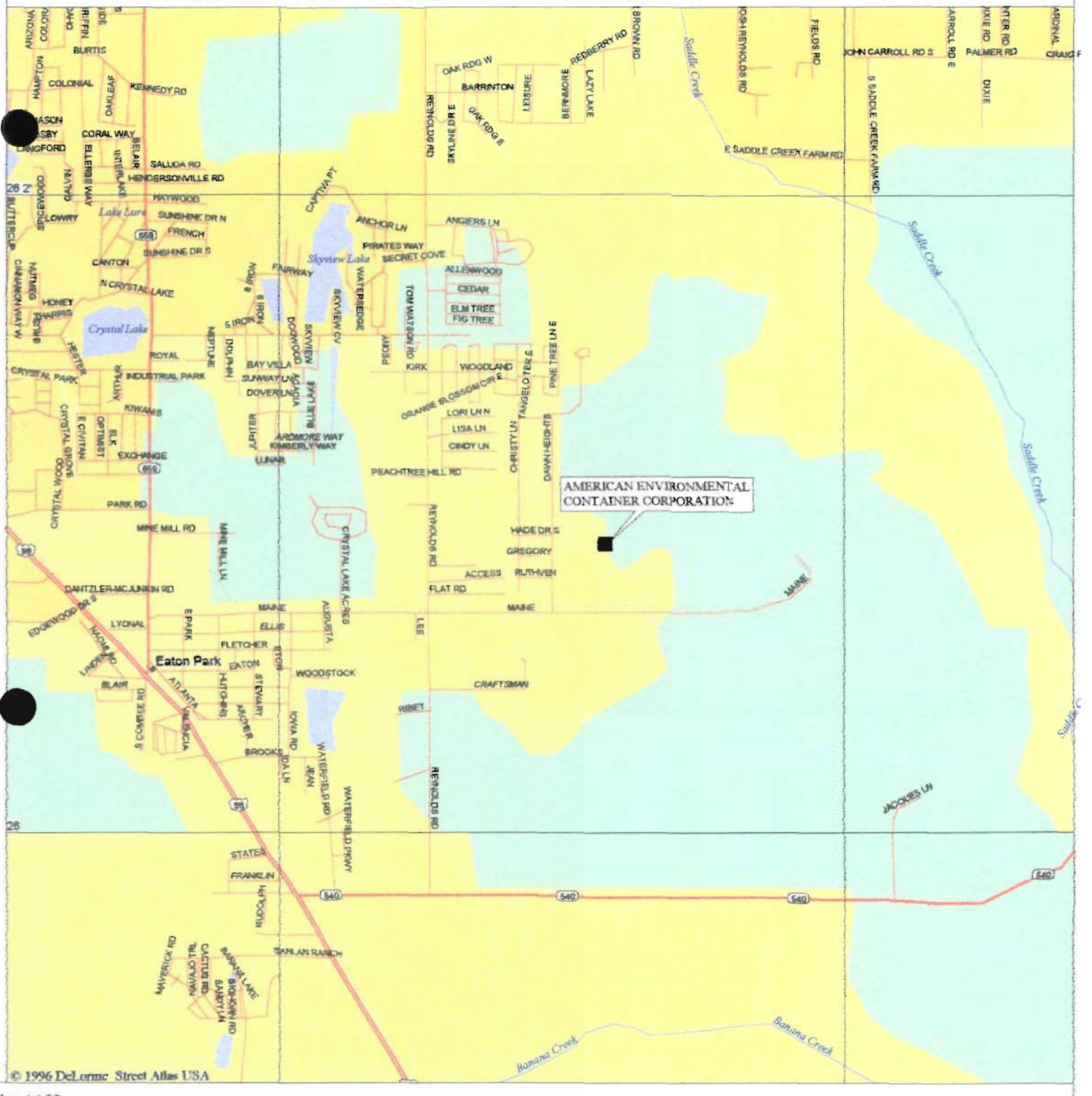
AMERICAN ENVIRONMENTAL CONTAINER CORPORATION



Mag 12.00
Wed May 03 10:59 2000
Scale 1:125,000 (at center)
2 Miles
2 KM

- Local Road
- Major Connector
- State Route
- Primary State Route
- Interstate/Limited Access
- US Highway
- Rest Area with facilities
- Railroad
- Small Town
- Large City
- Geographic Feature
- Hospital
- Park/Reservation
- Locale

AMERICAN ENVIRONMENTAL CONTAINER CORPORATION



Mag 14.00
Wed May 03 10:49 2000
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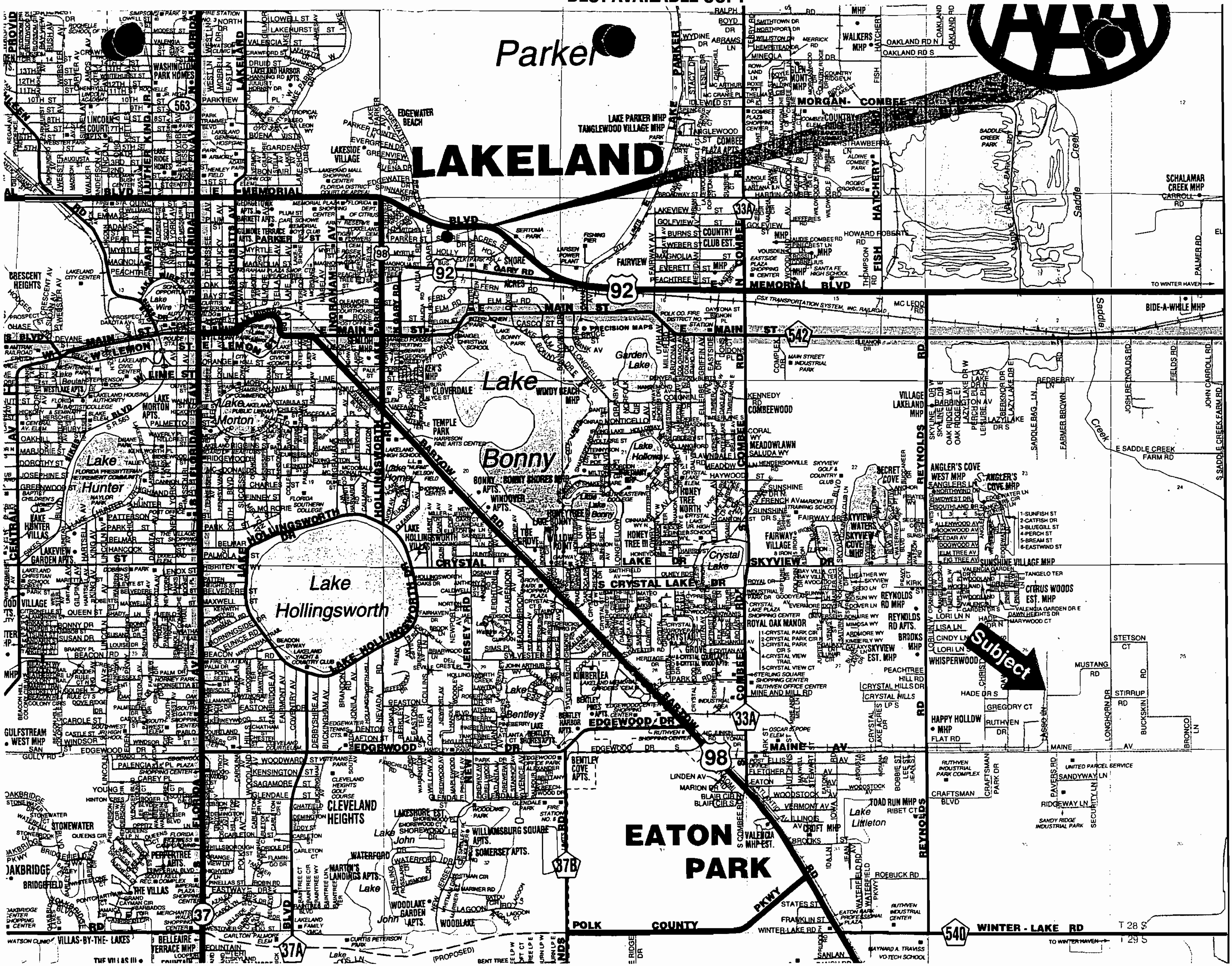
2000 Feet
1000 Meters

- Local Road
- Major Connector
- State Route
- US Highway
- Railroad
- Small Town
- Locale
- Cemetery
- Population Center
- Water
- Woodland
- River/Canal

BEST AVAILABLE COPY



20' PAVEMENT
60' INGRESS EGRESS ROADWAY EASEMENT
(PRIVATE) LASSO LANE
EDGE OF PAVEMENT

POINT OF BEGINNING LOT 7

POINT OF BEGINNING LOT 6

POINT OF BEGINNING LOT 4

POINT OF BEGINNING LOT 5

20.0'

395.18'

(210.18')

10' UTILITY EASEMENT

210.14'

APPROXIMATE C/L OF 12' DIRT DRIVE

4" SAN. SEWER STUB OUT

LOT 7
CONTAINS 1.47 ACRES

6' CHAIN LINK FENCE

1.6'

(N 89°56'27" E)

S 89°59'55" E

305.04'

(305.00')

3.9'

SAN. MANHOLE

605.99'

(606.22')

300.95'

(301.22')

10' UTILITY EASEMENT

END OF FENCE 4.8' NORTH 11.3' WEST

SAN. MANHOLE

R/W

210.24'

(210.18')

10' UTILITY EASEMENT

350.35'

N 00°15'13" E

(N 00°05'02" E)

(N 00°01'14" E)

10' UTILITY EASEMENT

N 00°05'26" E

10' UTILITY EASEMENT

210.19'

(210.18')

LOT 4
CONTAINS 1.45 ACRES

CONCRETE PAD AND POOL

Resin Tank

S 89°59'19" E

304.96'

(N 89°56'27" E)

(305.00')

605.98'

300.96'

(300.99')

LOT 34 W.F. HALLAM & CO.
LOT 47 W.F. HALLAM & CO.
PLAT BOOK 1, PAGE 101-A

44.1'

55.0'

99.6'

CONCRETE WALK

CONCRETE

40'

6'

OVERHEAD LIFT

STEEL POLES (TYPICAL)

LIMEROCK PARKING AREA

LIMEROCK PARKING AREA AND FIBERGLASS POOLS LYING ON GROUND IN THIS AREA. NOT LOCATED OR SHOWN

LIGHT POLE

LIGHT POLE

N00°04'10"E

(N00°01'14"E)

15' OHP

(184.97')

10' UTILITY EASEMENT

ASPHALT PARKING AREA

180.2'

2302 LASSO LANE
1 STORY METAL BUILDING
(COMMERCIAL)

180.2'

ASPHALT

10' UTILITY EASEMENT

(S 00°01'14" W)

210.04'

10' UTILITY EASEMENT

N 00°02'54" E

(210.00')

LOT 6
CONTAINS 1.46 ACRES

LOT 5
CONTAINS 1.43 ACRES

S 00°05'17" W

(S 00°05'02" W)

140.11'

(140.17')

SAN. MANHOLE

FENCE LINE 10.5' WEST

20.0'

MAIL BOX

3'x4' A/C

185.04'

3.6'

FOUND 5/8" IRON ROD (NO CAP)

21.0'

535'

CONCRETE

18.5'

4.4'

100.3'

14.8'

11.0'

ASPHALT

11.0'

5'

14.6'

3.5'

6' CHAIN LINK FENCE

(279.97')

10' UTILITY EASEMENT

FOUND 5/8" STEEL ROD

10' UTILITY EASEMENT

FENCE LINE 1.0' NORTH

230.91'

(230.93')

24.8'

17.2'

C1

C2

C3

19.0'

