BWSC | BARGE WAGGONER SUMNER & CANNON, INC.®

Dept. of Environmental Protection

JAN 28 2009

Southwest District

January 27, 2009
File 33330-02

Mr. Danny Stubbs
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
Southwest District Office
Air Program Administrators
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926

RE: AIR PERMIT DETERMINATION
DEP FILE NO. 1190048-001-AP

Dear Mr. Stubbs:

This letter addresses the request for additional information received on in your letter dated December 17, 2008 regarding the Federally Enforceable State Operation Permit (FESOP) for the Great Southern Wood - Bushnell, Inc. wood treating plant.

1) *Please provide the Department with a letter of authorization from an officer of the company.*

   Attached is a letter authorizing Kevin Savoy to execute documents on behalf of Great Southern Wood-Bushnell, Inc.

2) *Please provide process flow diagrams for the treatment cylinders.*

   Process flow diagrams for the treatment cylinders are attached to this response.

Should you have any questions or need additional information, please call me at (334) 793-6266.

Best regards,

Stanley D. Price
01/27/09

Stanley D. Price, P.E.
Project Manager

STANLEY D. PRICE LICENSE NO. 62075 STATE OF FLORIDA PROFESSIONAL ENGINEER

Copy: Mr. Jerry Wright, Great Southern Wood

Enclosures

GREAT SOUTHERN WOOD PRESERVING INC.

January 26, 2009

Dept. of Environmental Protection

JAN 28 2009

Southwest District

Ms. Cindy Zhang-Torres, P.E.
Air Program Permitting Supervisor
Florida Department of Environmental Protection
Southwest District Office
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926

Re: Application dated August 15, 2008 and subsequent correspondence
DEP File No. 1190048-001-AF

Dear Ms. Zhang-Torres:

My in-house attorney, Chris Mims, spoke with Danny Stubbs of your office on January 22, 2009 regarding the above application. In accordance with their conversation, please be advised of the following:

(1) Kevin Savoy (who is a Vice President of the Great Southern entities) and I are authorized representatives of the Great Southern entities (to include Great Southern Wood Preserving, Incorporated ("GSWPI") and Great Southern Wood - Bushnell, Inc. ("GSWBI")), and we are both authorized to execute applications and related documents on behalf of the Great Southern entities. Jerry Wright, our engineer, and Chris Mims are authorized to interact with you on behalf of the Great Southern entities.

(2) Per Chris' conversation with Danny, we are requesting that the air permit for our Florida plant be issued in the name of Great Southern Wood - Bushnell, Inc. ("GSWBI") (rather than GSWPI). Our Florida plant is owned and operated by GSWBI.

Should you need any additional information, please do not hesitate to give Chris Mims or Jerry Wright a call. As always, we appreciate your assistance.

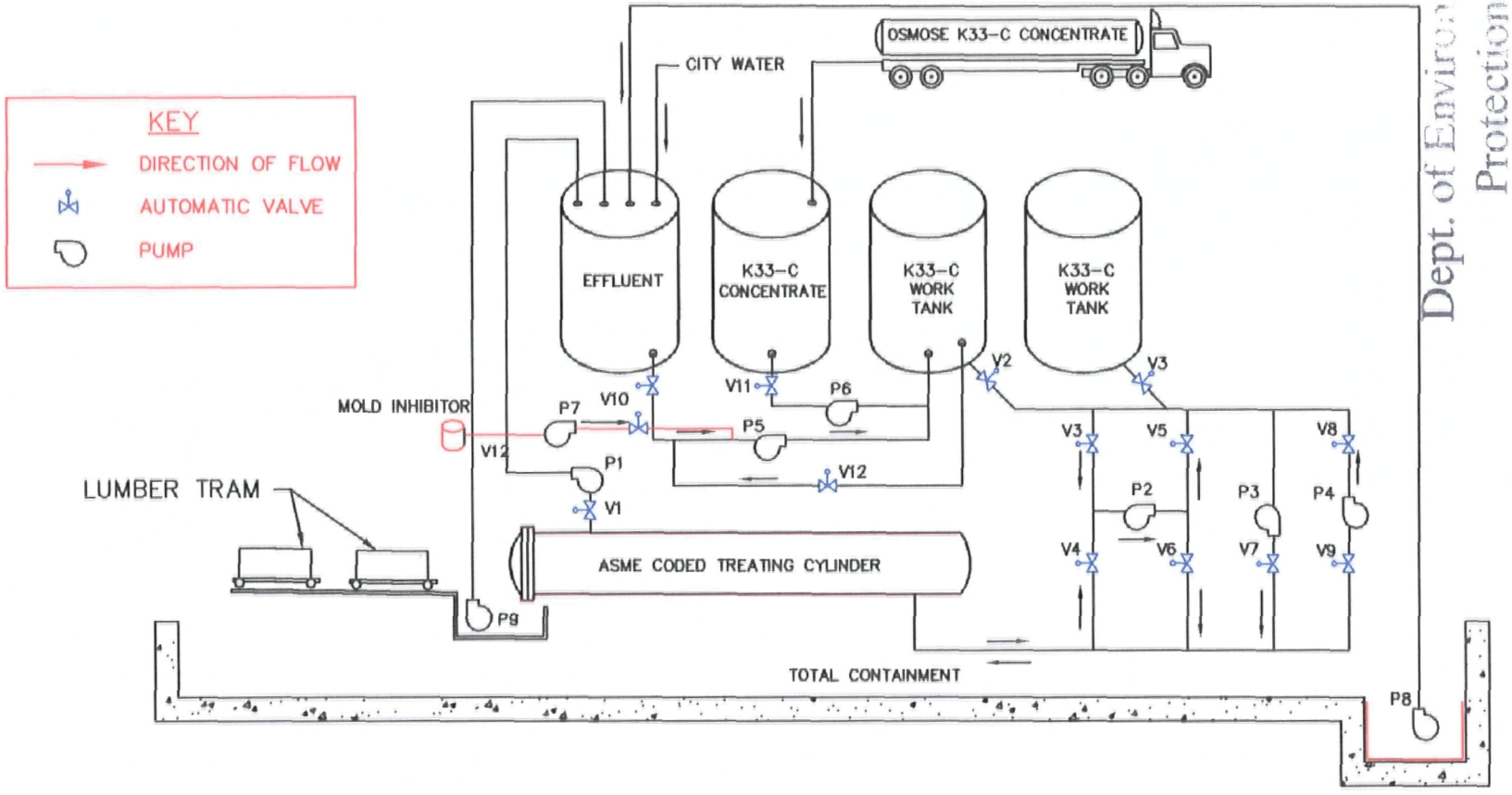
Very truly yours,

James W. Kane, Sr.
President and CEO

JWR/cmm

PO Box 610 Abbeville, Alabama 36310 334.585.2291
www.greatsouthernwood.com

PROCESS BLOCK FLOW DIAGRAM OF WATERBORNE CCA (CHROMATED COPPER ARSENIC) WOOD PRESERVING PLANT



1. PROCESS WATER – PROCESS WATER IS COLLECTED AND RE-CYCLED BACK TO PROCESS TO BE USED FOR PRESERVATIVE SOLUTION MAKE UP.
2. ALL PIPING AND PROCESS EQUIPMENT IS ABOVE GROUND AND CONTAINED IN THE CONCRETE CHEMICAL CONTAINMENT SYSTEM.

OSMOSE WOOD PRESERVING, INC.

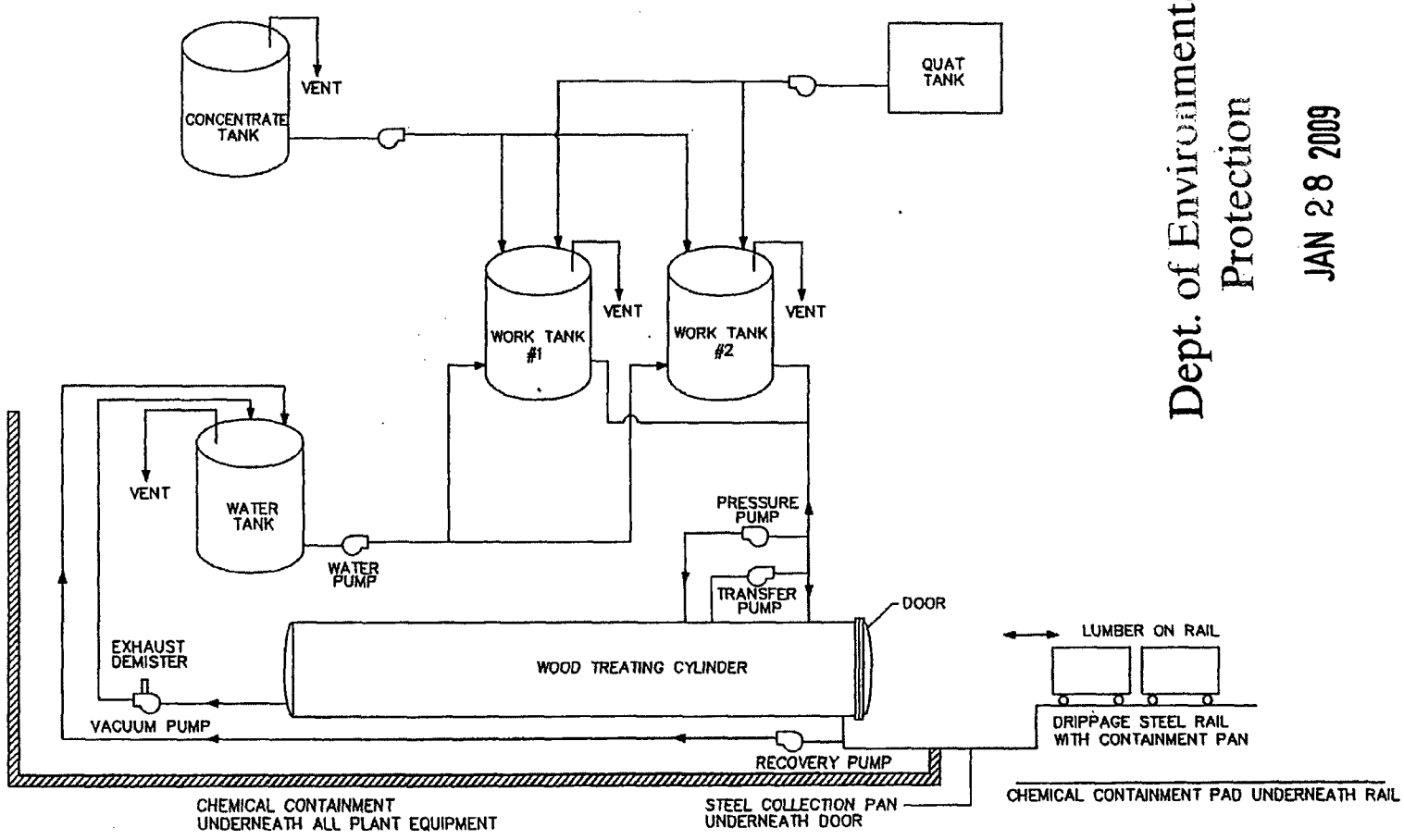
P.O DRAWER O GRIFFIN, GEORGIA 30224

SCALE: NONE	APPROVED BY:	DRAWN BY:
DATE:		KNB

PROCESS BLOCK FLOW DIAGRAM OF
WATER BORNE CCA WOOD PRESERVING PLANT

Great Southern Wood – Florida, Inc.	DRAWING NUMBER SK-101294

ATTACHMENT #5



NOTE:
1. ALL PIPING AND PROCESS EQUIPMENT IS ABOVE GROUND AND CONTAINED IN THE STEEL CHEMICAL CONTAINMENT SYSTEM.

PROCESS FLOW DIAGRAM
TYPICAL OSMOSE MicroPro 200C WOOD TREATING PLANT

SCALE: NONE DATE: 7-31-06

BWSC | BARGE WAGGONER SUMNER & CANNON, INC.®

RAI RESPONSE

November 14, 2008
File 33330-02

Dept. of Environmental Protection
NOV 17 2008
Southwest District

Mr. Danny Stubbs
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
Southwest District Office
Air Program Administrators
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926

RE: AIR PERMIT DETERMINATION
DEP FILE NO. 1190048-001-AP

Dear Mr. Stubbs:

This letter addresses the request for additional information received on in your letter dated October 3, 2008 regarding the Federally Enforceable State Operation Permit (FESOP) for the Great Southern Wood Bushnell, Inc. wood treating plant.

1) *Please provide the Department with a letter of authorization from an officer of the company.*

   Attached is page 3 from DEP Form 62-210.900(3) signed by the vice president of the company.

2) *Could cylinders 1 and 2 ever be used for the CCA wood preservation process?*

   No, cylinders 1 and 2 will never be used for the CCA wood preservation process.

3) *Please provide a facility plot plan that meets the requirements outlined in the application instructions.*

   A facility plot plan is attached to this response.

   Please provide process flow diagrams for each treatment cylinder.

   Process flow diagrams for each treatment cylinder are attached to this response.

4) *Please refer to "Emission Unit Information Section 1 of 2 and "Emission Unit Information Section 2 of 2 of this application under the section titled "Emission Unit Operating Capacity and Schedule.*
   - *Please provide either a process or throughput rate for item #3 and or a production rate for Item #4.*

Attached is page 12 from DEP Form No. 62-210.900(3) which includes the emissions unit Operating Capacity and Schedule.

- *Please provide a "Requested maximum Operating Schedule" for Item #5.*

Attached is page 12 from DEP Form No. 62-210.900(3) which includes the maximum operating schedule.

5) *Please refer to "Emission Unit Information Section 1 of 2 and "Emission Unit Information Section 2 of 2 of this application on the page titled "C Segment (Process/Fuel) Information". Please complete the "Segment Description and Rate" section of the application.*

Attached is page 14 from DEP Form No. 62-210.900(3) which includes the segment (process/fuel) information.

6) *Please complete the "Potential Emissions" section of the application for arsenic and chromium compounds and for any other pollutant that exceeds the emission unit threshold as defined in the instructions of DEP Form No. 62-210.900(3) in the section titled "D, Emissions Unit Pollutant Detail Information".*

Attached is page 15 from DEP Form No. 62-210.900(3) which includes the emission unit pollutant detail information.

7) *Please refer to 40 CFR part 63, Subpart QQQQQQ-National Emission Standards for Hazardous Air Pollutants for Wood Preserving Area Sources.*

- *Please define this facility as either an existing or new source based on the information provided in section 63.11428(b)*

  This is an existing source.

- *Please specify your compliance date based on information provided in section 63.11429 of the subpart.*

  Compliance was achieved prior to July 16, 2007.

- *Please identify the standards in section 63.11430 of the subpart that are applicable to your facility. If section 63.11430 (c) is applicable, then submit a management practice plan. .*

  Item (c) is applicable. Management Practice Plan is attached.

8) *In a permit determination letter issued by the Department on June 6, 2008, the installation of a LPG fired lumber kiln was discussed. If the lumber kiln has been purchased or installed, please provide the manufacture, model number and design firing rate in BTU/Hour of the kiln.*

Manufacturer – Kiln-direct.com
Model No. – SLK-271109-10M6H2HR-ALU
Design firing rate (Btu/hr): 600,000

Should you have any questions or need additional information, please call me at (334) 793-6266.

Best regards,

Stanley D. Price, P.E.
Project Manager

Copy: Mr. Jerry Wright, Great Southern Wood

Enclosures

Owner/Authorized Representative

1. Name and Title of Owner/Authorized Representative:
Kevin Savoy / Vice President

2. Owner/Authorized Representative Mailing Address:
Organization/Firm: Great Southern Wood Preserving, Inc.
Street Address: Hwy 431 N
City: Abbeville State: Alabama Zip Code: 36310

3. Owner/Authorized Representative Telephone Numbers:
Telephone: (334) 585-2291 Fax: (334) 585-1691

4. Owner/Authorized Representative Statement:

I, the undersigned, am the owner or authorized representative of the facility addressed in this application. 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

11/14/08
Date

* Attach letter of authorization if not currently on file.