FENCE CORNER 0.4' SOUTH

N 89°59'43" W

(S 89°56'27" W)

18" PIPE

21.0'

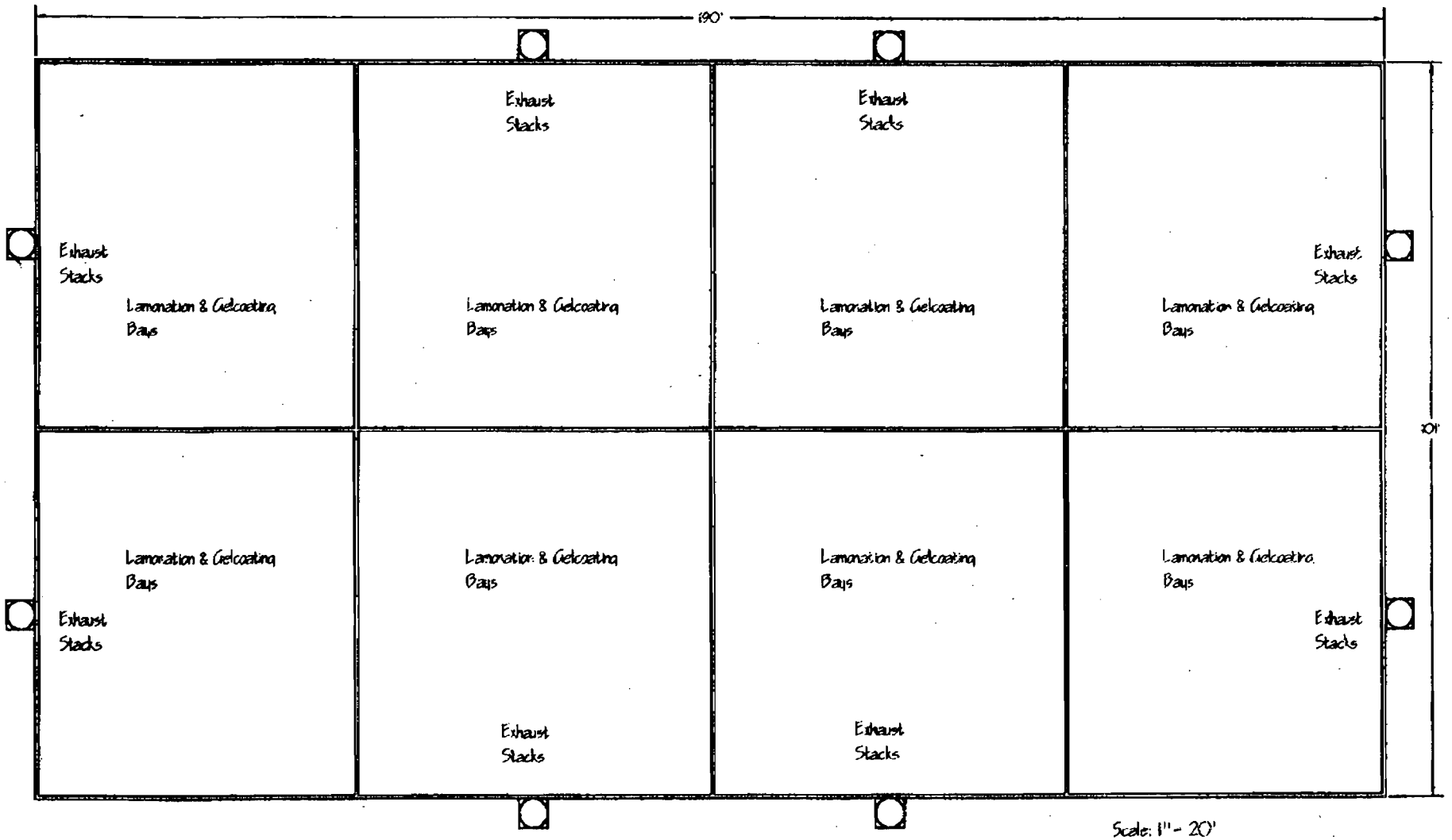
FENCE LINE 0.6' SOUTH

510.93'

EDGE OF PAVEMENT

DIRT DRIVE

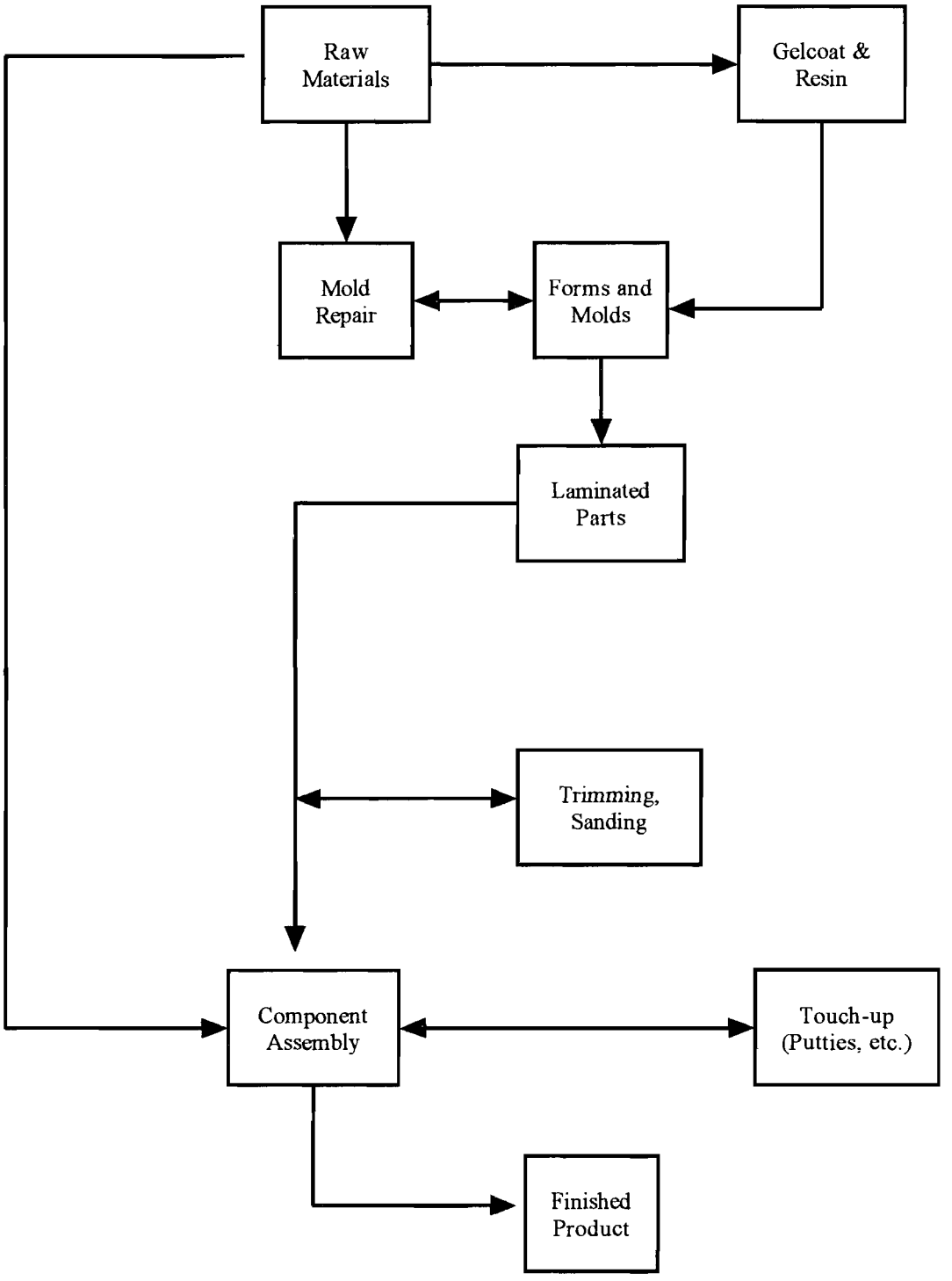
FOUND NAIL & TAB



Process Flowsheet
Process Description and
Emission Estimates

Attachment 2

Process Flow Diagram



American Environmental Container Corp.
2302 Lasso Lane Lakeland FL
Tom John Engineering, Inc. St. Petersburg, FL
(727) 579 - 0403

Process Description and Emission Estimates

Process Description

American Environmental Container Corporation manufactures fiberglass in-ground pools and spas in a wide range of sizes and styles at their facility at Lasso Lane, Lakeland (Polk County) under an existing Title V permit. The location of the facility, the adjacent areas, and the building layout are shown in Attachment 1.

The main building is approximately 189 feet long, 101 feet wide at maximum, and 21.5 feet high at roof peak. Lamination and gelcoat application is performed in bays, each of which is then divided in half for two active areas per bay. The current application requests permission to convert the assembly areas, mold repair areas, materials receiving and lunch areas into lamination bays, making a total of eight, as shown in Attachment 1. These bays will be the primary source of the VOC emissions. The bays will each be exhausted through a (proposed) 48 inch diameter, 15000 cfm (rated) fans discharging 27 feet AGL (above ground level).

General assembly/mold building, mold preparation/repair, fiberglass mat and material cutting, materials receiving, and related activities will be conducted in the bays or in adjacent areas. Additional operations consisting primarily of grinding, edge trimming and assembly will continue to be conducted behind the building in the adjacent open areas. These activities will be performed using hand held tools (trivial list activity) with integral vacuum bags to prevent the release of particulate emissions.

Expected facility total operating hours to meet the projected demand (at the emissions level requested for permitting) will be 24 hours per day, 7 days per week, 52 weeks per year (8760 hours/yr). Production demand will not be completely uniform throughout the year, and based on situation variables (product delivery schedule, preparation for trade shows, etc.) periods of higher and lower activity may be observed. For this reason, American Environmental Container Corporation believes that permit emission limits based on short term record keeping (e.g. "Lbs/hr") would be inherently inaccurate. American Environmental Container Corporation proposes monthly and rolling 12 month cumulative records as a demonstration of permit compliance, as will be discussed in a later section. The facility therefore requests an unlimited daily facility operating schedule (8760 hours per year) and up to 24 hours per day, seven days per week for laminating/gelcoating activities, subject to a maximum tons/year chemical emission limit.

In the manufacturing operation, potentially conducted in each of the individual bays, styrene-based gelcoat is applied to the mold via spray layup techniques. This gelcoat/mold interface will become the pool surface. Styrene-based resin is applied via spray guns to fiberglass mat, which is applied by hand to the surface of the mold. After sufficient layers of resin coated mat are applied to the mold, hand rollers are used to force the resin into the mat, ensuring that air bubbles and dry spots are eliminated. Additional layers of resin coated mat are applied as needed to achieve the required thickness, based on the final dimensions of the pool. The resin infused material is allowed to polymerize and harden. Miscellaneous styrene-containing putties and fillers may be used prior to removal of the pool from the mold in the laminating area or for final assembly.

Filters in the exhaust fan inlets will prevent the discharge of any particulate overspray from the lamination booths. The exhaust fan will continue to run for at least one hour after the resin/gelcoating operations have ceased in that booth, and doors and windows will be closed whenever feasible to ensure that VOC materials are captured and exhausted through the stacks with adequate dispersion.

When fully solidified, the pool will be removed from the mold. The mold may require minor cleaning or repair ("mold care") and a mold release agent may be applied to facilitate removal of the next part from the mold. The pool edges are trimmed by hand powered tools equipped with collectors; the trimmed material is discarded. The trimming operation results in large fragments and particles too large to become airborne ane result in fugitive emissions. Grinding of surface imperfections will be performed by hand tools equipped with bag collectors. No large scale sanding of the surfaces will occur; the smaller particulates generated both inside and outside the building will be controlled by the vacuum bag collectors in the hand tools, by portable "shop-vac" vacuum collectors as needed and normal "good housekeeping" procedures. These careful "good housekeeping practices" which provide control of fugitive particulates is necessary to prevent contamination of the fiberglass and gelcoat surfaces, and will be given the appropriate consideration by employees and management.

Holes are cut as needed in the pool to accommodate drain and filter lines and other items installed in the final assembly process. After passing a final quality control inspection, the pool is prepared for shipping.

The main Clean Air Act Amendment (CAAA) Title III VOC/HAP species emitted from the fiberglassing operation is styrene, which forms the base for the polyester resins and gelcoats used

in the product manufacture. In some gelcoat materials,(typically) 3% to perhaps 5% of the styrene may be replaced with methylmethacrylate (MMA); MMA would then be the CAAA Title III VOC species emitted in second highest quantity from the facility. Since MMA substitutes for styrene, the total VOC (and HAP) emissions would remain essentially unchanged with variations in MMA content.

The main cleanup material will be an aqueous based non VOC material. Acetone, classified as "non photochemically active" by USEPA, will also be used. A five gallon capacity acetone recovery still will be used approximately once per week to recycle acetone and minimize waste generation. Hazardous wastes will be removed from the facility by a licensed hauler as necessary.

This facility will emit styrene, a HAP species, in excess of the thresholds for Title III and Title V of the Clean Air Act Amendments of 1990, and will be considered a "Major Source" under that permitting program.

Emission Estimates

Lamination/gelcoating activities

The general procedure for estimating VOC/OS emissions is:

Material Usage Rate x Species Concentration x Emission Factor =

Species Emission Rate

This relationship is shown in Figure 2.0, which is illustrative of the proposed facility monthly and rolling 12 month consecutive total spreadsheet proposed for the facility. The material usages shown represent the estimated maximum annual usages of materials anticipated to be utilized at the facility, but should not be considered as enforceable facility wide permit limits, as will be discussed further.

The component species and concentrations of Figure 2.0 are based on current materials and vendors, obtained from the Material Safety Data (MSD) sheets, representative sample of which are presented in Attachment 6. The complete set of MSD sheets will be available for inspection upon request by the Department.

The product manufactured by American Environmental Container Corporation is a large in-ground pool (which may include an in-ground spa). The size and shape of these items is better represented as a boat than a typical bathtub or shower; as noted in Figure 2.1, the Composites Fabrication Association performed their studies on molds of less than 50 square feet. American Environmental Container Corporation's molds have a surface area of over 100 square feet, and the styrene emissions are more representative of the emissions obtained by the National Marine Manufacturers Association. The styrene emission factors utilized for emission calculations are therefore taken from Table 1 for "boat manufacturing"from the FDEP guidance document, presented as Figure 2.2, following. These values were used in the calculations of Figure 2.0 Any hand layup or tooling performed would result in emission factors equal to or less than the spray values selected; minor contributions of styrene from such materials as putty and fillers may be conservatively assumed to have an emission factor no greater than the hand layup of resin.

The emission factors for styrene originally listed in AP42 are being revised, and no replacement has been published. As directed by FDEP guidance, the Annual Operating Report for 1999

(Figure 2.3) used the earlier AP-42 values from the air permit. Use of the FDEP interim guidance factors to estimate styrene emissions from the 1999 data (Figure 2.4) results in an approximate 48 % increase, calculationally, of the emissions when compared to the emissions calculated in prior years at the same material usage rates. This does not represent an increase in actual emissions for this source over the estimations that would have been developed using the original AP-42 values, but reflects current thinking in how the emissions are determined. Other currently permitted (and unpermitted) sources of styrene emissions would be expected to increase, calculationally, the styrene emission in the same manner.

American Environmental Container Corporation will utilize a materials tracking program, similar to the illustration of Figure 2.0, to generate timely status reports (e.g. monthly and rolling 12 month total) to ensure that operations at the facility are in compliance with the limitations imposed by the permit.

Miscellaneous solvent emissions will be minimized due to careful dispersement and general "good housekeeping" practices, including the use of solvent safety cans, etc. Fugitive sources, such as open product and waste containers, will be identified and eliminated where feasible.

The styrene content of the resin and gelcoat may vary depending on particular type, purpose, blend or supplier, and the species and concentrations of all other raw materials are subject to change. Despite these changes, the record keeping system proposed will track each individual species, e.g. styrene, at its actual concentration in each shipment (as identified from its accompanying MSD sheet), assign an appropriate emission factor, and determine the emissions of an individual raw material or source as well as total facility emission for demonstration of compliance with permit conditions.

It should be noted that the raw material usage rate is a surrogate measure of the VOC species emission rate, which is the product of the usage rate, the species concentration and the emission factor for a particular species in a particular operation. If the species concentration varies up or down, as is often the case, the usage rate may be adjusted accordingly to maintain compliance with a VOC emission limitation. Careful record keeping of all VOC-containing production-related materials used at the facility is proposed as a means of demonstrating compliance with permit imposed VOC species emissions limitations

Miscellaneous activities

American Environmental Container Corporation will potentially use a small quantity of natural gas or propane fuel for space heating. Due to the expected resin volume requirements, a resin storage tank will replace the resin totes initially used. Breathing and working losses are expected to be considered "trivial" as discussed in Attachment 3. Additional operations and chemicals which may be used include cleanup materials, propellants, mold care/cleaners, and adhesives. When these materials are introduced for permanent use on site, the material usages and emissions will be captured in the facility data spreadsheet. They are expected to represent a small percentage of the total facility emissions.

Material Usage and Emission Discussion

Although the lamination operations are currently proposed to be exhausted through a stack for each bay, it should be noted that the activities are annually collectively regulated, with a proposed maximum emissions (calculated from material usages) for the collective operation. American Environmental Container Corporation requests that the Department allow processing of the raw materials to occur in any of the individual bays, with record keeping of the total material usages, rather than restricting the throughput of any individual bay.

The quantity and variety of VOC containing materials potentially used at the facility makes it impractical to provide (or accept permit limits for) specific usage limits (and the corresponding VOC specific emissions) for all raw materials. Many of these materials will be used infrequently and may be replaced by alternatives or substitutes. However, as noted the contribution of these miscellaneous VOC emissions to the total facility emission will be small; the actual material usages and speciated emissions will be captured accurately in the facility data record and spreadsheet as illustrated, and will provide assurance that the styrene and miscellaneous VOC emission limits requested are not exceeded. American Environmental Container Corporation requests that the Department limit by permit only the total facility general VOC emissions, total HAP emissions, and the total styrene emissions, and that individual raw material usages and species concentrations be allowed to vary as necessary for facility operations (e.g. partial substitution of a high styrene resin at a lower usage rate for a low styrene resin, or increased resin usage with corresponding reduced gelcoat usage) provided that American Environmental Container Corporation demonstrates in the facility usage and emission report that the variations result in emissions less than or equal to the permit limits. American Environmental Container Corporation

further requests that the Department accept the determination of the emissions by calculation based on the actual raw material usage data and the relevant MSD sheets, and that raw material usages be considered by the Department as an indicator of compliance but not as an enforceable limit.

Applicability of Techniques for Emission Reduction

Control Technologies

There are no economically and environmentally feasible (as determined by Boatbuilding MACT group and Fiberglass Composites MACT group) engineering control technologies available for this project, due to high volume of air mobilized through the facility (15,000 cfm per each of eight exhausts) and the low VOC concentration (50 ppm styrene limit under OSHA). The typical cost of a Regenerative Thermal Oxidizer (RTO) for an exhaust flowrate of ~30,000 cfm is approximately $450,000, not including operating costs (propane or natural gas) and consideration of the environmental impact of the fuel consumption and the quantities of NOx pollutant released from the combustion. Control methods are suitable for high VOC concentration, low flowrate activities, while the proposed process results in high flowrates and low concentrations..

Flow Coater Resin Application

The process is not amenable to fiberglass application by flow chopper. Resin is applied via a spray gun to the fiberglass mat surface, which is laid up by hand; when saturated, a second layer of fiberglass mat is applied. After sufficient layers are built up, hand rollers are used to "squeeze" the resin into the interstices of the mat. Current flow coater guns used in this (non-chop) capacity yield non-uniform resin layers between mat layers. Hand rolling is unable to redistribute the resin uniformly between the layers of mat, resulting in areas of higher and lower resin content and frequent void spaces with no resin. This produces a laminate with unacceptable physical characteristics, low corrosion resistance and poor cosmetic life.

Fluid Impingement Technologies (FIT) application

In the relatively new FIT application method, a mechanical spray system discharges two sreams of resin, which exit the gun at an angle towards each other, converging (ideally) at the surface of the part. This technology may eliminate the "fingering" problem of the flow coat method, and in

initial tests by EPA appears to have a styrene emission factor equivalent to a flow coat application method. American Environmental Container Corporation is proposing to employ mechanical application of the FIT type (or equivalent) for resin in the sections of the "new" lamination bays which are subject to these additional FDEP requirements.

Low Styrene Resins

The resin used by American Environmental Container Corporation is an "isophthalic" resin, not typical of boat manufacture or tub and shower manufacture. The physical characteristics required by the product are only delivered by use of a "medium" styrene content material.

A swimming pool cannot use the internal "stringers" installed in fiberglass boats to provide the structural support necessary for the product. On smaller dimensioned products, such as tubs and showers, the torsional and other stresses can be accommodated by a lower styrene content resin without the use of internal supports.

Tubs and shower stalls are exposed to water for relatively brief periods over the product life. Although boats are often exposed to water continuously, the water does not contain the high concentrations of aggressive and corrosive chemicals typical of pool environments. These materials rapidly degrade a pool's physical and aesthetic/cosmetic properties. McWhorter, the resin supplier for American Environmental Container Corporation (AECC), has noted that tests indicate that a low styrene resin in such an application would see approximately a 50% decrease in structural properties due to aggressive water exposure and penetration, while a medium styrene content, isophthalic corrosion resistant resin (typical of the type selected by AECC) would have almost no reduction in physical or cosmetic properties in the same test.

Currently, American Environmental Container Corporation is permitted to use a resin with a 52% styrene content, and is proposing for the "new" permit application a 49.8% styrene content resin (gelcoat styrene contents are proposed for reduction from 33% to 31.9, although the total HAP content remains unchanged). American Environmental Container Corporation additionally noted that a sample resin containing 48% styrene required additional time in the "wet out" step to soak into the glass roving prior to hand layup of the mat, on the order of 16 minutes per pool. This additional time may be attributed to the flow resistance of the higher thixotropic (more viscous), lower styrene material into the woven roving, a type of glass fiber which is required for the structural stability of the pool but is not typically found in pool and spa manufacturing. Since the

emissions of styrene are related to the exposed surface area and the time of exposure, the decreased emissions from a lower styrene resin are negated by the increased emissions from the additional time required to complete the multi-layer laminate.

Styrene Suppressants

Styrene suppressants characteristically seek to reduce VOC emissions from the material surface during application by generating a wax layer at the air/resin surface. This process results in a product with poor interlayer bonding properties, capable of delamination under conditions of torsional or other stress. The suppressed resins are also not efficient at reducing the styrene emissions from the spray process itself, which can account for up to 50% of the total styrene emissions from the overall process.

Closed Molding

In closed molding manufacturing, pre-cut fiberglass mat is placed in a concave (female) mold, and a convex (male) mold is brought in contact with the mat and female mold. Resin is then pumped into the space between the molds, filling the interstices of the mat and dislodging the air. Since there is no "spray" involved, and almost no resin/air surface area, the amount of styrene evaporated is minimized. The molds, being subjected to the high pressures required to infuse the resin, are substantially more expensive than the "open" molds, and the process requires both a male and a female mold for each part, further increasing the cost. The cost of the molds increases greatly as the size of the mold increases, as do cleaning and repair costs. The process is potentially feasible for small parts produced in large quantity which are capable of offsetting the high capital and operating costs.