Professional Engineer Certification

1. Professional Engineer Name: Stanley D. Price
Registration Number: 62075

2. Professional Engineer Mailing Address:
Organization/Firm: Barge Waggoner Sumner & Cannon, Inc.
Street Address: 2047 West Main Street
City: Dothan State: Alabama Zip Code: 36301

3. Professional Engineer Telephone Numbers:
Telephone: (334) 793-6266 Fax: (334) 793-4459

Owner/Authorized Representative

1. Name and Title of Owner/Authorized Representative:
   Kevin Savoy / Vice President

2. Owner/Authorized Representative Mailing Address:
   Organization/Firm: Great Southern Wood Preserving, Inc.
   Street Address: Hwy 431 N
   City: Abbeville State: Alabama Zip Code: 36310

3. Owner/Authorized Representative Telephone Numbers:
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Signature

11/14/01
Date

* Attach letter of authorization if not currently on file.

Professional Engineer Certification

1. Professional Engineer Name: Stanley D. Price
   Registration Number: 62075

2. Professional Engineer Mailing Address:
   Organization/Firm: Barge Waggoner Sumner & Cannon, Inc.
   Street Address: 2047 West Main Street
   City: Dothan State: Alabama Zip Code: 36301

3. Professional Engineer Telephone Numbers:
   Telephone: (334) 793-6266 Fax: (334) 793-4459

Owner/Authorized Representative

1. Name and Title of Owner/Authorized Representative:
   Kevin Savoy / Vice President

2. Owner/Authorized Representative Mailing Address:
   Organization/Firm: Great Southern Wood Preserving, Inc.
   Street Address: Hwy 431 N
   City: Abbeville State: Alabama Zip Code: 36310

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   I, the undersigned, am the owner or authorized representative of the facility addressed in this application. 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 Date

* Attach letter of authorization if not currently on file.

Professional Engineer Certification

1. Professional Engineer Name: Stanley D. Price
   Registration Number: 62075

2. Professional Engineer Mailing Address:
   Organization/Firm: Barge Waggoner Sumner & Cannon, Inc.
   Street Address: 2047 West Main Street
   City: Dothan State: Alabama Zip Code: 36301

3. Professional Engineer Telephone Numbers:
   Telephone: (334) 793-6266 Fax: (334) 793-4459

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 an air construction permit for one or more proposed new or modified emissions units (check here [ ], 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 [ ], 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.

Stanley D. Price — 11/14/08

Signature — Date

(seal)

Resubmittal of pages 3, 4, 12, 14 and 15 plus additional requested information

* Attach any exception to certification statement.

Emissions Unit Information Section 1 of 2 cylinders 1 & 2

Emissions Unit Control Equipment

1. Control Equipment/Method Description (limit to 200 characters per device or method): N/A
2. Control Device or Method Code(s):

Emissions Unit Details

1. Package Unit: Manufacturer:	Model Number:	
2. Generator Nameplate Rating:	MW	
3. Incinerator Information: Dwell Temperature: Dwell Time: Incinerator Afterburner Temperature:		°F seconds °F

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:		mmBtu/hr
2. Maximum Incineration Rate:	lb/hr	tons/day
3. Maximum Process or Throughput Rate:	2,075 ft^3/hr	
4. Maximum Production Rate:	2,075 ft^3/hr	
5. Requested Maximum Operating Schedule:		
	8 hours/day	5 days/week
	52 weeks/year	2,080 hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):		cylinders 1 & 2

C. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment _____ of _____

1. Segment Description (Process/Fuel Type) (limit to 500 characters): Wood Treating (emissions related to cubic foot of lumber treated)		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate: 2,075 ft^3/hr	5. Maximum Annual Rate: 12,982,320 ft^3	6. Estimated Annual Activity Factor: 0.46
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

Segment Description and Rate: Segment _____ of _____

1. Segment Description (Process/Fuel Type) (limit to 500 characters): N/A		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

D. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION

Potential Emissions

1. Pollutant Emitted: Methanol	2. Pollutant Regulatory Code: H115	
3. Primary Control Device Code:	4. Secondary Control Device Code:	5. Total Percent Efficiency of Control:
6. Potential Emissions: 0.06 lb/hour 3 E^{-5} tons/year		7. Synthetically Limited? [ ]
8. Emission Factor: Reference:		9. Emissions Method Code:
10. Calculation of Emissions (limit to 600 characters):		
11. Pollutant Potential Emissions Comment (limit to 200 characters):		

Allowable Emissions Allowable Emissions _____ of _____

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):	

Owner/Authorized Representative

1. Name and Title of Owner/Authorized Representative: Kevin Savoy / Vice President
2. Owner/Authorized Representative Mailing Address: Organization/Firm: Great Southern Wood Preserving, Inc. Street Address: Hwy 431 N City: Abbeville State: Alabama Zip Code: 36310
3. Owner/Authorized Representative Telephone Numbers: Telephone: (334) 585-2291 Fax: (334) 585-1691
4. Owner/Authorized Representative Statement: *I, the undersigned, am the owner or authorized representative* of the facility addressed in this application. 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 Date

* Attach letter of authorization if not currently on file.

Professional Engineer Certification

1. Professional Engineer Name: Stanley D. Price Registration Number: 62075
2. Professional Engineer Mailing Address: Organization/Firm: Barge Waggoner Sumner & Cannon, Inc. Street Address: 2047 West Main Street City: Dothan State: Alabama Zip Code: 36301
3. Professional Engineer Telephone Numbers: Telephone: (334) 793-6266 Fax: (334) 793-4459

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 an air construction permit for one or more proposed new or modified emissions units (check here [ ], 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 [ ], 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 (seal)

11/14/08
Date

Resubmittal of pages 3, 4, 12, 14 and 15 plus additional requested information

*Attach any exception to certification statement.

Emissions Unit Information Section 2 of 2 cylinder 3

Emissions Unit Control Equipment

1. Control Equipment/Method Description (limit to 200 characters per device or method):
2. Control Device or Method Code(s):

Emissions Unit Details

1. Package Unit:		
Manufacturer:	Model Number:	
2. Generator Nameplate Rating:	MW	
3. Incinerator Information:		
Dwell Temperature:		°F
Dwell Time:		seconds
Incinerator Afterburner Temperature:		°F

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:		mmBtu/hr
2. Maximum Incineration Rate:	lb/hr	tons/day
3. Maximum Process or Throughput Rate:	439 ft^3/hr	
4. Maximum Production Rate:	439 ft^3/hr	
5. Requested Maximum Operating Schedule:		
	8 hours/day	5 days/week
	52 weeks/year	2080 hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):	cylinder 3	

C. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment _____ of _____

1. Segment Description (Process/Fuel Type) (limit to 500 characters): Wood Treating (emissions related to cubic foot of lumber treated)		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate: 439 ft^3/hr	5. Maximum Annual Rate: 2,746,260 ft^3	6. Estimated Annual Activity Factor: 0.46
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

Segment Description and Rate: Segment _____ of _____

1. Segment Description (Process/Fuel Type) (limit to 500 characters):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

D. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION

Potential Emissions

1. Pollutant Emitted: Chromium Arsenic		2. Pollutant Regulatory Code: Chromium – H046 Arsenic – H015
3. Primary Control Device Code:	4. Secondary Control Device Code:	5. Total Percent Efficiency of Control:
6. Potential Emissions: Chromium 0.005 lb/hour 2.5 E^{-6} tons/year Arsenic 0.015 lb/hour 7.5 E^{-6} tons/year		7. Synthetically Limited? [ ]
8. Emission Factor: Reference:		9. Emissions Method Code:
10. Calculation of Emissions (limit to 600 characters):		
11. Pollutant Potential Emissions Comment (limit to 200 characters):		

Allowable Emissions Allowable Emissions _____ of _____

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):	

Management Practice Plan to
Minimize Air Emissions for

Great Southern Wood Preserving, Inc.

To comply with 40 CFR Part 63 Subpart QQQQQQ NESHAP for
Wood Preserving Area Sources

Our company uses the following operational procedures that minimize air emissions.

1. Our company uses the minimum amount of preservative allowed by the American Wood Preservers Association (AWPA) Treatment Standards to produce a quality treated wood product. Preservative usage is checked by an internal quality control program as well as a third party quality control program. The residues from treatment plus system wash water are collected for reuse in our treatment system.

2. The plant history required by the RCRA Subpart W regulations will provide a history of the preservatives used at our facility. The amounts of preservative used can be determined from our purchase records; from our Tier II reporting or from our process computer/treating records or our handwritten charge records and charts from recorders.

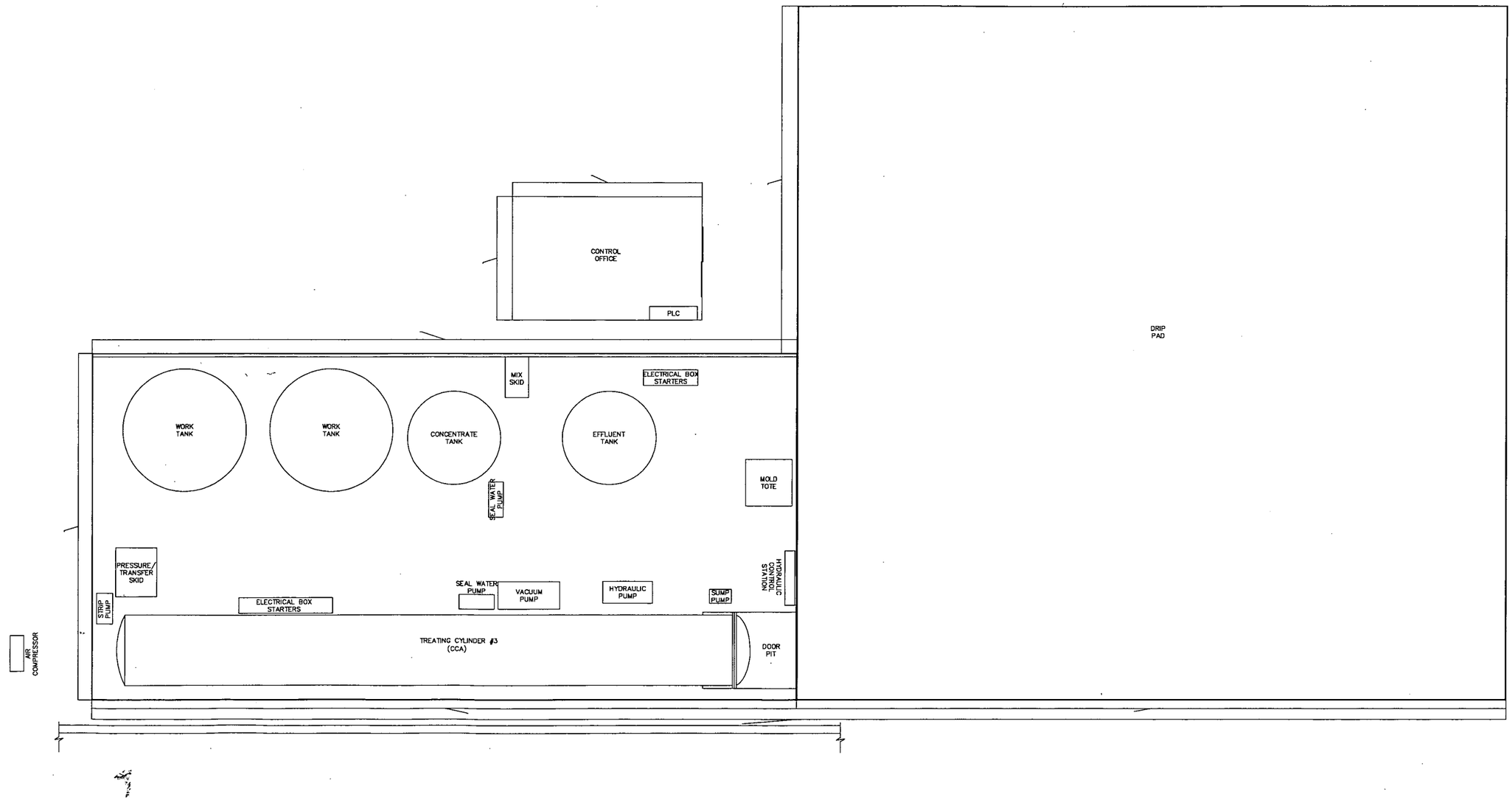
3. Treatment process records such as pressure readings for treatment cylinders can be found in the process computer or in our handwritten charge records and charts from recorders.

4. We do not employ thermal treating processes.

5. Our facility operates under the operational requirements of RCRA Subpart W which states that all treated wood products must be maintained on the drip pad until drippage has ceased. Our company maintains a treated wood drip pad residence time record as required by RCRA Subpart W.

6. It is our company policy to drain our cylinder to the fullest possible extent before we open the door.

7. Our plant is built so that a spill of treatment chemical to the environment outside the plant is very remote. Leaks from process equipment malfunctions inside the plant occur from time to time. On occasions when leaks occur, we clean up the area as soon as possible and repair the cause as soon as possible.



AS BUILT BY
GREAT SOUTHERN WOOD PRESERVING

REVISIONS			
NO.	DATE	BY	DESCRIPTION

Osmosė

DRAWN BY: MCP

APPROVED BY:

SCALE: NTS

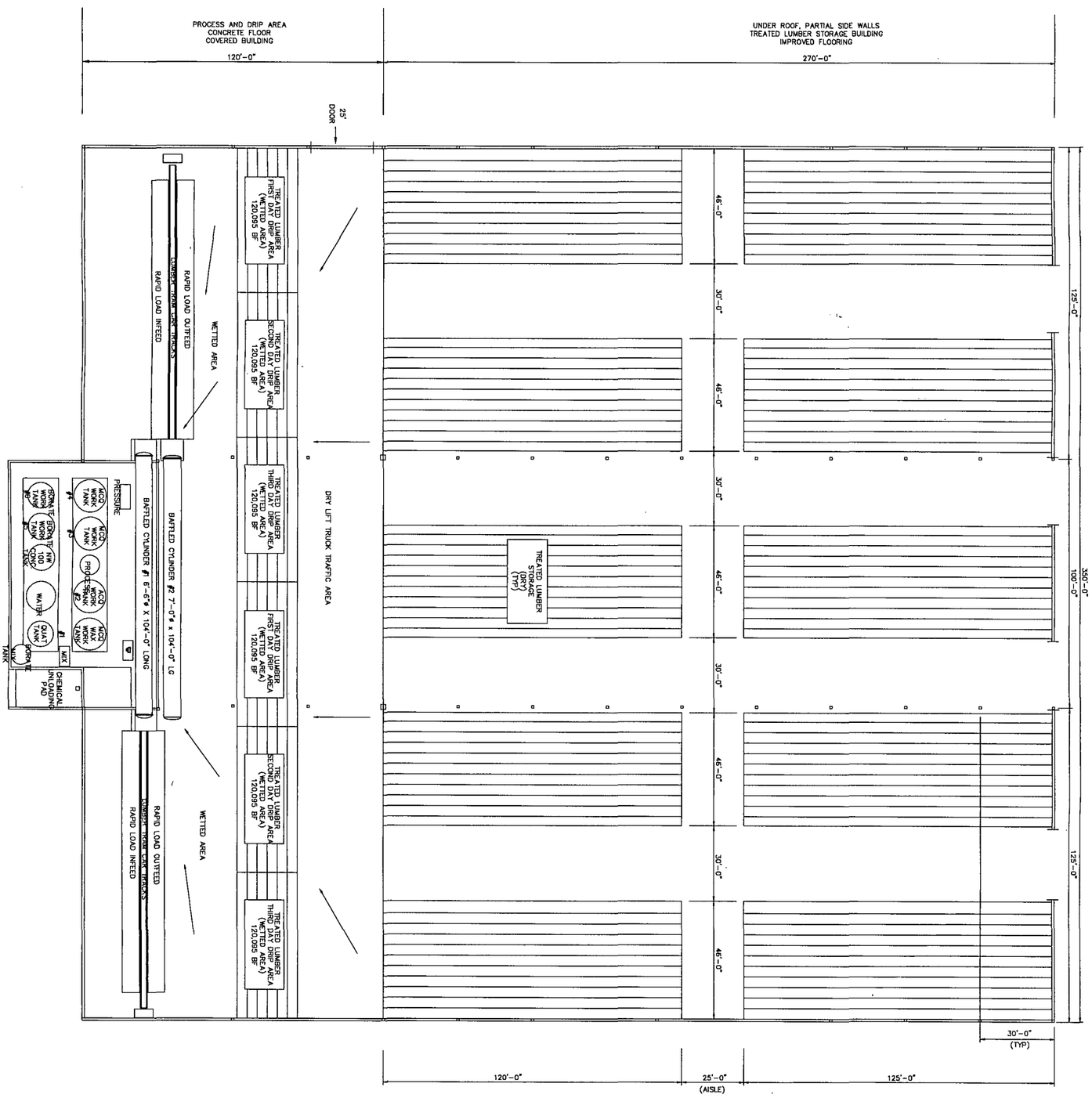
DATE: 9-14-04

P.O. Drawer O
Griffin, GA 30224
USA
770-228-8434

PAN PLANT

GREAT SOUTHERN WOOD PRESERVING
BUSHNELL, FL

DRAWING NUMBER 04-117-L1



Osmose®	P.O. Drawer O Griffin, GA 30224 USA Phone: 770-228-8434	PLANT LAYOUT	DATE: 10-31-08	DRAWN BY: RLS	NO.	DATE	BY	REVISION
		GREAT SOUTHERN WOOD PRESERVING, INC. BUSHNELL, FLORIDA	SCALE: 1"=20'	APPROVED BY:				
			DRAWING NO.: 08-101-L1					

2047 West Main Street, Suite 1

Dothan, Alabama 36301

334 793 6266

334 793 4459 Fax

www.bargewaggoner.com

BWSC Barge Waggoner Sumner & Cannon, Inc.