Vacuum or Bag Molding

Vacuum or bag molding follows standard lamination procedures, but after the resin layup a plastic sheet is applied over the wet surface or a plastic bag surrounds the part. A vacuum drawn on the sheet or bag aids in distributing the resin, and the plastic reduces the resin/air interface, reducing the styrene evaporation. Since the bag is not installed until the final step, it is ineffective in reducing emissions resulting from the resin application process, which may account for 50% of the total emissions in a standard layup procedure. Application and removal of the bag material is

very labor and material intensive (the plastic cannot be reused), with that effort increasing as the part size increases. Currently, the technique is utilized only on low volume, high dollar value products (e.g., custom boats, bullet-proof vests) or small size, high volume parts (e.g., parts for personal water craft). The boat building MACT group has concluded that neither closed molding nor bag molding should be considered as MACT, and the conclusions for AECC would be the same.

Operating Hour Limitations

Although AECC will begin operations with only one shift, the material usage estimates provided are for full buildout of the facility. The VOC emissions from the operations are limited by material usages, not operating hours.

Worker Gloves/Barrier Creams

The use of gloves or barrier creams by the workers is aimed at reducing the quantity of solvents used (and therefore evaporated) during hand cleaning activities. AECC has proposed to utilize acetone, a VOC-exempt species, in conjunction with an aqueous based cleaner, for the majority of cleaning activities at this site. A recovery still will be used to recycle acetone, minimizing the generation of hazardous waste. The required use of gloves or barrier creams would not be expected to significantly reduce facility VOC emissions, although these materials will be available to workers who wish to use them.

Facility wide emission reductions

As shown in Figure 2.3, at actual 1999 usages the styrene emissions (using regular spray layup. 33% styrene in gelcoat, and 52% styrene resin) were calculated at 55.07 TPY. Using the factors from Table 1 of Figure 2.2, the calculated emissions increase to 81.49 TPY (Figure 2.4). If the 1999 data is recalculated using mechanical application of 49.8% styrene resin and 31.9% styrene gelcoat, the predicted styrene emissions are 62.28 TPY, a decrease of 19.21 TPY (Figure 2.5). Using the format of Figure 2.0, the styrene content of the resin which would yield a 19.21 TPY decrease in styrene emissions is seen to be 38.79%. American Environmental Container Corporation believes that the overall styrene reductions and state of the art application methods demonstrates their good faith efforts to comply with FDEP requirements.

Figure 2.0

AMERICAN ENV. CONT. CORP

Materials Usage and Emissions Inventory

Period: ESTIMATED MAXIMUM ANNUAL

A. Raw Materials Usages and Species Compositions

item	representative vendor/description	cas#	100-42-5	80-62-6	131-11-3	78-93-3	
		species		methylmeth	dimethyl	methylethyl	general
		quantity	styrene	acrylate	phthalate	ketone	VOC
resin	McWorter	2907000	49.8%				
gelcoat	Cook	706800	31.9%	5%			
catalyst	Norex MEKP 30 red	72276			65%	1%	12%
mod-C	Polyguard	19000	91%				4%
finishcare	Polyguard	19000					100%
moldcare/tooling	Polyguard	19000	54%				
acetone		na					

B. Species Usages

item	description	total lbs	1700691	35340	46979	723	28433
		species	styrene	methylmeth acrylate	dimethyl phthalate	methylethyl ketone	general VOC
resin	McWorter		1447686	0	0	0	0
gelcoat	Cook		225455	35340	0	0	0
catalyst	Norex MEKP 30 red		0	0	46979.4	722.76	8673.12
mod-C	Polyguard		17290	0	0	0	760
finishcare	Polyguard		0	0	0	0	19000
moldcare/tooling	Polyguard		10260	0	0	0	0
acetone			na	na	na	na	na

C. Species and Total Emissions

item	description	total tons	142.62	12.72	0.02	0.36	11.45
		total lbs	285247	25445	47	723	22900
		species	styrene	methylmeth acrylate	dimethyl phthalate	methylethyl ketone	general VOC
resin	McWorter		173722	0	0	0	0
gelcoat	Cook		108218	25445	0	0	0
catalyst	Norex MEKP 30 red		0	0	47	723	8673
mod-C	Polyguard		2075	0	0	0	547
finishcare	Polyguard		0	0	0	0	13680
moldcare/tooling	Polyguard		1231	0	0	0	0
acetone			na	na	na	na	na

D. Emission Factors and Summaries

Emission factors	
styrene, 49%, resin, mechanical spray	0.120
styrene, 32%, gelcoat	0.480
styrene, 54%, tooling	0.120
methyl methacrylate	0.720
reactive/low vapor pressure	0.001
gen VOC	1.000

Emission Summary		
	lbs	tons
styrene	285247	142.62
total HAP	311461	155.73
total VOC	334362	167.18

methylmethacrylate emission factors obtained from CFA testing
styrene emission factors obtained from FDEP memo (following)

mod C mold cleaner/wax (mold release agent?)

Figure 2.1

BASELINE CHARACTERIZATION OF EMISSIONS FROM FIBERGLASS BOAT MANUFACTURING FOR NATIONAL MARINE MANUFACTURERS ASSOCIATION

Prepared for
National Marine Manufacturers Association
3050 K Street, N.W., Suite 145
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Prepared by
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August 1997

Table 1-2
Surface Area of Molds Used in Test Program

Mold	Surface Area (ft^2)
18-ft Deck	171.09
18-ft Hull	220.5
28-ft Hull	454
CFA Phase I Mold (controlled spray)	28.06
CFA Phase I Mold (uncontrolled spray)	37.28[a]

[a]Uncontrolled spray of this mold inevitably coated flange extensions, effectively increasing the surface area of the final laminate structure.

1.3.5 Materials

Materials chosen for this program are typical of those used in fiberglass boat manufacturing (Table 1-3). Two styrene polyester resins were used, one with a nominal 35 percent styrene by weight content and the other with a nominal 42 percent styrene by weight content. The gelcoat was a white on white gelcoat containing nominally 32 percent styrene and 5 percent MMA. The formulations used are considered most representative of the range of resin styrene and gelcoat contents in the industry. Based on a survey of industry representatives, the marine industry uses gelcoat that contains MMA as an inhibitor to degradation by exposure to ultraviolet (UV) light. MEKP in a DMP base is the most common catalyst used in the industry for both gelcoat and resin; MEKP/DMP was used in this program.

Figure 2.2

DARM-PER-32

SUBJECT: Guidance on the Use of Styrene Emission Factors for Certain Polyester Resin Plastics Product Fabrication Processes

DATE: March 1, 2000

On March 18, 1998, Section 4.4 of AP-42 was removed from the AP-42 web site (http://www.epa.gov/ttn/chief/ap42c4.html), because the emission factors presented in that section appear to underpredict styrene emissions from most polyester resin operations. A number of individual site tests and studies performed over the past few years have led to this conclusion. These recent reports address only the open molding processes of hand layup, spray-up, filament winding, and gel coating. At this time, the USEPA has no reason to question the validity of the emission factors presented in the old AP-42 section for continuous lamination, pultrusion, and closed molding operations. The USEPA is drafting a replacement AP-42 section based largely on two of these reports; the National Marine Manufacturers Association's (NMMA) "Baseline Characterization of Emissions from Fiberglass Boat Manufacturing" and the Composites Fabricators Association's (CFA) "CFA Emission Models for the Reinforced Plastics Industries."

The emission factors generated from these two documents, as well as emission factors from EPA/RTI, are shown in the USEPA Region 4 letter and "Summary of Emission Data Results" dated March 3, 1998. In this "Summary of Emission Data Results," USEPA Region 4 established (draft) minimum emission factors by averaging the NMMA results and the CFA results. In addition, the USEPA supplied an emission factor equation based on gel time, styrene content, air flow velocity, thickness of part, and standard deviation.

However, since EPA has not published "final" emission factors, this "Summary of Emission Data Results" has been used as a starting point to develop new "interim" styrene emission factors for certain polyester resin plastics product fabrication processes. We are going to define the "interim" styrene emission factors as shown in the following Table 1 and Table 2.

Table 1. Interim Styrene Emission Factors for Boat Manufacturing

	NVS Monomer-35%	NVS Monomer-38%	NVS Monomer-42%
Resin Non-Spray Layup	11	11	12
Resin Spray Layup	16	18	20
Gel Coat	48	51	54

NVS = non-vapor suppressed
Emission factors as a percent (%) of Available Monomer

Table 2. Interim Styrene Emission Factors for Reinforced Plastics

	NVS Monomer-35%	NVS Monomer-38%	NVS Monomer-42%
Resin Non-Spray Layup	13	15	16
Resin Spray Layup	19	25	30
Gel Coat	49	51	53

NVS = non-vapor suppressed
Emission factors as a percent (%) of Available Monomer

These interim emission factors for boat manufacturing were calculated by taking the low-rounded average of the NMMA emission factor range for each category as shown in Region 4's "Summary of Emission Data Results". Likewise, the interim emission factors for reinforced plastics manufacturing were calculated by taking the low-rounded (truncated) average of the CFA emission factor range for each category.

These interim styrene emission factors should be used instead of AP-42 for applicable construction permit and FESOP applications received on or after June 1, 1998. For permit applications received prior to June 1, 1998, you may continue to use the old AP-42 emission factors. As always, methods other than AP-42 factors or these interim factors may also be used to calculate emissions.

Annual Operating Reports (AORs) should be prepared using the same emission factors that their permit allowables are based upon, because use of the new emission

factors, when the current permit allowable is based on the old emission factors, is likely to show an exceedance of a permitted allowable in the ARMS database.

Don't forget that our air toxics program is now based upon only NESHAPS, rather than NESHAPS and modeling.

Howard L. Rhodes, Director
Division of Air Resources Management

Materials tracking/emissions inventory

Period: 2321 Operating hours this period 9 hrs/day 5 days/wk avg.
1999

A: Raw Materials usages

	Reichold resin	Polygard Mod-C	Cook gelcoat	Polygard finishkare	Polygard catalyst	Polygard tooling	tons total
total lbs used ->	1528760	50	230012	0	21344	2430	891
species V							
styrene	52%	91%	33%			54%	
parrafins		4%					
MMA			4%				
ethanol				100%			
MEKP					40%		
dimethylphthalate					50%		

B: Component Species Usages

species V							Species Lbs	Species Tons	TRI Report ?
styrene	787311	46	76640	0	0	1319	865316	432.66	Y
parrafins	0	2	0	0	0	0	2	0.00	N
MMA	0	0	9693	0	0	0	9693	4.85	N
ethanol	0	0	0	0	0	0	0	0.00	N
MEKP	0	0	0	0	8564	0	8564	4.28	N
dimethylphthalate	0	0	0	0	10706	0	10706	5.35	N

C: Species Emissions

species V lbs							Species Lbs	Species Tons	HAP?
styrene	86604	14	23375	0	0	145	110138	55.07	Y
parrafins	0	2	0	0	0	0	2	0.00	N
MMA	0	0	2956	0	0	0	2956	1.48	Y
ethanol	0	0	0	0	0	0	0	0.00	N
MEKP	0	0	0	0	9	0	9	0.00	Y
dimethylphthalate	0	0	0	0	11	0	11	0.01	Y
							113116	56.56	

Emission Factors: AP-42 and engineering knowledge

*styrene from:	resin	0.11	MMA	0.305	VOC	1.0
	gelcoat	0.305	MEKP	0.001		
	ModC	0.305	DMP	0.001		

*styrene emission factors used were in accordance with guidance from FDEP for completion of the Annual Operating Rep Other emission factors are available and predict generally higher emissions; however, USEPA has not formally approved any other set of factors. When an approved set of factors is published in the Federal Register on in AP42, it may be necessary to revise and resubmit these forms.