Application

August 15, 2008
File 33330-02

Dept. of Environmental Protection

AUG 18 2008

Southwest District

Ms. Cindy Zhang-Torres
Florida Department of Environmental Protection
Southwest District Office
Air Program Administrators
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926

RE: AIR PERMIT DETERMINATION

Dear Ms. Zhang-Torres:

In response to your inquiry about air emissions from our wood treating facility, I have enclosed a copy of the Non-Title V Source Air Permit Application. Also enclosed is the air emission information for cylinders 1, 2 & 3 at our Great Southern Wood Bushnell, Inc. wood treating plant. Please note that cylinders 1 & 2 use the Micro Pro 200C wood preservative system; cylinder 3 uses the Chromated Copper Arsenate (CCA) wood preserving system.

To assist in the estimation of air emissions from the Micro Pro system, our chemical technology vendor, Osmose, conducted air emissions testing on a full sized commercial production plant using Osmose NW 100C preservative. We are using the NW 100C air emissions data because the NW 100C and Micro Pro 200C are similar in production use with differences in the copper chemistry. NW 100C uses dissolved copper in an amine carrier and Micro Pro 200C uses a micronized suspension of copper in a water carrier. Micro Pro 200C has the following ingredients in concentrate form (see MSDS for greater detail): copper carbonate (57.6%), dispersant surfactants (7% - 10%), sodium nitrite (2%) and water (15% - 20%). The Micro Pro 200C chemistry has no Hazardous Air Pollutants (HAPS) or Volatile Organic Compounds (VOCs), therefore, unlike NW 100C, there are no air pollutants to test.

NW 100C and Micro Pro 200C preservative systems use Carbo-NT as a co-biocide for wood preservation. Carbo-NT is used at similar concentrations with similar production procedures in combination with NW 100C and Micro Pro 200C. Carbo-NT contains (see MSDS): quaternary compounds (50%), amines (1%), methanol (3%), propylene glycol (9%) and water (36%). Therefore, air testing monitored methanol, propylene glycol and VOCs at a commercial sized NW 100C plant. Because the Micro Pro 200C formulation does not contain any HAPs or VOCs, it is appropriate to use methanol, propylene glycol and VOC data generated in the enclosed NW 100C air emissions test. The information gathered in the enclosed testing can be scaled up or down to fit other commercial facilities. The system emission sources were analyzed to provide a batch-wise ("per charge") emission rate. The data calculations and details of the study conducted on a full size commercial plant are contained below in Appendix B.

Appendix C presents the calculations for a typical Osmose waterborne CCA treating plant air emission estimates.

The following is enclosed for your review:

- Appendix A Table 1 – Combined typical projected NatureWood (NW 100C system) air emissions (lbs/yr) for the Bushnell, FL treating cylinders 1 & 2.
- Appendix A Table 2 – Combined maximum projected NatureWood air emissions (lbs/yr) for the Bushnell, FL treating cylinders 1 & 2.
- Appendix A Table 3 – Estimated emissions for arsenic, copper and chromium for cylinder 3 based on estimates from a test cylinder.
- Appendix B Attachment 1 & 1A – Typical projected Micro Pro (Micro Pro 200C system) air emissions for the Bushnell, FL treating cylinders 1 & 2.
- Appendix B Attachment 1B & 1C – Maximum projected Micro Pro (Micro Pro 200C system) air emissions for the Bushnell, FL treating cylinders 1 & 2.
- Appendix B Attachment 2 – Air Emissions Report of Micro Pro 200C test program conducted at a commercial production facility test plant.
- Appendix B Attachment 3 – Micro Pro 200C wood preservative system description.
- Appendix B Attachment 4 – Treating Process Description
- Appendix B Attachment 5 – Process Flow Diagram
- Appendix B Attachment 6 – MSDS
    - Micro Pro 200C
    - Carbo-NT
    - Micro Shades Cedar Honey Brown
    - Micro Shades Green
    - Micro Shades PA
    - Micro Shades Red Brown
- Appendix C – Air emissions estimated for a typical Osmose waterborne CCA treating plant.
- Appendix C Attachment 1 – CCA treating process description.
- Appendix C Attachment 2 – MSDS
    - K-33 Wood Preservative
    - Cleanwood Mold Inhibitor

Please note that Appendix B attachments 1 and 1A represent actual emissions expected from our treating plant based on a 250-day treating schedule.

Appendix B attachment 1B and 1C is provided as information and represents an around-the-clock 365-day scenario.

Please note that the application fee of $750.00 will be sent to you by Great Southern Wood. Should you have any questions or need additional information, please call me at (334) 793-6266.

Best regards,

D. Keith Shippey

D. Keith Shippey
Environmental Planner

Copy: Mr. Jerry Wright, Great Southern Wood

Enclosures

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Department of Environmental Protection

Division of Air Resources Management

APPLICATION FOR AIR PERMIT - NON-TITLE V SOURCE

See Instructions for Form No. 62-210.900(3)

I. APPLICATION INFORMATION

Identification of Facility

1. Facility Owner/Company Name: Great Southern Wood Preserving, Inc.	
2. Site Name: Great Southern Wood Bushnell Plant	
3. Facility Identification Number: [X] Unknown	
4. Facility Location: Street Address or Other Locator: County Road 527-A City: Lake Panasoffkee County: Sumter Zip Code: 33538	
5. Relocatable Facility? [ ] Yes [X] No	6. Existing Permitted Facility? [ ] Yes [X] No

Application Contact

1. Name and Title of Application Contact: Jerry Wright / Project Manager
2. Application Contact Mailing Address: Organization/Firm: Great Southern Wood Preserving, Inc. Street Address: Hwy 431 N City: Abbeville State: Alabama Zip Code: 36310
3. Application Contact Telephone Numbers: Telephone: (334) 585-2291 Fax: (334) 585-1691

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	9-4-08
2. Permit Number:	1190048-001-AF

Purpose of Application

Air Operation Permit Application

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

[X] Initial non-Title V air operation permit for one or more existing, but previously unpermitted, emissions units.

[ ] Initial non-Title V air operation permit for one or more newly constructed or modified emissions units.

Current construction permit number:_____

[ ] Non-Title V air operation permit revision to address one or more newly constructed or modified emissions units.

Current construction permit number:_____

Operation permit number to be revised:_____

[ ] Initial non-Title V air operation permit under Rule 62-210.300(2)(b), F.A.C., for an existing facility seeking classification as a synthetic non-Title V source.

Current operation/construction permit number(s):

_____

[ ] Non-Title V air operation permit revision for a synthetic non-Title V source. Give reason for revision; e.g., to address one or more newly constructed or modified emissions units.

Operation permit number to be revised:_____

Reason for revision:_____

Air Construction Permit Application

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

[ ] 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

1. Name and Title of Owner/Authorized Representative:
   Jerry Wright / Project Manager

2. Owner/Authorized Representative Mailing Address:
   Organization/Firm: Great Southern Wood Preserving, Inc.
   Street Address: Hwy 431 N
   City: Abbeville State: Alabama Zip Code: 36310

3. Owner/Authorized Representative Telephone Numbers:
   Telephone: (334) 585-2291 Fax: (334) 585-1691

4. Owner/Authorized Representative Statement:

I, the undersigned, am the owner or authorized representative of the facility addressed in this application. 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 8-15-2008
Date

* Attach letter of authorization if not currently on file.

Professional Engineer Certification

1. Professional Engineer Name: Stan Price
   Registration Number: 62075

2. Professional Engineer Mailing Address:
   Organization/Firm: Barge Waggoner Sumner & Cannon, Inc.
   Street Address: 2047 West Main Street
   City: Dothan State: Alabama Zip Code: 36301

3. Professional Engineer Telephone Numbers:
   Telephone: (334) 793-6266 Fax: (334) 793-4459

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 an air construction permit for one or more proposed new or modified emissions units (check here [ ], 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 [ ], 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.

Stanley D. Price — Signature

08/15/08 — Date

(seal)

* Attach any exception to certification statement.

Scope of Application

Emissions Unit ID	Description of Emissions Unit	Permit Type	Processing Fee
1	Cylinders 1 & 2 that use the Micro Pro 200C wood preservative system	AF2C	$750.00
2	A cylinder that uses the CCA wood preservative system	AF2C	

Application Processing Fee

Check one: [X] Attached - Amount: $750 [ ] Not Applicable

Construction/Modification Information

1. Description of Proposed Project or Alterations: N/A
2. Projected or Actual Date of Commencement of Construction:
3. Projected Date of Completion of Construction:

Application Comment

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates: Zone: 17R East (km):392522.47 North (km): 3180873.5			
2. Facility Latitude/Longitude: Latitude (DD/MM/SS): 28/45/2 Longitude (DD/MM/SS): -82/6/2			
3. Governmental Facility Code:	4. Facility Status Code:	5. Facility Major Group SIC Code: 2491	6. Facility SIC(s): 2491
7. Facility Comment (limit to 500 characters):			

Facility Contact

1. Name and Title of Facility Contact: Mike French
2. Facility Contact Mailing Address: P.O. Box 759 Bushnell, FL 33513 Organization/Firm: Great Southern Wood Bushnell, Inc. Street Address: County Road 527-A City: Lake Panasoffkee State: Florida Zip Code: 33538
3. Facility Contact Telephone Numbers: Telephone: (352)793-9410 Fax: (352) 793-9475

Facility Regulatory Classifications

Check all that apply:

1. [ ] Small Business Stationary Source?	[X] Unknown
2. [ ] Synthetic Non-Title V Source?	
3. [ ] Synthetic Minor Source of Pollutants Other than HAPs?	
4. [ ] Synthetic Minor Source of HAPs?	
5. [ ] One or More Emissions Units Subject to NSPS?	
6. [ ] One or More Emission Units Subject to NESHAP Recordkeeping or Reporting?	
7. Facility Regulatory Classifications Comment (limit to 200 characters):	

Rule Applicability Analysis

B. FACILITY POLLUTANTS

List of Pollutants Emitted

1. Pollutant Emitted	2. Pollutant Classif.	3. Requested Emissions Cap lb/hour	tons/year	4. Basis for Emissions Cap	5. Pollutant Comment
H115	B				
H015	B				
H046	B				
VOC	B				

C. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements

1. Area Map Showing Facility Location: [X] Attached, Document ID:_____ [ ] Not Applicable [ ] Waiver Requested
2. Facility Plot Plan: [ ] Attached, Document ID:_____ [ ] Not Applicable [ ] Waiver Requested
3. Process Flow Diagram(s): [X] Attached, Document ID:_____ [ ] Not Applicable [ ] Waiver Requested
4. Precautions to Prevent Emissions of Unconfined Particulate Matter: [ ] Attached, Document ID:_____ [X] Not Applicable [ ] Waiver Requested
5. Supplemental Information for Construction Permit Application: [ ] Attached, Document ID:_____ [X] Not Applicable
6. Supplemental Requirements Comment:

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through G 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

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).

[ ] 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.

[X] 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. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
Cylinders 1 & 2 that use the Micro Pro 200C wood preservative system. This system uses a mixture of two Osmose manufactured chemicals, NW 200-C and Carbo-NT. Carbo-NT contains 3% methanol, which is a HAP as defined in Rule 62-210.200, F.A.C. This system also emits a small amount of VOCs. Process produces fugitive emissions only.

3. Emissions Unit Identification Number: ID:	[ ] No ID [X] ID Unknown

4. Emissions Unit Status Code: A	5. Initial Startup Date:	6. Emissions Unit Major Group SIC Code:24

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

Emissions Unit Information Section 1 **of** 2 Not Applicable

Emissions Unit Control Equipment

1. Control Equipment/Method Description (limit to 200 characters per device or method): N/A
2. Control Device or Method Code(s):

Emissions Unit Details

1. Package Unit: Manufacturer:	Model Number:	
2. Generator Nameplate Rating:	MW	
3. Incinerator Information: Dwell Temperature: Dwell Time: Incinerator Afterburner Temperature:		°F seconds °F

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:		mmBtu/hr
2. Maximum Incineration Rate:	lb/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate:		
5. Requested Maximum Operating Schedule: hours/day weeks/year		days/week hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):		

B. EMISSION POINT (STACK/VENT) INFORMATION

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram?	2. Emission Point Type Code: 4	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: F	6. Stack Height: feet	7. Exit Diameter: feet
8. Exit Temperature: °F	9. Actual Volumetric Flow Rate: acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates: Zone:	East (km):	North (km):
14. Emission Point Comment (limit to 200 characters):		

Emissions Unit Information Section 1 **of** 2 Not Applicable

C. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment _____ of _____

1. Segment Description (Process/Fuel Type) (limit to 500 characters): N/A		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

Segment Description and Rate: Segment _____ of _____

1. Segment Description (Process/Fuel Type) (limit to 500 characters): N/A		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

Emissions Unit Information Section 1 **of** 2 Not Applicable
Pollutant Detail Information Page 1 **of** 2

D. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION

Potential Emissions

1. Pollutant Emitted:		2. Pollutant Regulatory Code:
3. Primary Control Device Code:	4. Secondary Control Device Code:	5. Total Percent Efficiency of Control:
6. Potential Emissions: lb/hour tons/year		7. Synthetically Limited? [ ]
8. Emission Factor: Reference:		9. Emissions Method Code:
10. Calculation of Emissions (limit to 600 characters):		
11. Pollutant Potential Emissions Comment (limit to 200 characters):		

Allowable Emissions Allowable Emissions _____ of _____

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):	

Emissions Unit Information Section 1 **of** 2 Not Applicable

Pollutant Detail Information Page 1 **of** 2

E. VISIBLE EMISSIONS INFORMATION
(Only Emissions Units Subject to a VE Limitation)

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype: N/A	2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment (limit to 200 characters):	

F. CONTINUOUS MONITOR INFORMATION
(Only Emissions Units Subject to Continuous Monitoring)

Continuous Monitoring System: Continuous Monitor _____ of _____

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):	