Figure 2.3

Materials tracking/emissions inventory

Period: 2321 Operating hours this period 9 hrs/day 5 days/wk avg.
1999

A: Raw Materials usages

species V	Reichold resin	Polygard Mod-C	Cook gelcoat	Polygard finishkare	Polygard catalyst	Polygard tooling	tons total
total lbs used ->	1528760	50	230012	0	21344	2430	891
styrene	49.8%	91%	31.9%			54%	
parrafins		4%					
MMA			4%				
ethanol				100%			
MEKP					40%		
dimethylphthalate					50%		

B: Component Species Usages

species V							Species Lbs	Species Tons	TRI Report ?
styrene	761322	46	73374	0	0	1319	836061	418.03	Y
parrafins	0	2	0	0	0	0	2	0.00	N
MMA	0	0	9693	0	0	0	9693	4.85	N
ethanol	0	0	0	0	0	0	0	0.00	N
MEKP	0	0	0	0	8564	0	8564	4.28	N
dimethylphthalate	0	0	0	0	10706	0	10706	5.35	N

C: Species Emissions

species V lbs							Species Lbs	Species Tons	HAP?
styrene	91359	21	33018	0	0	158	124556	62.28	Y
parrafins	0	2	0	0	0	0	2	0.00	N
MMA	0	0	2956	0	0	0	2956	1.48	Y
ethanol	0	0	0	0	0	0	0	0.00	N
MEKP	0	0	0	0	9	0	9	0.00	Y
dimethylphthalate	0	0	0	0	11	0	11	0.01	Y
							127533	63.77	

Emission Factors: FDEP guidance

*styrene from:	resin	0.12	MMA	0.305	VOC	1.0
	gelcoat	0.45	MEKP	0.001		
	ModC	0.45	DMP	0.001		

*styrene emission factors used were in accordance with guidance from FDEP for completion of the Annual Operating Rep
Other emission factors are available and predict generally higher emissions; however, USEPA has not formally approved any other set of factors. When an approved set of factors is published in the Federal Register on in AP42, it may be necessary to revise and resubmit these forms.

Figure 2.5

Figure 2.6

AMERICAN ENV. CONT. CORP

equivalent resin styrene content for 19.21 TPY offset

Materials Usage and Emissions Inventory

Period: ESTIMATED MAXIMUM ANNUAL

A. Raw Materials Usages and Species Compositions

item	representative vendor/description	cas#	100-42-5	80-62-6	131-11-3	78-93-3	
		species		methylmeth	dimethyl	methylethyl	general
		quantity	styrene	acrylate	phthalate	ketone	VOC
resin	McWorter	2907000	38.79%				
gelcoat	Cook	706800	31.9%	5%			
catalyst	Norex MEKP 30 red	72276			65%	1%	12%
mod-C	Polyguard	19000	91%				4%
finishcare	Polyguard	19000					100%
moldcare/tooling	Polyguard	19000	54%				
acetone		na					

B. Species Usages

item	description	total lbs	1380630	35340	46979	723	28433
		species	styrene	methylmeth acrylate	dimethyl phthalate	methylethyl ketone	general VOC
resin	McWorter		1127625.3	0	0	0	0
gelcoat	Cook		225455	35340	0	0	0
catalyst	Norex MEKP 30 red		0	0	46979.4	722.76	8673.12
mod-C	Polyguard		17290	0	0	0	760
finishcare	Polyguard		0	0	0	0	19000
moldcare/tooling	Polyguard		10260	0	0	0	0
acetone			na	na	na	na	na

C. Species and Total Emissions

item	description	total tons	123.42	12.72	0.02	0.36	11.45
		total lbs	246839	25445	47	723	22900
		species	styrene	methylmeth acrylate	dimethyl phthalate	methylethyl ketone	general VOC
resin	McWorter		135315	0	0	0	0
gelcoat	Cook		108218	25445	0	0	0
catalyst	Norex MEKP 30 red		0	0	47	723	8673
mod-C	Polyguard		2075	0	0	0	547
finishcare	Polyguard		0	0	0	0	13680
moldcare/tooling	Polyguard		1231	0	0	0	0
acetone			na	na	na	na	na

D. Emission Factors and Summaries

Emission factors	
styrene, 49%, resin, mechanical spray	0.120
styrene, 32%, gelcoat	0.480
styrene, 54%, tooling	0.120
methyl methacrylate	0.720
reactive/low vapor pressure	0.001
gen VOC	1.000

MOD-C 0.120

methylmethacrylate emission factors obtained from CFA testing
styrene emission factors obtained from FDEP memo (following)

Emission Summary		
	lbs	tons
styrene	246839	123.42
total HAP	273054	136.53
total VOC	295954	147.98

4.4 Polyester Resin Plastic Products Fabrication

4.4.1 General Description[1-2]

A growing number of products are fabricated from liquid polyester resin reinforced with glass fibers and extended with various inorganic filler materials such as calcium carbonate, talc, mica, or small glass spheres. These composite materials are often referred to as fiberglass-reinforced plastic (FRP), or simply "fiberglass". The Society Of The Plastics industry designates these materials as "reinforced plastics/composites" (RP/C). Also, advanced reinforced plastics products are now formulated with fibers other than glass, such as carbon, aramid, and aramid/carbon hybrids. In some processes, resin products are fabricated without fibers. One major product using resins with fillers but no reinforcing fibers is the synthetic marble used in manufacturing bathroom countertops, sinks, and related items. Other applications of nonreinforced resin plastics include automobile body filler, bowling balls, and coatings.

Fiber-reinforced plastics products have a wide range of application in industry, transportation, home, and recreation. Industrial uses include storage tanks, skylights, electrical equipment, ducting, pipes, machine components, and corrosion resistant structural and process equipment. In transportation, automobile and aircraft applications are increasing rapidly. Home and recreational items include bathroom tubs and showers, boats (building and repair), surfboards and skis, helmets, swimming pools and hot tubs, and a variety of sporting goods.

The thermosetting polyester resins considered here are complex polymers resulting from the cross-linking reaction of a liquid unsaturated polyester with a vinyl type monomer, list often styrene. The unsaturated polyester is formed from the condensation reaction of an unsaturated dibasic acid or anhydride, a saturated dibasic acid or anhydride, and a polyfunctional alcohol. Table 4.4-1 lists the most common compounds used for each component of the polyester "backbone", as well as the principal cross-linking monomers. The chemical reactions that form both the unsaturated polyester and the cross-linked polyester resin are shown in Figure 4.4-1. The emission factors presented here apply to fabrication processes that use the finished liquid resins (as received by fabricators from chemical manufacturers), and not to the chemical processes used to produce these resins. (See Chapter 6, Organic Chemical Process Industry.)

In order to be used in the fabrication of products, the liquid resin must be mixed with a catalyst to initiate polymerization into a solid thermoset. Catalyst concentrations generally range from 1 to 2 percent by original weight of resin; within certain limits, the higher the catalyst concentration, the faster the cross-linking reaction proceeds. Common catalysts are organic peroxides, typically methyl ethyl ketone peroxide or benzoyl peroxide. Resins may contain inhibitors, to avoid self-curing during resin storage, and promoters, to allow polymerization to occur at lower temperatures.

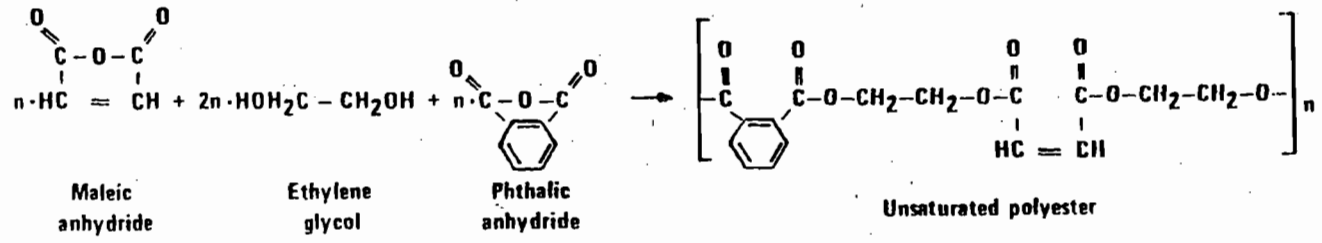
The polyester resin/fiberglass industry consists of many small facilities (such as boat repair and small contract firms) and relatively few large firms that consume the major fraction of the total resin. Resin usage at these operations ranges from less than 5,000 kilograms per year (11,000 pounds) to over 3 million kilograms (6.6 million pounds) per year.

Reinforced plastics products are fabricated using any of several processes, depending on their size, shape, and other desired physical characteristics. The principal processes include hand layup,

Table 4.4-1. TYPICAL COMPONENTS OF RESINS

To Form The Unsaturated Polyester		
Unsaturated Acids	Saturated Acids	Polyfunctional Alcohols
Maleic anhydride Fumaric acid	Phthalic anhydride Isophthalic acid Adipic acid	Propylene glycol Ethylene glycol Diethylene glycol Dipropylene glycol Neopentyl glycol Pentaerythritol
Cross-Linking Agents (Monomers)		
Styrene Methyl methacrylate Vinyl toluene Vinyl acetate Diallyl phthalate Acrylamide 2-Ethyl hexylacrylate		

REACTION 1



REACTION 2

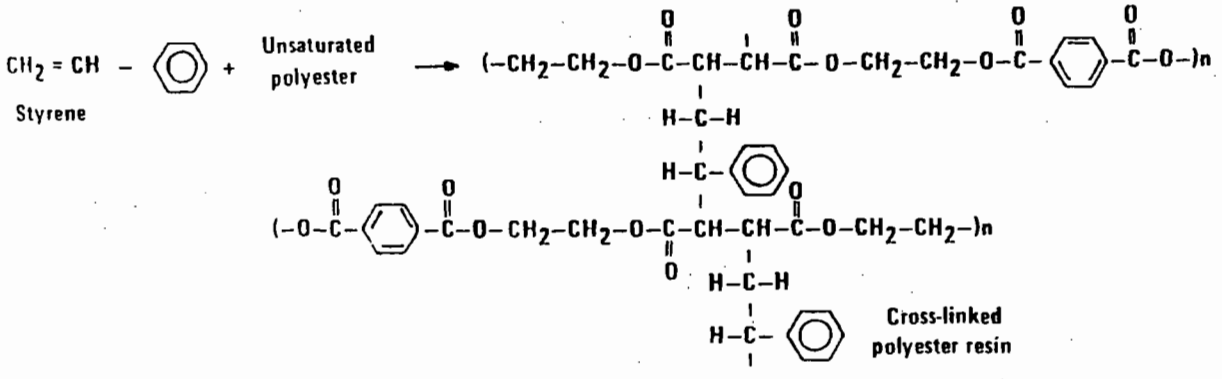


Figure 4.4-1. Typical reactions for unsaturated polyester and polyester resin formation.

spray layup (sprayup), continuous lamination, pultrusion, filament winding, and various closed molding operations.

Hand layup, using primarily manual techniques combined with open molds, is the simplest of the fabrication processes. Here, the reinforcement is manually fitted to a mold wetted with catalyzed resin mix, after which it is saturated with more resin. The reinforcement is in the form of either a chopped strand mat, a woven fabric, or often both. Layers of reinforcement and resin are added to build the desired laminate thickness. Squeegees, brushes, and rollers are used to smooth and compact each layer as it is applied. A release agent is usually first applied to the mold to facilitate removal of the composite. This is often a wax, which can be treated with a water soluble barrier coat such as polyvinyl alcohol to promote paint adhesion on parts that are to be painted. In many operations, the mold is first sprayed with gel coat, a clear or pigmented resin mix that forms the smooth outer surface of many products. Gel coat spray systems consist of separate sources of resin and catalyst, with an airless hand spray gun that mixes them together into an atomized resin/catalyst stream. Typical products are boat hulls and decks, swimming pools, bathtubs and showers, electrical consoles, and automobile components.

Spray layup, or "sprayup", is another open mold process, differing from hand layup in that it uses mechanical spraying and chopping equipment for depositing the resin and glass reinforcement. This process allows a greater production rate and more uniform parts than does hand layup, and often uses more complex molds. As in hand layup, gel coat is frequently applied to the mold before fabrication to produce the desired surface qualities. It is common practice to combine hand layup and sprayup operations.

For the reinforced layers, a device is attached to the sprayer system to chop glass fiber "roving" (uncut fiber) into predetermined lengths and project it to merge with the resin mix stream. The stream precoats the chop, and both are deposited simultaneously to the desired layer thickness on the mold surface (or on the gel coat that was applied to the mold). Layers are built up and rolled out on the mold as necessary to form the part. Products manufactured by sprayup are similar to those made by hand layup, except that more uniform and complex parts can generally be produced more efficiently with sprayup techniques. However, compared to hand layup, more resin generally is used to produce similar parts by spray layup because of the inevitable overspray of resin during application.

Continuous lamination of reinforced plastics materials involves impregnating various reinforcements with resins on an in-line conveyor. The resulting laminate is cured and trimmed as it passes through the various conveyor zones. In this process, the resin mix is metered onto a bottom carrier film, using a blade to control thickness. This film, which defines the panel's surface, is generally polyester, cellophane, or nylon and may have a smooth, embossed, or matte surface. Methyl methacrylate is sometimes used as the cross-linking agent, either alone or in combination with styrene, to increase strength and weather resistance. Chopped glass fibers free-fall into the resin mix and are allowed to saturate with resin, or "wet out". A second carrier film is applied on top of the panel before subsequent forming and curing. The cured panel is then stripped of its films, trimmed, and cut to the desired length. Principal products include translucent industrial skylights and greenhouse panels, wall and ceiling liners for food areas, garage doors, and cooling tower louvers. Figure 4.4-2 shows the basic elements of a continuous laminating production line.

Pultrusion, which can be thought of as extrusion by pulling, is used to produce continuous cross-sectional lineals similar to those made by extruding metals such as aluminum. Reinforcing fibers are pulled through a liquid resin mix bath and into a long machined steel die, where heat initiates an exothermic reaction to polymerize the thermosetting resin matrix. The composite profile

References For Section 4.4

1. M. B. Rogozen, *Control Techniques For Organic Gas Emissions From Fiberglass Impregnation And Fabrication Processes*, ARB/R-82/165, California Air Resources Board, Sacramento, CA, (NTIS PB82-251109), June 1982.

2. *Modern Plastics Encyclopedia, 1986-1987, 63*(10A), October 1986.

3. C. A. Brighton, *et al., Styrene Polymers: Technology And Environmental Aspects*, Applied Science Publishers, Ltd., London, 1979.

4. M. Elsherif, *Staff Report, Proposed Rule 1162 — Polyester Resin Operations*, South Coast Air Quality Management District, Rule Development Division, El Monte, CA, January 23, 1987.

5. M. S. Crandall, *Extent Of Exposure To Styrene In The Reinforced Plastic Boat Making Industry*, Publication No. 82-110, National Institute For Occupational Safety And Health, Cincinnati, OH, March 1982.

6. Written communication from R. C. Lepple, Aristech Chemical Corporation, Polyester Unit, Linden, NJ, to A. A. MacQueen, U. S. Environmental Protection Agency, Research Triangle Park, NC, September 16, 1987.

7. L. Walewski and S. Stockton, "Low-Styrene-Emission Laminating Resins Prove It In The Workplace", *Modern Plastics, 62*(8):78-80, August 1985.

8. M. J. Duffy, "Styrene Emissions — How Effective Are Suppressed Polyester Resins?", Ashland Chemical Company, Dublin, OH, presented at 34th Annual Technical Conference, Reinforced Plastics/Composites Institute, The Society Of The Plastics Industry, 1979.

9. G. A. LaFlam, *Emission Factor Documentation For AP-42 Section 4.12: Polyester Resin Plastics Product Fabrication*, Pacific Environmental Services, Inc., Durham, NC, November 1987.

Trivial and Exempt Activities

Attachment 3

PROPOSED EXEMPT AND TRIVIAL ACTIVITIES

American Environmental Container Corporation performs many of the activities identified by FDEP and presented in Attachment A, following, which lists "trivial" and presumptively exempt activities and emission units. No specific mention is made of these activities in the permit application.

The major production resin will be received into and delivered from a resin storage tank through a closed piping system. Breathing (standing) and working losses from the tank have been conservatively estimated using the "TANKS3" computer program, following, and are sufficiently low to be considered a trivial list activity. Records of material delivery and usage will be maintained at the facility to document the (calculated) low level of styrene emissions. All other resins and gelcoats are received and stored in drums, eliminating VOC breathing and working losses. Transfer losses are minimized by work practices as addressed in permit specific condition number 5 (Rule 62-297.320). These activities are considered presumptively exempt from permitting.

Potential emissions from the recovery still result from product transfer and uncondensed vapors. Due to the small quantity of material processed (the majority of which is acetone, no longer considered a VOC) this activity is considered presumptively exempt from permitting.

Activities involving the cutting, shaping, or trimming of fiberglass, wooden or foam parts, where not performed by hand held tools (trivial list activity) or controlled by a portable "shop vac" type particulate collector are conducted under Good Work Practice Standards. Particulate emissions from these activities are minimized as discussed in Attachment 5, and the activities are considered exempt from permitting.

ATTACHMENT A

LIST OF ACTIVITIES THAT MAY BE TREATED AS "TRIVIAL"

The following types of activities and emissions units may be presumptively omitted from part 70 permit applications. Certain of these listed activities include qualifying statements intended to exclude many similar activities.

Combustion emissions from propulsion of mobile sources, except for vessel emissions from Outer Continental Shelf sources.

Air-conditioning units used for human comfort that do not have applicable requirements under title VI of the Act.

Ventilating units used for human comfort that do not exhaust air pollutants into the ambient air from any manufacturing/industrial or commercial process.

Non-commercial food preparation.

Consumer use of office equipment and products, not including printers or businesses primarily involved in photographic reproduction.

Janitorial services and consumer use of janitorial products.

Internal combustion engines used for landscaping purposes.

Laundry activities, except for dry-cleaning and steam boilers.

Bathroom/toilet vent emissions.

Emergency (backup) electrical generators at residential locations.

Tobacco smoking rooms and areas.

Blacksmith forges.

Plant maintenance and upkeep activities (e.g., grounds-keeping, general repairs, cleaning, painting, welding, plumbing, re-tarring roofs, installing insulation, and paving parking lots) provided these activities are not conducted as part of a manufacturing process, are not related to the source's primary business activity, and not otherwise triggering a permit

modification[1]

Repair or maintenance shop activities not related to the source's primary business activity, not including emissions from surface coating or de-greasing (solvent metal cleaning) activities, and not otherwise triggering a permit modification.

Portable electrical generators that can be moved by hand from one location to another.[2]

Hand-held equipment for buffing, polishing, cutting, drilling, sawing, grinding, turning or machining wood, metal or plastic.

Brazing, soldering and welding equipment, and cutting torches related to manufacturing and construction activities that do not result in emission of HAP metals.[3]

Air compressors and pneumatically operated equipment, including hand tools.

Batteries and battery charging stations, except at battery manufacturing plants.

Storage tanks, vessels, and containers holding or storing liquid substances that will not emit any VOC or HAP.[4]

Storage tanks, reservoirs, and pumping and handling equipment of any size containing soaps, vegetable oil, grease, animal fat, and nonvolatile aqueous salt solutions, provided appropriate lids and covers are utilized.

---

[1]Cleaning and painting activities qualify if they are not subject to VOC or HAP control requirements. Asphalt batch plant owners/operators must still get a permit if otherwise required.

[2]"Moved by hand" means that it can be moved without the assistance of any motorized or non-motorized vehicle, conveyance, or device.

[3]Brazing, soldering and welding equipment, and cutting torches related to manufacturing and construction activities that emit HAP metals are more appropriate for treatment as insignificant activities based on size or production level thresholds. Brazing, soldering, welding and cutting torches directly related to plant maintenance and upkeep and repair of maintenance shop activities that emit HAP metals are treated as trivial and listed separately in this appendix.

[4]Exemptions for storage tanks containing petroleum liquids or other volatile organic liquids should be based on size limits such as storage tank capacity and vapor pressure of liquids stored and are not appropriate for this list.

Equipment used to mix and package, soaps, vegetable oil, grease, animal fat, and nonvolatile aqueous salt solutions, provided appropriate lids and covers are utilized.

Drop hammers or hydraulic presses for forging or metalworking.

Equipment used exclusively to slaughter animals, but not including other equipment at slaughterhouses, such as rendering cookers, boilers, heating plants, incinerators, and electrical power generating equipment.

Vents from continuous emissions monitors and other analyzers.

Natural gas pressure regulator vents, excluding venting at oil and gas production facilities.

Hand-held applicator equipment for hot melt adhesives with no VOC in the adhesive formulation.

Equipment used for surface coating, painting, dipping or spraying operations, except those that will emit VOC or HAP.

CO_2 lasers, used only on metals and other materials which do not emit HAP in the process.

Consumer use of paper trimmers/binders.

Electric or steam-heated drying ovens and autoclaves, but not the emissions from the articles or substances being processed in the ovens or autoclaves or the boilers delivering the steam.

Salt baths using nonvolatile slats that do not result in emissions of any regulated air pollutants.

Laser trimmers using dust collection to prevent fugitive emissions.

Bench-scale laboratory equipment used for physical or chemical analysis, but not lab fume hoods or vents.[5]

Routine calibration and maintenance of laboratory equipment or other analytical instruments.

Equipment used for quality control/assurance or inspection purposes, including sampling equipment used to withdraw materials for analysis.

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[5]Many lab fume hoods or vents might qualify for treatment as insignificant (depending on the applicable SIP) or be grouped together for purposes of description.

Hydraulic and hydrostatic testing equipment.

Environmental chambers not using hazardous air pollutant (HAP) gasses.

Shock chambers.

Humidity chambers.

Solar simulators.

Fugitive emission related to movement of passenger vehicles, provided the emissions are not counted for applicability purposes and any required fugitive dust control plan or its equivalent is submitted.

Process water filtration systems and demineralizes.

Demineralized water tanks and demineralizer vents.

Boiler water treatment operations, not including cooling towers.

Oxygen scavenging (de-aeration) of water.

Ozone generators.

Fire suppression systems.

Emergency road flares.

Steam vents and safety relief valves.

Steam leaks.

Steam cleaning operations.

Steam sterilizers.