Emissions Unit Information Section 1 **of** 2 Not Applicable

Pollutant Detail Information Page 1 **of** 2

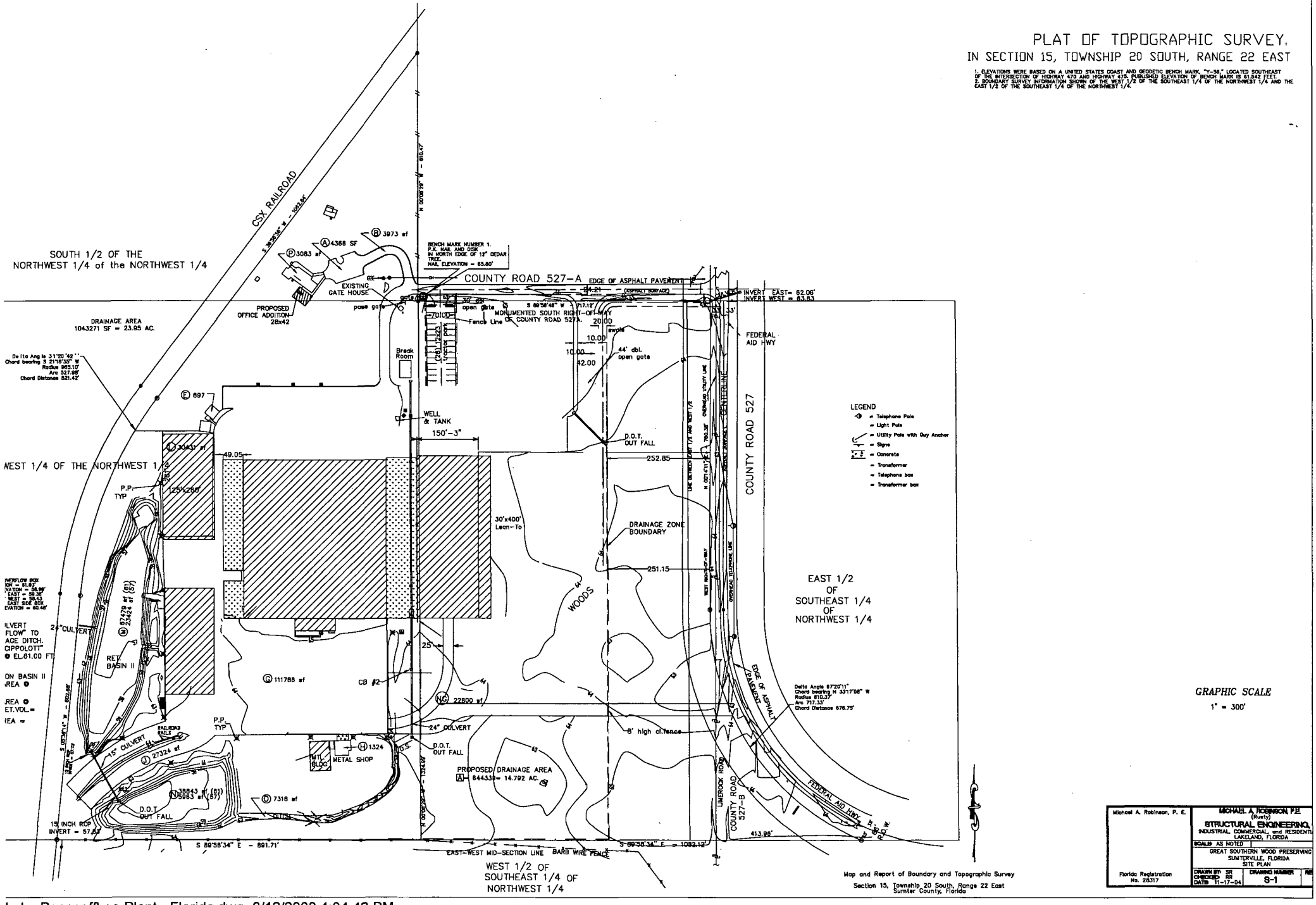
G. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

Supplemental Requirements

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

PLAT OF TOPOGRAPHIC SURVEY.
IN SECTION 15, TOWNSHIP 20 SOUTH, RANGE 22 EAST

1. ELEVATIONS WERE BASED ON A UNITED STATES COAST AND GEODETIC BENCH MARK, "Y-36," LOCATED SOUTHEAST OF THE INTERSECTION OF HIGHWAY 470 AND HIGHWAY 475. PUBLISHED ELEVATION OF BENCH MARK IS 61.842 FEET.
2. BOUNDARY SURVEY INFORMATION SHOWN OF THE WEST 1/2 OF THE SOUTHEAST 1/4 OF THE NORTHWEST 1/4 AND THE EAST 1/2 OF THE SOUTHEAST 1/4 OF THE NORTHWEST 1/4.



GRAPHIC SCALE
1" = 300'

Map and Report of Boundary and Topographic Survey
Section 15, Township 20 South, Range 22 East
Sumter County, Florida

Michael A. Robinson, P. E.
Florida Registration No. 28317

MICHAEL A. ROBINSON P.E. (Rusty)
STRUCTURAL ENGINEERING
INDUSTRIAL, COMMERCIAL, and RESIDENTIAL
LAKELAND, FLORIDA

SCALE: AS NOTED
GREAT SOUTHERN WOOD PRESERVING
SUMTERVILLE, FLORIDA
SITE PLAN

DRAWN BY: SR
CHECKED: RR
DATE: 11-17-04
DRAWING NUMBER: S-1

Lake Panasoffkee Plant - Florida.dwg 8/12/2008 4:04:42 PM

Emissions Unit Information Section 2 **of** 2

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through G 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

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).

[ ] 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.

[X] 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. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
A cylinder that uses the chromated copper arsenate (CCA) wood preservative system. The chrome and arsenic compounds are HAPs as defined in Rule 62-210.200, F.A.C. No VOCs are emitted in this process.

3. Emissions Unit Identification Number: ID:	[ ] No ID [X] ID Unknown

4. Emissions Unit Status Code:A	5. Initial Startup Date:	6. Emissions Unit Major Group SIC Code:24

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

Emissions Unit Information Section 2 **of** 2 Not Applicable

Emissions Unit Control Equipment

1. Control Equipment/Method Description (limit to 200 characters per device or method):
2. Control Device or Method Code(s):

Emissions Unit Details

1. Package Unit:		
Manufacturer:	Model Number:	
2. Generator Nameplate Rating:	MW	
3. Incinerator Information:		
Dwell Temperature:		°F
Dwell Time:		seconds
Incinerator Afterburner Temperature:		°F

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:		mmBtu/hr
2. Maximum Incineration Rate:	lb/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate:		
5. Requested Maximum Operating Schedule:		
	hours/day	days/week
	weeks/year	hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):		

Emissions Unit Information Section 2 **of** 2

B. EMISSION POINT (STACK/VENT) INFORMATION

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram?	2. Emission Point Type Code: 4	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: F	6. Stack Height: feet	7. Exit Diameter: feet
8. Exit Temperature: °F	9. Actual Volumetric Flow Rate: acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates: Zone: East (km): North (km):		
14. Emission Point Comment (limit to 200 characters):		

Emissions Unit Information Section 2 **of** 2 Not Applicable

C. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment _____ of _____

1. Segment Description (Process/Fuel Type) (limit to 500 characters):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

Segment Description and Rate: Segment _____ of _____

1. Segment Description (Process/Fuel Type) (limit to 500 characters):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

Emissions Unit Information Section 2 **of** 2 Not Applicable

Pollutant Detail Information Page 2 **of** 2

D. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION

Potential Emissions

1. Pollutant Emitted:	2. Pollutant Regulatory Code:	
3. Primary Control Device Code:	4. Secondary Control Device Code:	5. Total Percent Efficiency of Control:
6. Potential Emissions: lb/hour tons/year		7. Synthetically Limited? [ ]
8. Emission Factor: Reference:		9. Emissions Method Code:
10. Calculation of Emissions (limit to 600 characters):		
11. Pollutant Potential Emissions Comment (limit to 200 characters):		

Allowable Emissions Allowable Emissions _____ of _____

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):	

Emissions Unit Information Section 2 **of** 2 Not Applicable

Pollutant Detail Information Page 2 **of** 2

E. VISIBLE EMISSIONS INFORMATION
(Only Emissions Units Subject to a VE Limitation)

Visible Emissions Limitation: Visible Emissions Limitation _____ of _____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment (limit to 200 characters):	

F. CONTINUOUS MONITOR INFORMATION
(Only Emissions Units Subject to Continuous Monitoring)

Continuous Monitoring System: Continuous Monitor _____ of _____

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):	

Emissions Unit Information Section 2 **of** 2 Not Applicable

Pollutant Detail Information Page 2 **of** 2

G. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

Supplemental Requirements

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

APPENDIX A

TABLE 1

Combined Actual Projected NW® Air Emissions (lbs/yr) for Great Southern Wood of Florida, Bushnell, Florida Treating Cylinders 1 and 2

Cylinder	Charges Per Year	PG	MET	VOC	MEA
1	4000	2.05E+01	2.60E+01	5.71E+01	1.06E+01
2	4000	2.05E+01	2.60E+01	5.71E+01	1.06E+01
TOTAL LBS./YR.	---	41.0	52.0	114.2	21.2

TABLE 2

Combined Maximum Projected NW® Air Emissions (lbs/yr) for Great Southern Wood of Florida, Bushnell, Florida Treating Cylinders 1 and 2

Cylinder	Charges Per Year	PG	MET	VOC	MEA
1	8760	4.49E+01	5.69E+01	1.25E+02	2.32E+01
2	8760	4.49E+01	5.69E+01	1.25E+02	2.32E+01
TOTAL LBS./YR.	---	89.8	113.8	250.0	46.4

TABLE 3

Estimated emissions for Arsenic, Copper and Chromium from Great Southern Wood of Florida based on estimates from a test cylinder.

GREAT SOUTHERN WOOD OF FLORIDA VS. TEST CYLINDER DATA									
	Dimensions diameter x length	Volume (ft^3)	% Differ (Vol)	Total Actual Emissions lbs./year			Estimated Emissions lbs./year		
				As	Cu	Cr	As	Cu	Cr
Test cylinder	6'6" x 82'	2720		0.027	0.069	0.001			
Great Southern Wood of Florida cylinder	6'0" x 52'	1470	-46%				0.015	0.037	0.0005
						Total for Source	0.015	0.037	0.0005

APPENDIX B

AIR EMISSIONS INFORMATION FOR MICROPRO™ 200C TREATING SYSTEM

APPENDIX B - Attachment #1
Osmose Typical Micropro 200C Treating Pant

Projected Air Emissions for:

Great Southern of Florida

Cylinder 1

Background

Test Production Plant

Cylinder Size: 6.5 x 82 = 16844 Gallons

Great Southern of Florida

Cylinder Size: 7 x 102 = 22,617 Gallons

Assumptions:

1) Worst case condition - Assume larger treating cylinder system to have an emisison rate proportional to the increased size of the treating cylinder and increased production.
2) Actual emissions are expected to be much less than the worst case scenario.
3) Operate 2 shifts/day x 8 hours/shift / 1 hours/charge = 16 charges/day with 250 days/year = 4,000 charges/year.
4) Assume 123 mmbf production at **Great Southern of Florida**

22,617 gallon production cylinder / 16,870 gallon test cylinder = 1.3427153 scale factor =
Great Southern of Florida cylinder is 1.342715265 times the test production cylinder.

Scale Up:

VOC = < 1.06E-02 lbs. VOC/Charge test plant x 1.34271526 (Scale up factor) =
< 1.43E-02 lbs. VOC/Charge for the 7' x 102' (cylinder size).

< 1.43E-02 lbs. VOC/Chg x 4,000 chgs/year =
< 5.71E+01 lbs. VOC emitted/year

MET = < 4.84E-03 lbs. MET/Charge test plant x 1.34271526 (Scale up factor) =
< 6.50E-03 lbs. MET/Charge for the 7' x 102' (cylinder size).

< 6.50E-03 lbs. MET/Chg x 4,000 chgs/year =
< 2.60E+01 lbs. MET emitted/year

PG = < 3.82E-03 lbs. PG/Charge test plant x 1.34271526 (Scale up factor) =
< 5.12E-03 lbs. PG/Charge for the 7' x 102' (cylinder size).

< 5.12E-03 lbs. PG/Chg x 4,000 chgs/year =
< 2.05E+01 lbs. PG emitted/year

MEA = < 1.97E-03 lbs. MEA/Charge test plant x 1.34271526 (Scale up factor) =
< 2.65E-03 lbs. MEA/Charge for the 7' x 102' (cylinder size).

< 2.65E-03 lbs. MEA/Chg x 4,000 chgs/year =
< 1.06E+01 lbs. MEA emitted/year

APPENDIX B –Attachment #1A
Osmose Typical Micropro 200C Treating Pant

Projected Air Emissions for:

Great Southern of Florida

Cylinder 2

Background

Test Production Plant
Cylinder Size: 6.5 x 82 = 16844 Gallons

Great Southern of Florida
Cylinder Size: 7 x 102 = 22,617 Gallons

Assumptions:

1) Worst case condition - Assume larger treating cylinder system to have an emisison rate proportional to the increased size of the treating cylinder and increased production.
2) Actual emissions are expected to be much less than the worst case scenario.
3) Operate 2 shifts/day x 8 hours/shift / 1 hours/charge = 16 charges/day with 250 days/year = 4,000 charges/year.
4) Assume 123 mmbf production at **Great Southern of Florida**

22,617 gallon production cylinder / 16,870 gallon test cylinder = 1.3427153 scale factor =
Great Southern of Florida cylinder is 1.342715265 times the test production cylinder.

Scale Up:

VOC =	<	1.06E-02	lbs. VOC/Charge test plant x	1.34271526	(Scale up factor) =
	<	1.43E-02	lbs. VOC/Charge for the	7' x 102'	(cylinder size).
	<	1.43E-02	lbs. VOC/Chg x	4,000	chgs/year =
	<	5.71E+01	lbs. VOC emitted/year		
MET =	<	4.84E-03	lbs. MET/Charge test plant x	1.34271526	(Scale up factor) =
	<	6.50E-03	lbs. MET/Charge for the	7' x 102'	(cylinder size).
	<	6.50E-03	lbs. MET/Chg x	4,000	chgs/year =
	<	2.60E+01	lbs. MET emitted/year		
PG =	<	3.82E-03	lbs. PG/Charge test plant x	1.34271526	(Scale up factor) =
	<	5.12E-03	lbs. PG/Charge for the	7' x 102'	(cylinder size).
	<	5.12E-03	lbs. PG/Chg x	4,000	chgs/year =
	<	2.05E+01	lbs. PG emitted/year		
MEA =	<	1.97E-03	lbs. MEA/Charge test plant x	1.34271526	(Scale up factor) =
	<	2.65E-03	lbs. MEA/Charge for the	7' x 102'	(cylinder size).
	<	2.65E-03	lbs. MEA/Chg x	4,000	chgs/year =
	<	1.06E+01	lbs. MEA emitted/year		

APPENDIX B - Attachment #1B
Osmose Typical Micropro 200C Treating Pant

Projected Air Emissions for:

Great Southern of Florida

Cylinder 1

Background

Test Production Plant

Cylinder Size: 6.5 x 82 = 16844 Gallons

Great Southern of Florida

Cylinder Size: 7 x 102 = 22,617 Gallons

Assumptions:

1) Worst case condition - Assume larger treating cylinder system to have an emisison rate proportional to the increased size of the treating cylinder and increased production.
2) Actual emissions are expected to be much less than the worst case scenario.
3) Operate 3 shifts/day x 8 hours/shift / 1 hours/charge = 24 charges/day with 365 days/year = 8,760 charges/year.
4) Assume 270 mmbf production at **Great Southern of Florida**

22,617 gallon production cylinder / 16,870 gallon test cylinder = 1.3427153 scale factor = **Great Southern of Florida** cylinder is 1.342715265 times the test production cylinder.

Scale Up:

VOC =	<	1.06E-02	lbs. VOC/Charge test plant x	1.34271526	(Scale up factor) =
	<	1.43E-02	lbs. VOC/Charge for the	7' x 102'	(cylinder size).
	<	1.43E-02	lbs. VOC/Chg x	8,760	chgs/year =
	<	1.25E+02	lbs. VOC emitted/year		
MET =	<	4.84E-03	lbs. MET/Charge test plant x	1.34271526	(Scale up factor) =
	<	6.50E-03	lbs. MET/Charge for the	7' x 102'	(cylinder size).
	<	6.50E-03	lbs. MET/Chg x	8,760	chgs/year =
	<	5.69E+01	lbs. MET emitted/year		
PG =	<	3.82E-03	lbs. PG/Charge test plant x	1.34271526	(Scale up factor) =
	<	5.12E-03	lbs. PG/Charge for the	7' x 102'	(cylinder size).
	<	5.12E-03	lbs. PG/Chg x	8,760	chgs/year =
	<	4.49E+01	lbs. PG emitted/year		
MEA =	<	1.97E-03	lbs. MEA/Charge test plant x	1.34271526	(Scale up factor) =
	<	2.65E-03	lbs. MEA/Charge for the	7' x 102'	(cylinder size).
	<	2.65E-03	lbs. MEA/Chg x	8,760	chgs/year =
	<	2.32E+01	lbs. MEA emitted/year		

APPENDIX B - Attachment #1C
Osmose Typical Micropro 200C Treating Pant

Projected Air Emissions for:

Great Southern of Florida

Cylinder 2

Background

Test Production Plant

Cylinder Size: 6.5 x 82 = 16844 Gallons

Great Southern of Florida

Cylinder Size: 7 x 102 = 22,617 Gallons

Assumptions:

1) Worst case condition - Assume larger treating cylinder system to have an emisison rate proportional to the increased size of the treating cylinder and increased production.
2) Actual emissions are expected to be much less than the worst case scenario.
3) Operate 3 shifts/day x 8 hours/shift / 1 hours/charge = 24 charges/day with 365 days/year = 8,760 charges/year.
4) Assume 270 mmbf production at **Great Southern of Florida**

22,617 gallon production cylinder / 16,870 gallon test cylinder = 1.3427153 scale factor =
(**at Southern of Florida** cylinder is 1.342715265 times the test production cylinder.