TANK IDENTIFICATION AND PHYSICAL CHARACTERISTICS

Identification
- Identification No.: AECC-Lakel
- City: Lakeland
- State: FL
- Company: American Env. Cont. Corp
- Type of Tank: Vertical Fixed Roof

Tank Dimensions
- Shell Height (ft): 13.0
- Diameter (ft): 9.5
- Liquid Height (ft): 12.0
- Avg. Liquid Height (ft): 6.0
- Volume (gallons): 6363
- Turnovers: 30.0
- Net Throughput (gal/yr): 190890

Paint Characteristics
- Shell Color/Shade: White/White
- Shell Condition: Good
- Roof Color/Shade: White/White
- Roof Condition: Good

Roof Characteristics
- Type: Dome
- Height (ft): 1.00
- Radius (ft) (Dome Roof): 10.00
- Slope (ft/ft) (Cone Roof): 0.0000

Breather Vent Settings
- Vacuum Setting (psig): 0.00
- Pressure Setting (psig): 0.03

Meteorological Data Used in Emission Calculations: Orlando, Florida (Avg Atmospheric Pressure = 14.7 psia)

Mixture/Component		Daily Liquid Surf. Temperatures (deg F) Temp. Month Avg.	Min.	Max.	Bulk Temp. (deg F) Avg.	Vapor Pressures (psia) Avg.	Min.	Max.	Liquid Mol. Weight	Mass Fract.	Vapor Mass Fract.	Vapor Mol. Weight	Basis for Vapor Pressure Calculations
Styrene	All	74.41	68.90	79.92	72.42	0.1171	0.0975	0.1400	104.150			104.15	Option 2: A=7.1400, B=1574.510, C=224.090

Annual Emission Calculations

Standing Losses (lb):	16.8692
Vapor Space Volume (cu ft):	539.61
Vapor Density (lb/cu ft):	0.0021
Vapor Space Expansion Factor:	0.042145
Vented Vapor Saturation Factor:	0.954879

Tank Vapor Space Volume

Vapor Space Volume (cu ft):	539.61
Tank Diameter (ft):	9.5
Vapor Space Outage (ft):	7.61
Tank Shell Height (ft):	13.0
Average Liquid Height (ft):	6.0
Roof Outage (ft):	0.61

Roof Outage (Dome Roof)

Roof Outage (ft):	0.61
Dome Radius (ft):	10
Shell Radius (ft):	4.8

Vapor Density

Vapor Density (lb/cu ft): 0.0021
Vapor Molecular Weight (lb/lb-mole): 104.150000
Vapor Pressure at Daily Average Liquid
Surface Temperature (psia): 0.117115
Daily Avg. Liquid Surface Temp.(deg. R): 534.08
Daily Average Ambient Temp. (deg. R): 532.07
Ideal Gas Constant R
(psia cuft /(lb-mole-deg R)): 10.731
Liquid Bulk Temperature (deg. R): 532.09
Tank Paint Solar Absorptance (Shell): 0.17
Tank Paint Solar Absorptance (Roof): 0.17
Daily Total Solar Insolation
Factor (Btu/sqft•day): 1487.00

Vapor Space Expansion Factor
Vapor Space Expansion Factor: 0.042145
Daily Vapor Temperature Range (deg.R): 22.05
Daily Vapor Pressure Range (psia): 0.042527
Breather Vent Press. Setting Range(psia): 0.03
Vapor Pressure at Daily Average Liquid
Surface Temperature (psia): 0.117115
Vapor Pressure at Daily Minimum Liquid
Surface Temperature (psia): 0.097508
Vapor Pressure at Daily Maximum Liquid
Surface Temperature (psia): 0.140035
Daily Avg. Liquid Surface Temp. (deg R): 534.08
Daily Min. Liquid Surface Temp. (deg R): 528.57
Daily Max. Liquid Surface Temp. (deg R): 539.59
Daily Ambient Temp. Range (deg.R): 20.80

Annual Emission Calculations
Vented Vapor Saturation Factor
Vented Vapor Saturation Factor: 0.954879
Vapor Pressure at Daily Average Liquid
Surface Temperature (psia): 0.117115
Vapor Space Outage (ft): 7.61

Working Losses (lb): 55.4375
Vapor Molecular Weight (lb/lb-mole): 104.150000
Vapor Pressure at Daily Average Liquid
Surface Temperature (psia): 0.117115
Annual Net Throughput (gal/yr): 190890
Turnover Factor: 1.0000
Maximum Liquid Volume (cuft): 851
Maximum Liquid Height (ft): 12.0
Tank Diameter (ft): 9.5
Working Loss Product Factor: 1.00

Total Losses (lb): 72.31

Annual Emissions Report

	Losses (lbs.):		
Liquid Contents	Standing	Working	Total
Styrene	16.87	55.44	72.31
Total:	16.87	55.44	72.31

Additional Applicable Requirements

Attachment 4

ADDITIONAL APPLICABLE REQUIREMENTS

Additional applicable requirements for this facility are detailed in the FDEP air permit, which describes the record keeping parameter requirements, the reporting requirements, and compliance testing requirements, as appropriate.

The facility will comply with the Specific Conditions and requirements of the current air permit and the Title V construction and operating permit(s) when issued, as noted in Attachment 5.

The facility recognizes its obligation with respect to sources of objectionable odor, and will utilize exhaust fans to capture and disperse VOC species as required. The requirement for information on the exhaust stack parameters is based on the FDEP Draft Air Toxic Guidelines. However, in consideration of the non-Rule nature of the policy and in recognition of the policy memo of June 8, 1995, from Howard Rhodes, DARM. American Environmental Container Corporation requests that the parameters referenced be considered a "guideline" parameter rather than an enforceable permit condition, provided no verifiable objectionable odor complaints are generated.

Compliance Plan and Certification

Attachment 5

AMERICAN ENVIRONMENTAL CONTAINER CORPORATION
COMPLIANCE PLAN

The purpose of this attachment is to document the methods by which the facility proposes to demonstrate compliance with its applicable requirements. Most of the facility-wide applicable requirements address general permitting standards for stationary air pollution sources and general prohibitions on certain types of activities (e.g., open burning and motor vehicle air conditioner repair). For these types of requirements, no specific actions are required to be performed by the facility except on a periodic, as-needed basis. The facility will continue to comply with these general requirements by taking the necessary steps to ensure that all necessary air permits are applied for and obtained in accordance with FDEP's protocols and by not performing those activities that are prohibited.

For the purposes of the following discussion, compliance plans have been included only for those substantive requirements that set work practice standards or emissions limits, or will necessitate regular monitoring, record keeping, or reporting. Compliance plans for the facility as a whole and for each regulated emissions unit are described below.

A. GENERAL FACILITY COMPLIANCE PLAN

The compliance plans presented in this section address monitoring, record keeping, and reporting requirements for the facility as a whole.

1. In accordance with 62-210.370(3) FAC, the facility will submit an annual operating report to the appropriate FDEP district office by March 1 of the following year unless otherwise indicated by permit condition or FDEP request. The annual operating report will be completed on the form 62-210.900(5) FAC or as instructed by FDEP.

2. In accordance with 62-213.205 FAC, between January 15 and March 1 of each year, the facility will pay upon written notice from FDEP, an annual emissions fee in an amount determined by the procedures specified by the rule. The emissions fee will be submitted along with a completed form 62-213.900(1) FAC.

3. In accordance with 62-296.320(4)(c), the facility will take reasonable precautions to prevent emissions of unconfined particulate matter from the facility. Activities which can cause fugitive particulate emissions at the facility include vehicular movement, transportation of materials, and industrially related activities such as materials loading, unloading, storing, and handling. Reasonable precautions to be taken by the facility include:

    Application of water to paved and unpaved areas accommodating vehicular traffic if a visible particulate plume is observed to extend more than 15 feet from the point of origin.

Removal of particulate matter from buildings or work areas to prevent a visible particulate plume of unconfined particulate greater than 20%.

Enclosure or covering of activities or equipment where necessary to prevent unconfined particulate emissions from having an opacity greater than 20%.

4. Material usages, material compositions, and methods of use will be documented in accordance with the specific conditions of the construction and operation permits. Materials used will be in compliance with the specifications identified in the permit. Emissions will be calculated by the methods specified in the permit, and will be demonstrated to be in compliance with the permit limitations.

B. CONTROL DEVICE/WORK PRACTICE PLAN

In order to comply with the permit general and specific conditions, all control devices (regulated and unregulated) will be properly maintained. Routine facility inspections will be performed to confirm the effectiveness of control devices (if present) and work practice standards in minimizing emissions. Repairs to equipment and modifications to work practice procedures will be made as necessary. Records of these repairs or modifications will be maintained on site for a minimum of 5 years and will be available for review by FDEP or the Agency's designated representatives. All required compliance testing and facility record keeping will be conducted in a timely manner and in conformance with the applicable permit specific conditions. In particular, filter media on the VOC and/or particulate exhaust fans will be changed routinely or as needed to maintain an adequate air flow to minimize potential odor complaints.

C. COMPLIANCE TESTING

Compliance testing, as appropriate and required by permit, will be conducted in accordance with EPA Methods as contained in 40CFR60 Appendix A and adopted by reference in Rule 62-297, FAC. This testing will be performed within 60 days of the receipt of notification or as specified by the Department. Submission of the test results, and an addendum to this application if necessary, will be filed within 45 days of the testing.

AMERICAN ENVIRONMENTAL CONTAINER CORPORATION
COMPLIANCE REPORT

The subject facility is in compliance with each existing applicable requirement outlined in the Title V application, except as noted below. A statement of compliance follows as required.

Emissions Unit ID	Description of Emission Unit	Compliance Status
1	Fiberglass Resin and Gelcoat Manufacturing, including Miscellaneous Solvents and Related Assembly Activities	In Compliance

Compliance Certification

I, the undersigned, am the responsible official as defined in Chapter 62-210.200 Florida Administrative Code (FAC) of the Title V source for which this report is being submitted. I hereby certify, based on the information and belief formed after reasonable inquiry, that the statements made and data contained in this report are true, accurate, and complete.

Signature

5-10-00

Date

Representative Material Safety Data Sheets

Attachment 6

M A T E R I A L S A F E T Y D A T A S H E E T
COATINGS, RESINS, AND RELATED MATERIALS

MANUFACTURED BY:
McWhorter Technologies, Inc.
400 East Cottage Place
Carpentersville, IL. 60110
EMERGENCY CONTACT: CHEMTREC 1-800-424-9300
INFORMATION CONTACT:1-888-CALL-MWT (DURING NORMAL BUSINESS HOURS)
DATE OF PREP: 8/04/99 SUPERSEDES DATE: 8/03/99 DATE OF PRINT: 9/13/99

SECTION I. PRODUCT IDENTIFICATION

PRODUCT CODE: (INTERNAL REF.#362)
745 4668
PRODUCT NAME :
UNSATURATED POLYESTER RESIN
SHIPPING DESCRIPTION:
RESIN SOLUTION,
3, UN 1866, PG III
MARINE POLLUTANT, CONTAINS:
STYRENE

SECTION II. HAZARDOUS INGREDIENTS

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM
HEALTH: 2 * FLAMMABILITY: 3
REACTIVITY: 1

INGREDIENT / CAS NO.	WT. PERCENT	TLV ppm	TLV mg/m3	SOURCE	IDLH ppm	VAPOR PRESSURE (mm Hg @68F)	LEL
STYRENE 100-42-5	49.8						
		20.0000	86.00	TWA/ACGIH	700	4.30	1.10
		100.0000	425.00	FEDERAL PEL			
		40.0000	170.00	STEL/ACGIH			

SECTION III. PHYSICAL DATA

BOILING RANGE: 148-415 F
SPECIFIC GRAVITY 1.080
VAPOR DENSITY (AIR=1): 3.027
VOLATILE ORGANIC CONTENT (VOC): N/A
PERCENT VOLATILE BY VOL: 59.39
EVAPORATION RATE (n-Bu Ac=1): 0.43
VAPOR PRESSURE (mm Hg@68F): 3.67
APPEARANCE AND ODOR: light straw-colored solution - styrene odor
SOLUBILITY IN WATER: negligible

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 86 DEG. F SETAFLASH OSHA CLASSIFICATION: IC
FLAMMABLE LIMITS % BY VOLUME IN AIR AT 212 DEG. F:
LOWER EXPLOSION LIMIT: 2.00
UPPER EXPLOSION LIMIT 12.00

EXTINGUISHING MEDIA:
Use foam, carbon dioxide or chemical fire fighting apparatus.