Scale Up:

VOC = < 1.06E-02 lbs. VOC/Charge test plant x 1.34271526 (Scale up factor) =
< 1.43E-02 lbs. VOC/Charge for the 7' x 102' (cylinder size).

< 1.43E-02 lbs. VOC/Chg x 8,760 chgs/year =
< 1.25E+02 lbs. VOC emitted/year

MET = < 4.84E-03 lbs. MET/Charge test plant x 1.34271526 (Scale up factor) =
< 6.50E-03 lbs. MET/Charge for the 7' x 102' (cylinder size).

< 6.50E-03 lbs. MET/Chg x 8,760 chgs/year =
< 5.69E+01 lbs. MET emitted/year

PG = < 3.82E-03 lbs. PG/Charge test plant x 1.34271526 (Scale up factor) =
< 5.12E-03 lbs. PG/Charge for the 7' x 102' (cylinder size).

< 5.12E-03 lbs. PG/Chg x 8,760 chgs/year =
< 4.49E+01 lbs. PG emitted/year

MEA = < 1.97E-03 lbs. MEA/Charge test plant x 1.34271526 (Scale up factor) =
< 2.65E-03 lbs. MEA/Charge for the 7' x 102' (cylinder size).

< 2.65E-03 lbs. MEA/Chg x 8,760 chgs/year =
< 2.32E+01 lbs. MEA emitted/year

APPENDIX B - Attachment #2

Example Typical Osmose Waterborne MicroPro™ 200C Treating Plant Air Emission Test Program

I. Background Data

We are enclosing typical air emission estimate calculations for the MicroPro™ 200C preservative (a waterborne copper carbonate formulation).

Air emissions from MicroPro™ 200C wood preserving plants are negligible. As described, to assist in the estimation of air emissions from the MicroPro™ system, Osmose conducted air emissions testing on a full sized commercial production plant using Osmose NW100C preservative. We are using the NW100C air emissions data because the NW100C and MicroPro™ 200C are similar in production use with differences in the copper chemistry. NW100C uses dissolved copper in an amine carrier and MicroPro™ 200C uses a micronized suspension of copper in a water carrier. MicroPro™ 200C has the following ingredients (see MSDS); Copper Carbonate (57.6%), Dispersant (surfactants) (7-10%); Sodium Nitrate (2.0%) and Water (15-20%). The MicroPro™ 200C chemistry has no Hazardous Air Pollutants (HAPS) or VOCS, therefore, unlike NW100C there are no air pollutants to test. NW100C and MicroPro™ 200C preservative systems use Carbo-NT as a Co-Biocide. Carbo-NT is used at similar concentrations with similar production procedures in combination with NW100C and MicroPro™ 200C. Carbo-NT contains (see MSDS); Quatenary Compounds (50%); Amines (1%); Methanol (3%); Propylene Glycol (9%) and Water (36%). Therefore, we tested for Methanol, Propylene Glycol and VOC's when we conducted air monitoring at our commercial sized NW100C wood treatment plant. We feel that because the MicroPro™ 200C formulation has no HAPS or VOC's we can use the Methanol, Polypropylene and VOC data generated in the enclosed NW100C air emissions test. The information gathered through our testing can be scaled up or down to fit other commercial size facilities. The system emission sources were analyzed to provide a "per charge" emission rate. The data calculations and details of the study conducted on a full size commercial plant are contained below in Attachment #2.

II. Plant Data

A. Assume typical Osmose single treating cylinder plant.

B. Preservative solution moved by pump.

C. Cylinder Volume = 16,870 gallons.

D. Twenty-six charges were produced over a six day period.

APPENDIX B - Attachment #2 (Continued)

E. Process sources were monitored throughout twenty-six entire treating cycles.

F. Effluent tank receives emissions from cylinder and vacuum pump.

G. Effluent water has potential for containing residual chemical.

H. Monitoring completed over a 3 ½ day (180 minute) time period, except for freshly treated lumber which was a 102 hour, 7 minute (6130 minutes) time period.

I. Sources include work tank vent, NW100C concentrate tank vent, quat concentrate tank vent, effluent tank vent, treating cylinder, freshly treated wood stack and untreated wood stack, treating building, outside the treating area, and personal task duration sample (treater).

J. System operated at ambient temperature.

APPENDIX B - Attachment #2 (continued)

Emission Sampling Program for Osmose, Inc.

Test Program Conducted at Commercial Production Facility Test Plant

June 2006

Prepared For:

Osmose, Inc.
Griffin, GA

Submitted By:

Earth Tech, Inc.
196 Baker Avenue
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1. EXECUTIVE SUMMARY

An emissions sampling program was conducted at a commercial production test facility to establish emission factors for the pressure wood treating operations at the facility. Specifically, emission rates for methanol, mono-ethanol amine (MEA), propylene glycol, and copper were to be established while utilizing the Nature Wood "NW" wood preserving mixture manufactured by Osmose, Inc. The "NW" is a mixture of two Osmose manufactured chemicals, NW 100-C and Carbo NT, which are mixed with water in various concentrations.

Emissions sampling was performed at seven locations in the process to quantify the mass emissions of methanol, MEA, propylene glycol, and copper. The seven sampling locations were as follows:

(1) The vacuum pump exhaust;

(2) The vapor space within the treatment cylinder;

(3) A bundle (half pack) of the treated wood within an exhausted enclosure;

(4) A bundle of the untreated wood within an exhausted enclosure;

(5) The NW 100-C storage tank vapor space;

(6) The Carbo NT storage tank vapor space; and

(7) The NW working tank vapor space.

Sampling at all locations, with the exception of the vapor space within the treatment cylinder, were sampled in accordance with National Institute of Occupational Safety & Health (NIOSH) sampling methods. Whole air samples were taken for gas chromatographic (GC) analysis of the vapor space within the treatment cylinder for methanol, MEA, and propylene glycol. During the emissions sampling, production records were taken in order to correlate the emissions to production rates such that emission factors could be developed for each pollutant in terms of pounds emitted per production charge (lbs/charge). Production data can be found in Appendix B.

Provided in Table 1-1 is a summary of the results of the emissions sampling program. A detailed discussion on how these results were obtained is provided in Section 2. Appendix E contains a short summary of sampling information, plant statistics, and assumptions. Appendix E also contains examples of the calculations contained in the report.

Table 1-1: Summary of Results (lbs/charge)

Sampling Location	Methanol	MEA	Propylene Glycol	VOC	Copper
Treated Wood Bundle	0.00325 lbs/ charge (5 days storage)	0.00144 lbs/ charge(5 days storage)	0.00344 lbs/ charge (5 days storage)	0.00813 lbs/ charge (5 days storage)	0
Vacuum Pump Exhaust	0.000098 lbs/ charge	0.000111 lbs/ charge	0.0000467 lbs/ charge	0.000256 lbs/ charge	0
Treatment Cylinder Vapor Space	0.000325 lbs/ charge	0.000325 lbs/ charge	0.000325 lbs/ charge	0.000975 lbs/ charge	0
NW 100-C Storage Tank	NA	6.90×10^{-5} lbs/charge	NA	6.90×10^{-5} lbs/charge	0
Carbo NT Storage Tank	8.58×10^{-4} lbs/charge	NA	3.99×10^{-6} lbs/charge	8.62×10^{-4} lbs/charge	0
Working Tank	3.125×10^{-4} lbs/charge	2.5×10^{-5} lbs/charge	0	3.38×10^{-4} lbs/charge	0
Totals	**0.004844**	**0.00197**	**0.00382**	**0.0106**	**0**

2. EMISSIONS SAMPLING AND RESULTS

Following is a discussion of the sampling that was conducted for each pollutant at each of the seven sampling locations. The specific procedures used to quantify emissions of each pollutant in terms of pounds emitted per production charge (lbs/charge) are detailed in this section.

2.1 Sampling Methods

The NIOSH sampling methods used for the sampling program are as follows:

Methanol:	NIOSH Method 2000
MEA:	NIOSH Method 2007
Propylene Glycol:	NIOSH Method 5523
Copper:	NIOSH Method 7029

Sampling of the treatment cylinder vapor space for methanol, MEA, and propylene glycol was performed by obtaining "whole air" samples of the vapor space in Tedlar bags to be analyzed by gas chromatography (GC). These samples were collected in general accordance with 40 CFR 60, Appendix A, Method 18 8.2.1.1.2. Copper samples of the treatment cylinder vapor space were obtained in accordance with NIOSH Method 7029.

All sampling was conducted for each pollutant at each location for 1 hour with the exception of the treated and untreated wood bundles and the treatment cylinder vapor space. For the treated and untreated wood bundles, samples were collected over the course of the entire week. In order to ensure that no breakthrough of the sample media occurred, redundant full day, 24-hour, samples were collected for methanol, MEA, and propylene glycol within the wood bundle enclosures. Grab samples of the treatment cylinder vapor space were collected in Tedlar bags. With the exception of the grab samples of the treatment cylinder vapor space, three 1-hour samples were taken for each target pollutant at each sampling location in accordance with the applicable sampling methods listed above.

Section 2.3 provides a detailed discussion of the sampling locations, procedures, and results for each pollutant and process location.

2.2 Handling of Below Detection Limit (BDL) Results

Sampling was generally conducted in strict accordance with the procedures specified in each NIOSH Sampling Method as identified previously. For the sampling of the treated and untreated wood bundles, sampling was conducted significantly longer than specified in the NIOSH method since the pollutant concentrations for these two locations were expected to be below the target concentration range for the method. Extending the sampling time and volumes increased the likelihood that quantifiable concentrations would be measured or that the detection limit would be lowered sufficiently to not have a significant impact on the overall results.

Based upon review of the minimum detection limits specified in each NIOSH method, sampling times and volumes were established prior to conducting the test program. These sampling times and volumes were developed so that any results reported as below the detection limit (BDL) would be sufficiently low enough such that the results would not significantly impact the overall emission factors.

The laboratory results for many of the samples are in fact reported as BDL. These results indicate that the level of emissions for these pollutants at the specified sampling locations is minimal. However, in order to quantify emissions for these BDL samples, a review of Environmental Protection Agency (EPA) literature was conducted. Based upon this review, it was determined that for emissions sampling programs the EPA generally handles BDL values as zero. Handling all BDL values as zero may not provide a full accounting of emissions. Alternatively, these concentrations were handled in accordance with EPA's guidance for conducting Risk Assessment evaluations. In accordance with EPA Region 3's *Guidance on Handling Chemical Concentration Data Near the Detection Limit in Risk Assessments* and EPA's *Guidance for Data Useability in Risk Assessment (DURA)*, BDL values can be handled in one of three ways:

1. BDL values are assigned the value of the detection limit (DL), which is the largest concentration that could be present but not detected.
2. BDL values are reported as zero, in which all undetected chemicals are assumed absent.
3. BDL values are reported as one-half of the DL, which assumes that on the average all values between the DL and zero could be present and that the median point between zero and the DL represents the average actual concentration

In accordance with the EPA guidance, reporting BDL values at the DL produces a mean concentration that is biased high and is not consistent with EPA's policy of using best science in risk assessments. Reporting the BDL values as zero should only be used for chemicals for which no risk is likely to be present. Reporting the BDL values as one-half of the DL should be used for chemicals for which some risk may be present below the DL. When determining which of these three procedures to apply, EPA uses a decision tree in which the first question is "Do the chemical's physical-chemical characteristics (e.g., water solubility, vapor pressure, Henry's law constant, etc.), permit it to be reasonably present in the sample?" If the answer to this question is yes, then EPA recommends reporting BDL values as one-half of the DL.

Based upon this guidance, it was determined that emissions of methanol, MEA, and propylene glycol could be reasonably assumed to be present in the sample. Therefore, BDL concentrations for these three chemicals are reported as one-half of the DL. For copper, it is unlikely that it would be present given its physical-chemical characteristics; therefore, BDL concentrations of copper are reported as zero.

2.3 Procedures and Results

2.3.1 Treated and Untreated Wood

To estimate emissions of methanol, MEA, propylene glycol, and copper from the treated wood, a bundle of the treated wood was placed within an enclosure (a bundle of wood is defined as 117.4 ft^3 or 2 half packs). The enclosure was constructed of a wood frame covered in polyethylene sheeting. The seams of the

polyethylene sheeting were sealed with duct tape to create the enclosure. A small fan rated at 50 cubic feet per minute (CFM) was installed such that the enclosure was continuously exhausted.

Observations of the enclosure when the exhaust fan was on showed the polyethylene sheeting was bowed inwards indicating that the enclosure was operating under negative pressure. Since the enclosure was operating under a constant negative pressure, it met the criteria of a Total Enclosure as defined under EPA Method 204. As a Total Enclosure, the EPA assumes that all (100%) of the emissions from the enclosure are captured. Therefore, it can be assumed that the measured concentrations within the enclosure represent 100 percent of the emissions from the wood bundle. This procedure was repeated for a bundle of untreated wood such that the results could be compared and any bias from the untreated wood could be used to adjust the emission factors from the treated wood. Sampling for all target pollutants was conducted by placing the samplers within the enclosure.

Provided in Tables 2-1 and 2-2 is a summary of the sampling completed for the treated and untreated wood bundles, respectively. Mass emissions were estimated from the measured airborne concentrations and the rated flow rate of the exhaust fan to derive an emission factor per bundle of treated wood. Sample calculations for Tables 2-1 and 2-2 are provided in Appendix E.

As shown in Tables 2-1 and 2-2, the measured emissions from the treated bundle are minimal. In fact, the measured emissions from the untreated bundle are comparable to the treated bundle for all four targeted pollutants. Since no breakthrough of the sample media was observed for the week long samples, the long term measured concentrations for these samples provide the best representation of the emissions from the treated and untreated bundles. It was assumed that the emissions from the treated wood would come from the treated wood within the first five days.

Without taking into account any contribution from the untreated lumber, the resulting emissions in terms of pounds per treated bundle (lbs/bundle) for each pollutant are as follows:

- Methanol: 0.000325 lbs/bundle
- MEA: 0.000144 lbs/bundle
- Propylene Glycol: 0.000344 lbs/bundle
- Copper: 0

The treated bundle was treated with the most concentrated solution of NW, the 0.40 target retention. Even with this treatment, the measured emissions are minimal. Based upon an average of 10 bundles of 8 ft. material within a charge, the estimated emissions of methanol, MEA, and propylene glycol per charge are as follows:

- Methanol: 0.00325 lbs/charge
- MEA: 0.00144 lbs/charge
- Propylene Glycol: 0.00344 lbs/charge

APPENDIX B – Attachment #2 (continued)

Sample calculation is provided in Appendix E.

Table 2-1: Summary of Results – Treated Wood Enclosure

Pollutant	Sample #	Start Date & Time	Stop Date & Time	Sample Duration (mins)	Sample Volume (Liters)	Pollutant Concentration (mg/m^3)	Emissions (lbs/bundle)	Emissions (lbs/ft^3 wood)
Methanol	Long Term	11/7/05 @ 14:00	11/11/05 @ 20:10	6,130	646.7	0.017	3.25×10^{-04}	2.77×10^{-6}
	Day 1	11/7/05 @ 14:00	11/8/05 @ 14:45	1,485	158.4	<0.063	1.46×10^{-04}	1.24×10^{-6}
	Day 2	11/8/05 @ 15:44	11/9/05 @ 15:00	1,396	143.8	0.083	3.62×10^{-04}	3.08×10^{-6}
	Day 3	11/9/05 @ 15:09	11/10/05 @ 15:00	1,431	145.2	0.069	3.08×10^{-04}	2.62×10^{-6}
	Day 4	11/10/05 @ 15:10	11/11/05 @ 15:10	1,440	145.3	0.089	4.00×10^{-04}	3.41×10^{-6}
MEA	Long Term	11/7/05 @ 14:00	11/11/05 @ 20:10	6,130	666.9	<0.015	1.44×10^{-04}	1.23×10^{-6}
	Day 1	11/7/05 @ 14:00	11/8/05 @ 14:45	1,485	152.7	<0.065	1.51×10^{-04}	1.29×10^{-6}
	Day 2	11/8/05 @ 15:44	11/9/05 @ 15:00	1,396	141.4	<0.070	1.53×10^{-04}	1.30×10^{-6}
	Day 3	11/9/05 @ 15:09	11/10/05 @ 15:00	1,431	147.1	<0.068	1.52×10^{-04}	1.29×10^{-6}
	Day 4	11/10/05 @ 15:10	11/11/05 @ 15:10	1,440	149.0	<0.067	1.51×10^{-04}	1.29×10^{-6}
Propylene Glycol	Long Term	11/7/05 @ 14:00	11/11/05 @ 20:10	6,130	6,623.5	0.018	3.44×10^{-04}	2.93×10^{-6}
	Day 1	11/7/05 @ 14:00	11/8/05 @ 14:45	1,485	1,529.7	0.0065	3.01×10^{-05}	2.56×10^{-7}
	Day 2	11/8/05 @ 15:44	11/9/05 @ 15:00	1,396	1,405.6	0.0071	3.09×10^{-05}	2.63×10^{-7}
	Day 3	11/9/05 @ 15:09	11/10/05 @ 15:00	1,431	1,468.9	0.0068	3.04×10^{-05}	2.59×10^{-7}
	Day 4	11/10/05 @ 15:10	11/11/05 @ 15:10	1,440	1,489.0	0.024	1.08×10^{-04}	9.20×10^{-7}
Copper	Long Term	11/7/05 @ 14:00	11/11/05 @ 20:10	6,130	6,166.8	<0.00016	0	0

Notes: "<" indicates that the measured concentration was below the detectable limit and the listed concentration is the detection limit.

Emissions based upon rated fan capacity of 50 CFM at the measured concentration for the sample duration (6130 mins). Conservative emissions estimates for 30 days on-site are provided in a Table in Appendix E.

117.4 ft^3 of wood tested (a bundle or 2 half packs of 8 ft. material)

Table 2-2: Summary of Results – Untreated Wood Enclosure

Pollutant	Sample #	Start Date & Time	Stop Date & Time	Sample Duration (mins)	Sample Volume (Liters)	Pollutant Concentration (mg/m^3)	Emissions (lbs)	Emissions (lbs/ft^3)
Methanol	Long Term	11/7/05 @ 14:00	11/11/05 @ 20:10	6,105	674.6	0.015	2.86×10^{-04}	2.44×10^{-06}
MEA	Long Term	11/7/05 @ 14:00	11/11/05 @ 20:10	6,105	519.5	<0.019	1.81×10^{-04}	1.54×10^{-06}
Propylene Glycol	Long Term	11/7/05 @ 14:00	11/11/05 @ 20:10	6,105	5,058.8	0.0097	1.85×10^{-04}	1.58×10^{-06}
Copper	Long Term	11/7/05 @ 14:00	11/11/05 @ 20:10	6,105	6,657.5	<0.00015	0	0

Notes: "<" indicates that the measured concentration was below the detectable limit and the listed concentration is the detection limit.

Emissions based upon rated fan capacity of 50 CFM at the measured concentration for the sample duration.

Emissions (lbs) are calculated using the pollutant concentration and the sample volume. Sample volume is the flow rate times the sample duration.

To calculate estimate emissions conservatively, the sample duration was assumed to be a 5 day period since the emissions are calculated based on pollutant concentration and sample duration time. Samplers for MEA and Propylene Glycol lost power (power strip tripped) between Days 1 and 2. Therefore, to estimate emissions from MEA and Propylene Glycol conservatively, the sample duration for MEA and Propylene Glycol assumed equivalent to Methanol and Copper samples (5 day period) for estimating emissions. Conservative emissions estimates for 30 days on-site are provided in a Table in Appendix E.

117.4 ft^3 of wood tested (a bundle or 2 half packs of 8 ft. material)

2.3.2 Vacuum Pump Exhaust

The vacuum pump exhausts into the top of the effluent tank. The effluent tank at the production facility test plant has several openings in the top of the tank. In order to minimize losses during the sampling to the extent possible, all but one of these openings was sealed with polyethylene sheeting and duct tape. Sampling was conducted by lowering the sample media approximately 1 foot below the opening of the effluent tank.

Sampling was conducted for 1 hour for each target pollutant. The 1 hour samples were collected in two 30-minute intervals over two separate product charges since the vacuum pump typically operates for 30 minutes at the end of each product charge. All samples, with the exception of the second 30-minute sample for Run #3, were collected during charges with the highest concentration of NW. Sampling was initiated concurrently with the initial operation of the vacuum pump for each 30-minute sampling period.

To quantify mass emissions of each pollutant from the vacuum pump, three methods could be applied to estimate the volume of vapors exhausted from the treatment cylinder. These methods include the following: (1) applying the vacuum pump exhaust flow rate over the duration of the vacuum pump operation; (2) measuring the exhaust volume from the tank vent; and (3), the void volume of the treatment cylinder plus the connecting piping to the vacuum exhaust pump.

The product specification sheet for the vacuum pump includes an exhaust curve with a maximum flow rate of approximately 750 CFM. Applying this flow rate over the course of the 1 hour test period would result in the total volume of vapors exhaust of 45,000 cubic feet. However, exit velocity measurements over the 18 inch opening of the effluent tank showed a maximum velocity of 50 feet per minute, which quickly diminished to no measurable flow rate. At the maximum measured velocity of the tank opening, the exhaust flow rate out of the effluent tank was less than 100 CFM. Based upon these results, it is Earth Tech's opinion that using the void volume of the treatment cylinder plus the connecting piping to the vacuum exhaust pump is the best approach for estimating emissions.

The charge reports for each charge include the volume of the cylinder displaced by the wood bundles and associated rail cars. From this displacement volume and the total volume of the treatment cylinder, the void space volume can be determined for each charge cycle. Production information for each charge is located in Appendix B. Sample calculations are provided in Appendix E. Provided in Table 2-3 are the results of the air sampling with the calculated mass emissions using the void space volume. The volume of the connecting piping to the vacuum pump was conservatively assumed to be equal to the void space of the treatment cylinder for each test run. The average emission factors for each pollutant in terms of pounds per charge (lbs/charge) are as follows:

- Methanol: 0.000098 lbs/charge
- MEA: 0.000111 lbs/charge
- Propylene Glycol: 0.0000467 lbs/charge
- Copper: 0 lbs/charge

Table 2-3: Summary of Results – Vacuum Pump Exhaust

Pollutant	Sample #	NW Product Target Retention	Date & Time	Sample Duration (mins)	Wood Displacement Volume In (ft^3)	Void Space Volume* (ft^3)	Pollutant Concentration (mg/m^3)	Emissions (lbs/charge)
Methanol	Run 1	0.40 Full Cell	11/8/05 10:21 & 11:44	60	1,197 & 1,265	1,024	<1.47	9.40×10^{-05}
	Run 2	0.40 Full Cell	11/8/05 13:13 & 14:42	60	1,176 & 1,136	1,099	<1.47	1.01×10^{-04}
	Run 3	0.40 Full Cell & 0.25	11/8/05 16:09 & 17:29	60	1,139 & 1,174	1,098	<1.45	9.94×10^{-05}
MEA	Run 1	0.40 Full Cell	11/8/05 10:21 & 11:44	60	1,197 & 1,265	1,024	<1.67	1.07×10^{-04}
	Run 2	0.40 Full Cell	11/8/05 13:13 & 14:42	60	1,176 & 1,136	1,099	<1.67	1.15×10^{-04}
	Run 3	0.40 Full Cell & 0.25	11/8/05 16:09 & 17:29	60	1,139 & 1,174	1,098	<1.61	1.11×10^{-04}
Propylene Glycol	Run 1	0.40 Full Cell	11/8/05 10:21 & 11:44	60	1,197 & 1,265	1,024	0.60	7.68×10^{-05}
	Run 2	0.40 Full Cell	11/8/05 13:13 & 14:42	60	1,176 & 1,136	1,099	0.30	4.12×10^{-05}
	Run 3	0.40 Full Cell & 0.25	11/8/05 16:09 & 17:29	60	1,139 & 1,174	1,098	0.16	2.20×10^{-05}
Copper	Run 1	0.40 Full Cell	11/8/05 10:21 & 11:44	60	1,197 & 1,265	1,024	<0.00017	0
	Run 2	0.40 Full Cell	11/8/05 13:13 & 14:42	60	1,176 & 1,136	1,099	<0.00017	0
	Run 3	0.40 Full Cell & 0.25	11/8/05 16:09 & 17:29	60	1,139 & 1,174	1,098	<0.00014	0

Notes: "<" indicates that the measured concentration was below the detectable limit and the listed concentration is the detection limit.
One-half of the detection limit was used for all pollutants except for copper, when applicable.
The void space volume based upon the two run average and treatment cylinder total volume of 2,255 ft^3 (16,870 gallons when empty)
Two times the void space volume used to calculate mass emissions to account for piping between cylinder and pump.

*Void space volume is the cylinder volume (empty) minus the wood volume.

2.3.3 Treatment Cylinder

Whole air samples of the treatment cylinder head space were collected for methanol, MEA, and propylene glycol. Samples were collected by inserting a ¼-inch Teflon tube approximately 3-4 feet within the cylinder at the end of a product charge and drawing the void space vapors into a 1-liter Tedlar Bag using a leak free sample pump. This sampling procedure is in general accordance with 40 CFR 60, Appendix A, Method 18 8.2.1.1.2. Three one hour copper samples of the void space vapors were collected in accordance with the NIOSH method. Each one hour sample is comprised of four 15-minute samples of four separate product charges. The 15-minute samples were conducted in order to minimize the impact on production to the extent possible.

Mass emissions per charge were then estimated using the void space volume as described in Section 2.3.4. Provided in Table 2-4 are the results of the air sampling with the calculated mass emissions using the void space volume. All of the laboratory results for the treatment cylinder void space vapors were below the detectable limit. Therefore, one-half of the detection limit was used to estimate emissions of methanol, MEA, and propylene glycol. Since the detection limit for these three pollutants are the same, the calculated emissions for all three pollutants are the same. Sample calculation is provided in Appendix E. Emissions of copper were assumed to be zero as described in Section 2.2. The average emission factors for each pollutant in terms of pounds per charge (lbs/charge) are as follows:

- Methanol: 0.000325 lbs/charge
- MEA: 0.000325 lbs/charge
- Propylene Glycol: 0.000325 lbs/charge
- Copper: 0 lbs/charge.

Table 2-4: Summary of Results – Treatment Cylinder Vapor Space

Pollutant	Sample #	NW Product Target Retention	Date & Time	Sample Duration (mins)	Wood Displacement Volume In (ft^3)	Void Space Volume* (ft^3)	Pollutant Concentration (mg/m^3)	Emissions (lbs/charge)	Emissions (lbs/ft^3)
Methanol	Run 1	0.40 Full Cell	11/8/05 @ 11:00	60	1,197	1,058	<10	3.30×10^{-04}	2.76×10^{-7}
	Run 2	0.40 Full Cell	11/8/05 @ 12:28	60	1,265	990	<10	3.09×10^{-04}	$2.44x\ 10^{-7}$
	Run 3	0.40 Full Cell	11/8/05 @ 13:55	60	1,176	1,079	<10	3.37×10^{-04}	2.87×10^{-7}
MEA	Run 1	0.40 Full Cell	11/8/05 @ 11:00	60	1,197	1,058	<10	3.30×10^{-04}	2.76×10^{-7}
	Run 2	0.40 Full Cell	11/8/05 @ 12:28	60	1,265	990	<10	3.09×10^{-04}	$2.44x\ 10^{-7}$
	Run 3	0.40 Full Cell	11/8/05 @ 13:55	60	1,176	1,079	<10	3.37×10^{-04}	2.87×10^{-7}
Propylene Glycol	Run 1	0.40 Full Cell	11/8/05 @ 11:00	60	1,197	1,058	<10	3.30×10^{-04}	2.76×10^{-7}
	Run 2	0.40 Full Cell	11/8/05 @ 12:28	60	1,265	990	<10	3.09×10^{-04}	$2.44x\ 10^{-7}$
	Run 3	0.40 Full Cell	11/8/05 @ 13:55	60	1,176	1,079	<10	3.37×10^{-04}	2.87×10^{-7}
Copper	Run 1	0.40 Full Cell	11/8/05 @ 11:00	60	1,197	1,058	<0.015	0	0
	Run 2	0.40 Full Cell	11/8/05 @ 12:28	60	1,265	990	<0.015	0	0
	Run 3	0.40 Full Cell	11/8/05 @ 13:55	60	1,176	1,079	<0.015	0	0

Notes: "<" indicates that the measured concentration was below the detectable limit and the listed concentration is the detection limit.
One-half of the detection limit was used for all pollutants except for copper, when applicable.
The Void Space Volume based upon displacement volume of run and treatment cylinder total volume of 2,255 ft^3 (16,870 gallons when empty)
Run 1: 1,197 total Board volume (ft^3), Run 2: 1,265 total Board volume (ft^3), Run 3: 1,176 total Board volume (ft^3)
*Void space volume is the cylinder volume (empty) minus the wood volume.

2.3.4 Storage Tanks

Sampling of the vapor space of the chemical concentrate and working tanks was conducted during the sampling program. MEA and copper were sampled in the head space of the NW 100-C tank. Methanol and propylene glycol were sampled in the head space of the Carbo-NT tank. Sampling was conducted for all pollutants from the working tank. The production facility test plant had three working tanks of various concentrations. The working tank with the highest concentration of NW was sampled.

Three one-hour test runs were conducted for each target pollutant on each tank. For the working tank, one test run was conducted first thing in the morning for three consecutive days prior to production startup so that the tank vapor space concentrations were at equilibrium during the sampling. The results of this sampling are provided in Table 2-5.

As would be expected, the concentration of the pollutant with the highest vapor pressure, methanol, is in the highest concentration in the vapor space. The results for MEA and copper were both below their respective detection limits. As discussed in Section 2.2, the concentration of copper is assumed to be zero while one-half of the detection limit was used for determining the MEA concentration. Based upon the average of the three values listed in Table 2-5 for each pollutant, the working emission factor for each pollutant is as follows:

- Methanol (Carbo-NT): 2.63×10^{-6} lbs/gal
- Methanol (Working Tank): 5.36×10^{-8} lbs/gal
- MEA (NW100-C): 5.47×10^{-9} lbs/gal
- MEA (Working Tank): 6.13×10^{-9} lbs/gal
- Propylene Glycol (Carbo-NT): 4.57×10^{-9} lbs/gal
- Propylene Glycol (Working Tank): 5.4×10^{-9} lbs/gal

These results were then compared to the results from EPA's TANKS emission factor model for storage tanks, version 4.09. The dimensions of the storage tanks used at the production facility test plant were used in the model. A worst case scenario of 100°F year round (365 days) ambient temperature was used to estimate emissions. The model uses an assumption provided by the user on the number of turnovers of the tank (e.g. 2 per year). Additionally, the working tank emissions are based upon the 0.40 solution. The results of the model, in terms of working and breathing loss emissions in pounds per gallon are provided below. The output from the model is provided in Appendix D.