MATERIAL SAFETY DATA SHEET

SECTION I - IDENTIFICATION

TRADE NAME: POLYCOR
DESCRIPTION: BASE WHITE
PRODUCT CODE IDENTITY: 943W016
NPCA HMIS RATING: H 2* F 3 R 2

REVISION: 42
LAST REVISED : 05-16-97
DATE OF ISSUE: 06-21-97

COMPANY NAME: COOK COMPOSITES AND POLYMERS CO.
ADDRESS: 919 E. 14th AVENUE
NORTH KANSAS CITY, MO 64116

PREPARED BY:
HAZARD COMMUNICATION DEPT.

CUSTOMER NAME: G L S FIBERGLASS CO
GL1019 1750 N KINGSBURY ST
CHICAGO IL 60614
ATTENTION:

INFORMATION TELEPHONE:
COMPOSITES: 1-800-821-3590
POLYMERS: 1-800-488-5541

TRANSPORTATION EMERGENCY TELEPHONE (CHEMTREC): 1-800-424-9300

CCP certifies that its products comply with all the provisions of the Toxic Substances Control Act (TSCA), unless otherwise stated by ingredient in Section II.

*** The percent by weight composition data given in Sections II and XX are NOT SPECIFICATIONS, but are based on 'target' formula values for each ingredient in the product. The data are presented as ranges for low hazard ingredients and single point values for ingredients of regulatory concern. Actual batch concentrations will vary within limits consistent with separately established product specifications. ***

SECTION II INGREDIENTS

1
CAS# 000080-62-6
METHYL METHACRYLATE
PCT BY WT: 5.0000 VAPOR PRESSURE: 29.000 MMHG @ 68F
EXPOSURE LIMIT:

ACGIH TLV/TWA:	100 PPM (410 MG/CU.M.)
OSHA PEL/TWA:	100 PPM (410 MG/CU.M.)
LD50, Oral:	7.9 G/KG (RAT)
LD50, Dermal:	35.5 G/KG (RABBIT)
LC50, Inhalation:	>12,500 PPM/0.5H (RAT)

2
CAS# 000100-42-5
STYRENE MONOMER
PCT BY WT: 31.8980 VAPOR PRESSURE: 4.500 MMHG @ 68F
EXPOSURE LIMIT:

ACGIH TLV/TWA:	50 PPM (SKIN) (213 MG/CU.M.)
ACGIH TLV/STEL:	100 PPM (SKIN) (426 MG/CU.M.)
OSHA PEL/TWA:	100 PPM
OSHA PEL/CEILING:	ACCEPTABLE CEILING CONCENTRATION - 200 PPM
OSHA PEL/STEL:	ACCEPTABLE PEAK (5 MIN/3 HR) - 600 PPM MAX.
LD50, Oral:	4.97 G/KG (RAT)
LD50, Dermal:	20 G/KG (RABBIT)
OTHER:	LCLO: 5000 PPM/8H (RAT)

COOK COMPOSITES AND POLYMERS CO.
MATERIAL SAFETY DATA SHEET

943W016

3
CAS# 013463-67-7
TITANIUM DIOXIDE
PCT BY WT: 10 - 20
EXPOSURE LIMIT:
ACGIH TLV/TWA: 10 MG/CU.M. (TOTAL DUST)
OSHA PEL/TWA: 10 MG/CU.M. (TOTAL DUST)
LD50, Oral: >7500 MG/KG (RAT)
LD50, Dermal: NOT AVAILABLE
LC50, Inhalation: NOT AVAILABLE

4
CAS# 014807-96-6
TALC (HYDROUS MAGNESIUM SILICATE)
PCT BY WT: 1 - 5
EXPOSURE LIMIT:
ACGIH TLV/TWA: 2 MG/CU.M., RESPIRABLE DUST
OSHA PEL/TWA: 2 MG/CU.M., RESPIRABLE DUST
LD50, Oral: NOT AVAILABLE
LD50, Dermal: NOT AVAILABLE
LC50, Inhalation: NOT AVAILABLE

5
CAS# 112926-00-8
SILICA, AMORPHOUS-SILICA GEL
PCT BY WT: 1 - 5
EXPOSURE LIMIT:
ACGIH TLV/TWA: 10 MG/CU.M. (TOTAL DUST)
OSHA PEL/TWA: 6 MG/CU.M.
LD50, Oral: NOT AVAILABLE
LD50, Dermal: NOT AVAILABLE
LC50, Inhalation: NOT AVAILABLE

6
CAS# 021645-51-2
ALUMINA TRIHYDRATE
PCT BY WT: 1 - 5
EXPOSURE LIMIT:
ACGIH TLV/TWA: 10 MG/CU.M. (TOTAL DUST)
OSHA PEL/TWA: 5MG/CU.M.(RESPIRAFL FRACTION);10MG/CU.M.(TOT

7
UNSATURATED POLYESTER RESIN
ON TSCA INVENTORY CAS# PROPRIETARY
PCT BY WT: 30 - 40
EXPOSURE LIMIT:
ACGIH TLV/TWA: NONE ESTABLISHED
OSHA PEL/TWA: NONE ESTABLISHED

SECTION III PHYSICAL DATA

Boiling Range: High= -N/A F Low= 212.00 F

Vapor Pressure: See Section II

Theoretical Weight per Gallon, Calculated: 10.49460 LB/GL

Theoretical Specific Gravity, Calculated: 1.2610

Maximum Theoretical VOC, Calculated: 3.3720 lb/gal
--If applicable, see Section IX for further VOC information--

Physical State: LIQUID

Appearance: WHITE

NORAC

THE NORAC COMPANY, INC.
Azusa, CA

MATERIAL SAFETY DATA SHEET

MSDS Reference
mekp30 Red.doc

Print Date
07/16/99

NOROX MEKP-30 RED

MANUFACTURER	The Norac Company, Inc.	EMERGENCY TELEPHONE	(626) 334-2908
ADDRESS	405 S. Motor Ave., Azusa, CA 91702	CHEMTREC	1-800-424-9300
PRODUCT NAME	Norox MEKP-30 Red	CAS NO.	See Section II
CHEMICAL NAME	Methyl Ethyl Ketone Peroxide (MEKP), 5.5% Active Oxygen		
CHEMICAL FAMILY	Organic Peroxide	FORMULA	Mixture of many.

COMPONENTS	CAS NO.	%	HAZARD DATA
Methyl Ethyl Ketone Peroxide	1338-23-4	21	Oral–Rat LD_{50}: 484 mg/kg
Dimethyl Phthalate	131-11-3	61	Oral–Rat LD_{50}: 6900 mg/kg
Proprietary Phlegmatizer		12	Oral–Rat LD_{50}: >3200 mg/kg
Hydrogen Peroxide	7722-84-1	0.6	Oral–Skin LD_{50}: 4060 mg/kg
Methyl Ethyl Ketone	78-93-3		Oral–Rat LD_{50}: 2737 mg/kg

BOILING POINT °F	Unknown	SPECIFIC GRAVITY (Water=1)	1.15
VAPOR PRESSURE mm Hg	Unknown	PERCENT VOLATILE BY VOLUME	Unknown
VAPOR DENSITY (Air=1)	>1		
SOLUBILITY IN WATER	Slight	EVAPORATION RATE	Unknown
APPEARANCE AND ODOR	Red liquid with a slight odor.		

THRESHOLD LIMIT VALUE	1.5 mg/m³ for Methyl Ethyl Ketone Peroxides
ROUTES OF EXPOSURE	
Skin Absorption	Severe skin irritant, causes redness, blistering, and edema.
Eye Contact	Eye contact causes severe corrosion and may cause blindness.
Ingestion	Human systemic effects by ingestion: changes in structure or function of esophagus, nausea, or vomiting, and other gastrointestinal effects.
Inhalation	Moderately toxic by inhalation.
EFFECTS OF OVER-EXPOSURE	Prolonged inhalation of vapors may cause mucous membrane irritation and vertigo. There are no known medical conditions which are recognized as being aggravated by exposure.

EMERGENCY AND FIRST AID PROCEDURES

Skin	Wash contaminated area thoroughly with soap and water.
Eyes	Flush eyes with water for 30 minutes and seek medical attention.
Ingestion	Take large quantities of milk or water and immediately call a physician. For aid to physician, suggest local Poison Control Center.

INCOMPATIBILITY (Materials to avoid)	Dimethylaniline, cobalt napthenate and other promoters, accelerators, reducing agents, or any hot material.
STABILITY	Stable when kept in original, closed container, out of direct sunlight at temperatures below 80°F.
HAZARDOUS DECOMPOSITION PRODUCTS	Acrid smoke and irritating fumes.
HAZARDOUS POLYMERIZATION	Will not occur.

Norox MEKP-30 Red

RESPIRATORY PROTECTION	None
VENTILATION	Mechanical, general.
EYE PROTECTION	Safety goggles recommended. A permanent eye wash is highly recommended.
HAND PROTECTION	Protective gloves recommended (solvent resistant).
OTHER	A safety shower is recommended when the risk of a significant exposure exits.

FLASH POINT (C.O.C.) > 200°F (Method Used)	**FLAMMABLE LIMITS:** N/A
EXTINGUISHING MEDIA	Water from a safe distance - preferably with a fog nozzle. In case of very small fires, other means such as carbon dioxide, foam or dry chemical extinguishers may be effective. Dry chemical combined with MEKP-30 may reignite. Light water additives may be particularly effective at extinguishing MEKP-30 fires.
SPECIAL FIRE FIGHTING PROCEDURES	Firemen should be equipped with protective clothing and SCBA's. In case of fire near storage area, cool the containers with water spray. If dry chemical is used to extinguish an MEKP-30 fire, the extinguished area must be thoroughly wetted down with water to prevent reignition.
UNUSUAL FIRE AND EXPLOSION HAZARDS	The heat of decomposition of the peroxides adds to the heat of the fire. Dry chemical fire extinguishing agent may catalyze the decomposition.

STEPS TO BE TAKEN IN EVENT OF SPILL OR RELEASE	Dike to prevent runoff from entering drains, sewers, streams, etc. and transfer into containers. Spilled material should be swept up with an inert, moist diluent such as perlite, vermiculite, or sand, and placed in a clean polyethylene lined drum or a polyethylene drum.
WASTE DISPOSAL METHOD	Immediately dispose of waste material in accordance with federal, state and local regulations.

HANDLING AND STORING	Keep containers closed to prevent contamination. Rotate stock using the oldest material first. Storage at or below 80°F is required to ensure product safety. Prolonged storage at elevated temperatures will result in product degradation. Cooler storage is recommended for longer shelf life.
OTHER PRECAUTIONS	MEKP-30 should never be added to hot solvents or monomers as a violent decomposition and/or reaction may result. When using spray equipment, never spray raw MEKP-30 into curing or into raw resin or fluxes. Keep MEKP-30 in its original container. DO NOT STORE WITH FOOD OR DRINK. DO NOT USE NEAR FOOD OR DRINK. Unmixed, uncontaminated material, remaining at the end of the day, shall be returned to a proper organic peroxide storage area[1]. Under no circumstances should material be returned to the original container.[2]

The following chemicals are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

Chemical Name	CAS Number	Percent
Dimethyl Phthalate	131-11-3	65
Methyl Ethyl Ketone	78-93-3	1

VOC Information
Using ASTM Test Method D-2369-87, but at 40°C (since MEKP decomposes rapidly above 100°C and is not a VOC), MEKP-30 contains 2.4% VOC, by weight, or 28 grams per liter. For more information call Norac.

[1] See CCR Title 8 Section 5461, NFPA 432, and UFC (91) Sec. 80.307.

[2] See NFPA 14-3