- Methanol (Carbo-NT): 7.63×10^{-5} lbs/gal
- Methanol (Working Tank): 1.25×10^{-7} lbs/gal
- MEA (NW100-C): 3.07×10^{-6} lbs/gal
- MEA (Working Tank): 1.00×10^{-8} lbs/gal
- Propylene Glycol (Carbo-NT): 3.55×10^{-7} lbs/gal

APPENDIX B – Attachment #2 (continued)

- Propylene Glycol (Working Tank): 0 lbs/gal

Table 2-5: Summary of Results – Storage Tank Concentrations

Pollutant	Run #	NW 100-C (mg/m^3)	NW 100-C (lbs/gal)	Carbo-NT (mg/m^3)	Carbo-NT (lbs/gal)	Working Tank (mg/m^3)	Working Tank (lbs/gal)
Methanol	1	NA	NA	437	3.65×10^{-6}	6.25	5.22×10^{-8}
	2	NA	NA	188	1.57×10^{-6}	5.81	4.85×10^{-8}
	3	NA	NA	321	2.68×10^{-6}	7.21	6.02×10^{-8}
MEA	1	<1.41	5.88×10^{-9}	NA	NA	<1.51	6.30×10^{-9}
	2	<1.15	4.80×10^{-9}	NA	NA	<1.49	6.22×10^{-9}
	3	<1.37	5.72×10^{-9}	NA	NA	<1.41	5.88×10^{-9}
Propylene Glycol	1	NA	NA	0.25	2.09×10^{-9}	0.48	4.01×10^{-9}
	2	NA	NA	0.11	9.18×10^{-10}	0.25	2.09×10^{-9}
	3	NA	NA	1.28	1.07×10^{-8}	1.21	1.01×10^{-8}
Copper	1	<0.014	0	NA	NA	<0.016	0
	2	<0.012	0	NA	NA	<0.016	0
	3	<0.014	0	NA	NA	<0.017	0

Notes: "<" indicates that the measured concentration was below the detectable limit.
In this case, pound per gallon values based upon one-half of the detection limit, for all except copper where it is assumed to be zero.

A comparison of the measured concentrations versus the EPA TANKS model shows that the measured concentrations are lower for Methanol, MEA and propylene glycol. For regulatory purposes, using EPA's TANKS model is likely to be accepted by most state regulatory agencies. The actual test data can be used to support the EPA TANKS results in the event that a regulatory agency questions the results of the model.

These EPA Tank emission factors were then converted to emissions in terms of pounds per charge based upon a typical working solution consumption of 2,500 gallons per charge, a Carbo-NT solution concentration of 0.45 percent (11.25 gals per batch), and an NW 100-C concentration of 0.90 percent (22.5 gallons per batch).

- Methanol (Carbo-NT): 8.58×10^{-4} lbs/charge
- Methanol (Working Tank): 3.125×10^{-4} lbs/charge
- MEA (NW100-C): 6.90×10^{-5} lbs/charge
- MEA (Working Tank): 2.50×10^{-5} lbs/charge
- Propylene Glycol (Carbo-NT): 3.99×10^{-6} lbs/charge
- Propylene Glycol (Working Tank): 0 lbs/gal

2.3.5 Summary Potential Emissions

Table 2-6 provides a summary of the Osmose Test Results and calculation of potential annual emissions estimates for the Carbo Net storage tank, working tank, vacuum pump exhaust, treatment cylinder, and treated wood. VOC emissions are assumed to be the total of the Methanol, MEA, and the Propylene Glycol.

Assumptions for the calculations in Table 2-6 include the following: one cylinder (clyn) is one charge; time for a charge is 70 minutes which equates to 20.6 charges per day; maximum potential is based on 365 days per year; potential is based on 250 days per year of operation. A plant may have six cylinders. Appendix E contains sample calculations for Table 2-6.

APPENDIX A

LABORATORY RESULTS

APPENDIX B – Attachment #2 (continued)

Osmose Test Results Summary

Location	Contaminant	Result mg/m3	Volume liters	Sample Duration minutes
Blank	Methanol	0 mg	NA	NA
Carbo Net Storage Run 1	Methanol	437	7.7	60
Carbo Net Storage Run 2	Methanol	188	10.7	60
Carbo Net Storage Run 3	Methanol	321	8.1	60
Working Tank Vapor Run 1	Methanol	6.25	6.4	60
Working Tank Vapor Run 2	Methanol	5.81	6.2	60
Working Tank Vapor Run 3	Methanol	7.21	6.1	60
Vacuum Pump Exhaust Run 1	Methanol	<1.47	6.8	60
Vacuum Pump exhaust Run 2	Methanol	<1.47	6.8	60
Vacuum Pump Exhaust Run 3	Methanol	<1.45	6.9	60
Treatment Cylinder Run 1	Methanol	<10	1.0	grab
Treatment Cylinder Run 2	Methanol	<10	1.0	grab
Treatment Cylinder Run 3	Methanol	<10	1.0	grab
Treated Wood Day 1	Methanol	<0.063	158.4	1,485
Treated Wood Day 2	Methanol	0.083	143.8	1,396
Treated Wood Day 3	Methanol	0.069	145.2	1,431
Treated Wood Day 4	Methanol	0.089	145.3	1,440
Treated Wood Day 1-5 Sample	Methanol	0.017	646.7	6,130
Untreated Wood Day 1-5 Sample	Methanol	0.015	674.6	6,105

Location	Contaminant	Result mg/m3	Volume liters	Sample Duration minutes
Blank	Ethanolamine	0 mg	NA	NA
NW100-C Storage Run 1	Ethanolamine	<1.41	7.1	60
NW100-C Storage Run 2	Ethanolamine	<1.15	8.7	60
NW100-C Storage Run 3	Ethanolamine	<1.37	7.3	60
Working Tank Vapor Run 1	Ethanolamine	<1.51	6.6	60
Working Tank Vapor Run 2	Ethanolamine	<1.49	6.7	60
Working Tank Vapor Run 3	Ethanolamine	<1.41	7.1	60
Vacuum Pump Exhaust Run 1	Ethanolamine	<1.67	6.0	60
Vacuum Pump exhaust Run 2	Ethanolamine	<1.67	6.0	60
Vacuum Pump Exhaust Run 3	Ethanolamine	<1.61	6.2	60
Treatment Cylinder Run 1	Ethanolamine	<10	1.0	grab
Treatment Cylinder Run 2	Ethanolamine	<10	1.0	grab
Treatment Cylinder Run 3	Ethanolamine	<10	1.0	grab
Treated Wood Day 1	Ethanolamine	<0.065	152.7	1,485
Treated Wood Day 2	Ethanolamine	<0.070	141.4	1,396
Treated Wood Day 3	Ethanolamine	<0.068	147.1	1,431
Treated Wood Day 4	Ethanolamine	<0.067	149.0	1,440
Treated Wood Day 1-5 Sample	Ethanolamine	<0.015	666.9	6,130
Untreated Wood Day 1-5 Sample	Ethanolamine	<0.019	519.5	6,105

APPENDIX B – Attachment #2 (continued)

Osmose Test Results Summary

Location	Contaminant	Result mg/m3	Volume liters	Sample Duration minutes
Blank	Propylene Glycol	0 mg	NA	NA
Carbo Net Storage Run 1	Propylene Glycol	0.25	75.9	60
Carbo Net Storage Run 2	Propylene Glycol	0.11	90.2	60
Carbo Net Storage Run 3	Propylene Glycol	1.28	67.0	60
Working Tank Vapor Run 1	Propylene Glycol	0.48	62.6	60
Working Tank Vapor Run 2	Propylene Glycol	0.25	60.0	60
Working Tank Vapor Run 3	Propylene Glycol	1.21	60.3	60
Vacuum Pump Exhaust Run 1	Propylene Glycol	0.6	56.3	60
Vacuum Pump exhaust Run 2	Propylene Glycol	0.3	63.2	60
Vacuum Pump Exhaust Run 3	Propylene Glycol	0.16	61.7	60
Treatment Cylinder Run 1	Propylene Glycol	<10	1.0	grab
Treatment Cylinder Run 2	Propylene Glycol	<10	1.0	grab
Treatment Cylinder Run 3	Propylene Glycol	<10	1.0	grab
Treated Wood Day 1	Propylene Glycol	0.0065	1,529.7	1,485
Treated Wood Day 2	Propylene Glycol	0.0071	1,405.6	1,396
Treated Wood Day 3	Propylene Glycol	0.0068	1,468.9	1,431
Treated Wood Day 4	Propylene Glycol	0.024	1,489.0	1,440
Treated Wood Day 1-5 Sample	Propylene Glycol	0.018	6,623.5	6,130
Untreated Wood Day 1-5 Sample	Propylene Glycol	0.0097	5,058.8	6,105

Location	Contaminant	Result ug/m3	Volume liters	Sample Duration minutes
Blank	copper	<1.0	NA	NA
NW100-C Storage Run 1	copper	<14	70.9	60
NW100-C Storage Run 2	copper	<12	85.8	60
NW100-C Storage Run 3	copper	<14	70.2	60
Working Tank Vapor Run 1	copper	<16	61.7	60
Working Tank Vapor Run 2	copper	<16	66.0	60
Working Tank Vapor Run 3	copper	<17	60.6	60
Vacuum Pump Exhaust Run 1	copper	<17	60.1	60
Vacuum Pump exhaust Run 2	copper	<17	59.1	60
Vacuum Pump Exhaust Run 3	copper	<14	69.5	60
Treatment Cylinder Run 1	copper	<15	68.7	60
Treatment Cylinder Run 2	copper	<15	66.7	60
Treatment Cylinder Run 3	copper	<15	67.9	60
Treated wood	copper	<0.16	6,166.8	6,130
Untreated wood	copper	<0.15	6,657.5	6,105

APPENDIX B

PRODUCTION RECORDS

NOTE: Production Records may be obtained by request only.

APPENDIX C

FIELD SAMPLING DATA SHEETS

NOTE: Production Records may be obtained by request.

APPENDIX D

EPA TANKS DATA

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification		
User Identification:	Osmose Working Tank	
City:	Atlanta	
State:	Georgia	
Company:	Confidential Client	
Type of Tank:	Vertical Fixed Roof Tank	
Description:	20,000 gallon working tank	
Tank Dimensions		
Shell Height (ft):		20.00
Diameter (ft):		14.00
Liquid Height (ft) :		18.00
Avg. Liquid Height (ft):		10.00
Volume (gallons):		20,000.00
Turnovers:		100.00
Net Throughput(gal/yr):		2,000,000.00
Is Tank Heated (y/n):	Y	
Paint Characteristics		
Shell Color/Shade:	Gray/Light	
Shell Condition	Good	
Roof Color/Shade:	Gray/Light	
Roof Condition:	Good	
Roof Characteristics		
Type:	Cone	
Height (ft)		1.00
Slope (ft/ft) (Cone Roof)		0.14
Breather Vent Settings		
Vacuum Settings (psig):		0.00
Pressure Settings (psig)		0.00

Meterological Data used in Emissions Calculations: Atlanta, Georgia (Avg Atmospheric Pressure = 14.22 psia)

APPENDIX B – Attachment #2 (continued)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Osmose Working Tank - Vertical Fixed Roof Tank
Atlanta, Georgia

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Osmose Working Solution	All	100.00	100.00	100.00	100.00	0.5000	0.5000	0.5000	18.0000			18.00	
Ethanolamine (mono-)						0.0186	0.0186	0.0186	61.0900	0.0033	0.0001	61.09	Option 2: A=7.456, B=1577.67, C=173.37
Methyl alcohol						4.5770	4.5770	4.5770	32.0400	0.0001	0.0012	32.04	Option 2: A=7.897, B=1474.08, C=229.13
Propylene glycol						0.0071	0.0071	0.0071	76.1100	0.0004	0.0000	76.11	Option 2: A=8.2082, B=2085.9, C=203.54
Unidentified Components						0.5002	0.5002	0.5002	17.9866	0.9961	0.9986	17.95	

APPENDIX B – Attachment #2 (continued)

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Osmose Working Tank - Vertical Fixed Roof Tank
Atlanta, Georgia

Annual Emission Calculations	
Standing Losses (lb):	0.0000
Vapor Space Volume (cu ft):	1,590.6931
Vapor Density (lb/cu ft):	0.0015
Vapor Space Expansion Factor:	0.0000
Vented Vapor Saturation Factor:	0.7850
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,590.6931
Tank Diameter (ft):	14.0000
Vapor Space Outage (ft):	10.3333
Tank Shell Height (ft):	20.0000
Average Liquid Height (ft):	10.0000
Roof Outage (ft):	0.3333
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.3333
Roof Height (ft):	1.0000
Roof Slope (ft/ft):	0.1400
Shell Radius (ft):	7.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0015
Vapor Molecular Weight (lb/lb-mole):	18.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.5000
Daily Avg. Liquid Surface Temp. (deg. R):	559.6700
Daily Average Ambient Temp. (deg. F):	61.2542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	559.6700
Tank Paint Solar Absorptance (Shell):	0.5400
Tank Paint Solar Absorptance (Roof):	0.5400
Daily Total Solar Insulation Factor (Btu/sqft day):	1,452.3034
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0000
Daily Vapor Temperature Range (deg. R):	0.0000
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.5000
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.5000
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.5000
Daily Avg. Liquid Surface Temp. (deg R):	559.6700
Daily Min. Liquid Surface Temp. (deg R):	559.6700
Daily Max. Liquid Surface Temp. (deg R):	559.6700
Daily Ambient Temp. Range (deg. R):	19.9583
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.7850
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.5000

Vapor Space Outage (ft):	10.3333
Working Losses (lb):	200.0000
Vapor Molecular Weight (lb/lb-mole):	18.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.5000
Annual Net Throughput (gal/yr.):	2,000,000.0000
Annual Turnovers:	100.0000
Turnover Factor:	0.4667
Maximum Liquid Volume (gal):	20,000.0000
Maximum Liquid Height (ft):	18.0000
Tank Diameter (ft):	14.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	200.0000

APPENDIX B – Attachment #2 (continued)

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Osmose Working Tank - Vertical Fixed Roof Tank
Atlanta, Georgia

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Osmose Working Solution	200.00	0.00	200.00
Ethanolamine (mono-)	0.02	0.00	0.02
Methyl alcohol	0.25	0.00	0.25
Propylene glycol	0.00	0.00	0.00
Unidentified Components	199.73	0.00	199.73

APPENDIX B – Attachment #2 (continued)

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Osmose Carbo-NT
City:	Atlanta
State:	Georgia
Company:	Confidential Client
Type of Tank:	Vertical Fixed Roof Tank
Description:	20,000 gallon concentrate tank

Tank Dimensions

Shell Height (ft):		20.00
Diameter (ft):		14.00
Liquid Height (ft) :		18.00
Avg. Liquid Height (ft):		10.00
Volume (gallons):		20,000.00
Turnovers:		100.00
Net Throughput(gal/yr):		2,000,000.00
Is Tank Heated (y/n):	Y	

Paint Characteristics

Shell Color/Shade:	Gray/Light
Shell Condition	Good
Roof Color/Shade:	Gray/Light
Roof Condition:	Good

Roof Characteristics

Type:	Cone	
Height (ft)		1.00
Slope (ft/ft) (Cone Roof)		0.14

Breather Vent Settings

Vacuum Settings (psig):	0.00
Pressure Settings (psig)	0.00

Meterological Data used in Emissions Calculations: Atlanta, Georgia (Avg Atmospheric Pressure = 14.22 psia)

APPENDIX B – Attachment #2 (continued)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Osmose Carbo-NT - Vertical Fixed Roof Tank
Atlanta, Georgia

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Osmose Carbo NT	*All*	*100.00*	*100.00*	*100.00*	*100.00*	*0.5000*	*0.5000*	*0.5000*	*50.0000*			*50.00*	
Methyl alcohol						4.5770	4.5770	4.5770	32.0400	0.0300	0.2745	32.04	Option 2: A=7.897, B=1474.08, C=229.13
Propylene glycol						0.0071	0.0071	0.0071	76.1100	0.0900	0.0013	76.11	Option 2: A=8.2082, B=2085.9, C=203.54
Unidentified Components						0.3191	0.3186	0.3191	63.4506	0.8800	0.7241	49.21	

APPENDIX B – Attachment #2 (continued)

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Osmose Carbo-NT - Vertical Fixed Roof Tank
Atlanta, Georgia

Annual Emission Calcaulations	
Standing Losses (lb):	0.0000
Vapor Space Volume (cu ft):	1,590.6931
Vapor Density (lb/cu ft):	0.0042
Vapor Space Expansion Factor:	*0.0000*
Vented Vapor Saturation Factor:	0.7850
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,590.6931
Tank Diameter (ft):	14.0000
Vapor Space Outage (ft):	10.3333
Tank Shell Height (ft):	20.0000
Average Liquid Height (ft):	10.0000
Roof Outage (ft):	0.3333
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.3333
Roof Height (ft):	1.0000
Roof Slope (ft/ft):	0.1400
Shell Radius (ft):	7.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0042
Vapor Molecular Weight (lb/lb-mole):	50.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.5000
Daily Avg. Liquid Surface Temp. (deg. R):	559.6700
Daily Average Ambient Temp. (deg. F):	61.2542
Ideal Gas Constant R (*psia cuft / (lb-mol-deg R)*):	10.731
Liquid Bulk Temperature (deg. R):	559.6700
Tank Paint Solar Absorptance (Shell):	0.5400
Tank Paint Solar Absorptance (Roof):	0.5400
Daily Total Solar Insulation Factor (Btu/sqft day):	1,452.3034
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0000
Daily Vapor Temperature Range (deg. R):	0.0000
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.5000
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.5000
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.5000
Daily Avg. Liquid Surface Temp. (deg R):	559.6700
Daily Min. Liquid Surface Temp. (deg R):	559.6700
Daily Max. Liquid Surface Temp. (deg R):	559.6700
Daily Ambient Temp. Range (deg. R):	19.9583
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.7850
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.5000

Vapor Space Outage (ft):	10.3333
Working Losses (lb):	555.5556
Vapor Molecular Weight (lb/lb-mole):	50.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.5000
Annual Net Throughput (gal/yr.):	2,000,000.0000
Annual Turnovers:	100.0000
Turnover Factor:	0.4667
Maximum Liquid Volume (gal):	20,000.0000
Maximum Liquid Height (ft):	18.0000
Tank Diameter (ft):	14.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	555.5556

APPENDIX B – Attachment #2 (continued)

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Osmose Carbo-NT - Vertical Fixed Roof Tank
Atlanta, Georgia

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Osmose Carbo NT	555.56	0.00	555.56
Methyl alcohol	152.57	0.00	152.57
Propylene glycol	0.71	0.00	0.71
Unidentified Components	402.28	0.00	402.28

APPENDIX B – Attachment #2 (continued)

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Osmose NW100-C
City:	Atlanta
State:	Georgia
Company:	Confidential Client
Type of Tank:	Vertical Fixed Roof Tank
Description:	20,000 gallon tank

Tank Dimensions

Shell Height (ft):		20.00
Diameter (ft):		14.00
Liquid Height (ft) :		18.00
Avg. Liquid Height (ft):		10.00
Volume (gallons):		20,000.00
Turnovers:		100.00
Net Throughput(gal/yr):		2,000,000.00
Is Tank Heated (y/n):	Y	

Paint Characteristics

Shell Color/Shade:	Gray/Light
Shell Condition	Good
Roof Color/Shade:	Gray/Light
Roof Condition:	Good

Roof Characteristics

Type:	Cone	
Height (ft)		1.00
Slope (ft/ft) (Cone Roof)		0.14

Breather Vent Settings

Vacuum Settings (psig):	0.00
Pressure Settings (psig)	0.00

Meterological Data used in Emissions Calculations: Atlanta, Georgia (Avg Atmospheric Pressure = 14.22 psia)

APPENDIX B – Attachment #2 (continued)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Osmose NW100-C - Vertical Fixed Roof Tank
Atlanta, Georgia

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Osmose NW100-C	All	100.00	100.00	100.00	100.00	0.5000	0.5000	0.5000	40.0000			40.00	
Ethanolamine (mono-)						0.0186	0.0186	0.0186	61.0900	0.3700	0.0138	61.09	Option 2: A=7.456, B=1577.67, C=173.37
Unidentified Components						0.6539	0.6479	0.6539	39.8078	0.6300	0.9862	33.26	

APPENDIX B – Attachment #2 (continued)

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Osmose NW100-C - Vertical Fixed Roof Tank
Atlanta, Georgia

Annual Emission Calculations

Standing Losses (lb):	0.0000
Vapor Space Volume (cu ft):	1,590.6931
Vapor Density (lb/cu ft):	0.0033
Vapor Space Expansion Factor:	0.0000
Vented Vapor Saturation Factor:	0.7850
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,590.6931
Tank Diameter (ft):	14.0000
Vapor Space Outage (ft):	10.3333
Tank Shell Height (ft):	20.0000
Average Liquid Height (ft):	10.0000
Roof Outage (ft):	0.3333
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.3333
Roof Height (ft):	1.0000
Roof Slope (ft/ft):	0.1400
Shell Radius (ft):	7.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0033
Vapor Molecular Weight (lb/lb-mole):	40.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.5000
Daily Avg. Liquid Surface Temp. (deg. R):	559.6700
Daily Average Ambient Temp. (deg. F):	61.2542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	559.6700
Tank Paint Solar Absorptance (Shell):	0.5400
Tank Paint Solar Absorptance (Roof):	0.5400
Daily Total Solar Insulation Factor (Btu/sqft day):	1,452.3034
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0000
Daily Vapor Temperature Range (deg. R):	0.0000
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range(psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.5000
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.5000
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.5000
Daily Avg. Liquid Surface Temp. (deg R):	559.6700
Daily Min. Liquid Surface Temp. (deg R):	559.6700
Daily Max. Liquid Surface Temp. (deg R):	559.6700
Daily Ambient Temp. Range (deg. R):	19.9583
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.7850
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.5000

APPENDIX B – Attachment #2 (continued)

Vapor Space Outage (ft):	10.3333
Working Losses (lb):	444.4444
Vapor Molecular Weight (lb/lb-mole):	40.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.5000
Annual Net Throughput (gal/yr.):	2,000,000.0000
Annual Turnovers:	100.0000
Turnover Factor:	0.4667
Maximum Liquid Volume (gal):	20,000.0000
Maximum Liquid Height (ft):	16.0000
Tank Diameter (ft):	14.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	444.4444

APPENDIX B – Attachment #2 (continued)

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Osmose NW100-C - Vertical Fixed Roof Tank
Atlanta, Georgia

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Osmose NW100-C	444.44	0.00	444.44
Ethanolamine (mono-)	6.13	0.00	6.13
Unidentified Components	438.31	0.00	438.31

APPENDIX B – Attachment #2 (continued)

APPENDIX E

SUMMARY SAMPLING INFORMATION, PLANT STATISTICS AND ASSUMPTIONS

SAMPLE CALCULATIONS

Osmose Test Results Summary (5 Days of Storage)

Location	Contaminant	Result lb/charge	Results (lb/day/cyln)	Max. Potential (lb/year/cyln)	Potential (lb/year/cyln)	Max Potential lb/yr/six cylns
Carbo Net Storage	Methanol	8.58E-04	1.77E-02	6.44	4.41	38.65
Working Tank	Methanol	3.13E-04	6.43E-03	2.35	1.6	14.08
Vacuum Pump Exhaust	Methanol	0.000098	2.02E-03	0.74	0.5	4.42
Treatment Cylinder	Methanol	3.25E-04	6.69E-03	2.44	1.7	14.64
Treated Wood *	Methanol	3.25E-03	6.69E-02	24.40	16.7	146.42
Total	Methanol	4.84E-03	9.96E-02	36.37	24.9	218.21

Location	Contaminant	Result lb/charge	Results (lb/day/cyln)	Max. Potential (lb/year/cyln)	Potential (lb/year/cyln)	Max Potential lb/yr/six cylns
NW100-C	Ethanolamine	6.90E-05	1.42E-03	0.52	0.35	3.11
Working Tank	Ethanolamine	2.50E-05	5.14E-04	0.19	0.1	1.13
Vacuum Pump Exhaust	Ethanolamine	1.11E-04	2.28E-03	0.83	0.6	5.00
Treatment Cylinder	Ethanolamine	3.25E-04	6.69E-03	2.44	1.7	14.64
Treated Wood *	Ethanolamine	1.44E-03	2.96E-02	10.81	7.4	64.87
Total	Ethanolamine	1.97E-03	4.05E-02	14.79	10.1	88.75

Location	Contaminant	Result lb/charge	Results (lb/day/cyln)	Max. Potential (lb/year/cyln)	Potential (lb/year/cyln)	Max Potential lb/yr/six cylns
Carbo Net Storage	Propylene Glycol	3.99E-06	8.21E-05	0.03	0.02	0.18
Working Tank Vapor	Propylene Glycol	0.00E+00	0.00E+00	0.00	0.0	0.00
Vacuum Pump Exhaust	Propylene Glycol	4.67E-05	9.61E-04	0.35	0.2	2.10
Treatment Cylinder	Propylene Glycol	3.25E-04	6.69E-03	2.44	1.7	14.64
Treated Wood *	Propylene Glycol	3.44E-03	7.08E-02	25.83	17.7	154.98
Total	Propylene Glycol	3.82E-03	7.85E-02	28.65	19.6	171.90

Location	Contaminant	Result lb/charge	Results (lb/day/cyln)	Max. Potential (lb/year/cyln)	Potential (lb/year/cyln)	Max Potential lb/yr/six cylns
NW100-C Storage	VOC	6.90E-05	1.42E-03	0.52	0.35	3.11
Carbo Net Storage	VOC	8.62E-04	1.77E-02	6.47	4.43	38.83
Working Tank	VOC	3.38E-04	6.94E-03	2.53	1.74	15.20
Vacuum Pump Exhaust	VOC	2.56E-04	5.26E-03	1.92	1.32	11.52
Treatment Cylinder	VOC	9.75E-04	2.01E-02	7.32	5.01	43.93
Treated wood	VOC	8.13E-03	1.67E-01	61.04	41.81	366.27
Total	VOC	1.06E-02	2.19E-01	79.8	54.7	478.9

Assumptions

One cylinder (cyln) or(one charge)

Average time estimated for charge is 70 minutes including preparation and removal from cyclinder to calculate average charges per day (20.6 charges/day)

Max. Potential Based on 365 days

Potential based on 250 days

* Results based on 5 days

Osmose Test Results Summary

A plant may have 6 cylinders

Location	Contaminant	Result lb/charge	Results (lb/day/cyln)	Max. Potential (lb/year/cyln)	Potential (lb/year/cyln)	Max Potential lb/yr/six cylns
NW100-C	copper	0.00E+00	0.00E+00	0.00	0.00	0.00
Working Tank Vapor	copper	0.00E+00	0.00E+00	0.00	0.0	0.00
Vacuum Pump Exhaust	copper	0.00E+00	0.00E+00	0.00	0.0	0.00
Treatment Cylinder	copper	0.00E+00	0.00E+00	0.00	0.0	0.00
Treated Wood	copper	0.00E+00	0.00E+00	0.00	0.0	0.00
Total	copper	0.00E+00	0.00E+00	0.00	0.0	0.00

Assumptions

One cylinder (cyln) or(one charge)

Average time estimated for charge is 70 minutes including preparation and removal from cyclinder to calculate average charges per day (20.6 charges/day)

Max. Potential Based on 365 days

Potential based on 250 days

A plant may have 6 cylinders

Osmose Test Results Summary (30 Days of Storage)

Location	Contaminant	Result lb/charge	Results (lb/day/cyln)	Max. Potential (lb/year/cyln)	Potential (lb/year/cyln)	Max Potential lb/yr/six cylns
Carbo Net Storage	Methanol	8.58E-04	1.77E-02	6.44	4.41	38.65
Working Tank	Methanol	3.13E-04	6.43E-03	2.35	1.6	14.08
Vacuum Pump Exhaust	Methanol	0.000098	2.02E-03	0.74	0.5	4.42
Treatment Cylinder	Methanol	3.25E-04	6.69E-03	2.44	1.7	14.64
Treated Wood *	Methanol	2.29E-02	4.71E-01	171.95	117.8	1031.68
Total	Methanol	2.45E-02	5.04E-01	183.91	126.0	1103.47

Location	Contaminant	Result lb/charge	Results (lb/day/cyln)	Max. Potential (lb/year/cyln)	Potential (lb/year/cyln)	Max Potential lb/yr/six cylns
NW100-C	Ethanolamine	6.90E-05	1.42E-03	0.52	0.35	3.11
Working Tank	Ethanolamine	2.50E-05	5.14E-04	0.19	0.1	1.13
Vacuum Pump Exhaust	Ethanolamine	1.11E-04	2.28E-03	0.83	0.6	5.00
Treatment Cylinder	Ethanolamine	3.25E-04	6.69E-03	2.44	1.7	14.64
Treated Wood *	Ethanolamine	1.01E-02	2.08E-01	75.84	51.9	455.02
Total	Ethanolamine	1.06E-02	2.19E-01	79.82	54.7	478.90

Location	Contaminant	Result lb/charge	Results (lb/day/cyln)	Max. Potential (lb/year/cyln)	Potential (lb/year/cyln)	Max Potential lb/yr/six cylns
Carbo Net Storage	Propylene Glycol	3.99E-06	8.21E-05	0.03	0.02	0.18
Working Tank Vapor	Propylene Glycol	0.00E+00	0.00E+00	0.00	0.0	0.00
Vacuum Pump Exhaust	Propylene Glycol	4.67E-05	9.61E-04	0.35	0.2	2.10
Treatment Cylinder	Propylene Glycol	3.25E-04	6.69E-03	2.44	1.7	14.64
Treated Wood *	Propylene Glycol	2.42E-02	4.98E-01	181.71	124.5	1090.24
Total	Propylene Glycol	2.46E-02	5.06E-01	184.53	126.4	1107.17

Location	Contaminant	Result lb/charge	Results (lb/day/cyln)	Max. Potential (lb/year/cyln)	Potential (lb/year/cyln)	Max Potential lb/yr/six cylns
NW100-C Storage	VOC	6.90E-05	1.42E-03	0.52	0.35	3.11
Carbo Net Storage	VOC	8.62E-04	1.77E-02	6.47	4.43	38.83
Working Tank	VOC	3.38E-04	6.94E-03	2.53	1.74	15.20
Vacuum Pump Exhaust	VOC	2.56E-04	5.26E-03	1.92	1.32	11.52
Treatment Cylinder	VOC	9.75E-04	2.01E-02	7.32	5.01	43.93
Treated Wood *	VOC	5.74E-02	1.18E+00	430.99	295.20	2585.95
Total	**VOC**	**5.99E-02**	**1.23E+00**	**449.8**	**308.1**	**2698.5**

Assumptions

One cylinder (cyln) or(one charge)

Average time estimated for charge is 70 minutes including preparation and removal from cyclinder to calculate average charges per day (20.6 charges/day)

Max. Potential Based on 365 days

Potential based on 250 days

* Results based on 30 days

Osmose Test Results Summary

A plant may have 6 cylinders

Location	Contaminant	Result lb/charge	Results (lb/day/cyln)	Max. Potential (lb/year/cyln)	Potential (lb/year/cyln)	Max Potential lb/yr/six cylns
NW100-C	copper	0.00E+00	0.00E+00	0.00	0.00	0.00
Working Tank Vapor	copper	0.00E+00	0.00E+00	0.00	0.0	0.00
Vacuum Pump Exhaust	copper	0.00E+00	0.00E+00	0.00	0.0	0.00
Treatment Cylinder	copper	0.00E+00	0.00E+00	0.00	0.0	0.00
Treated Wood	copper	0.00E+00	0.00E+00	0.00	0.0	0.00
Total	copper	0.00E+00	0.00E+00	0.00	0.0	0.00

Assumptions

One cylinder (cyln) or(one charge)

Average time estimated for charge is 70 minutes including preparation and removal from cyclinder to calculate average charges per day (20.6 charges/day)

Max. Potential Based on 365 days

Potential based on 250 days

A plant may have 6 cylinders

Osmose Test Results Summary

Location	Contaminant	Result lb/2MM gallons	Results (lb/gallon)	Potential (lb/charge)
Carbo Net Storage	Methanol	152.57	7.63E-05	8.58E-04
Working Tank	Methanol	0.25	1.25E-07	3.125E-04

Location	Contaminant			
NW100-C	Ethanolamine	6.13	3.07E-06	6.90E-05
Working Tank	Ethanolamine	0.02	1.00E-08	2.50E-05

Location	Contaminant			
Carbo Net Storage	Propylene Glycol	0.71	3.55E-07	3.99E-06
Working Tank Vapor	Propylene Glycol	0.00	0.00E+00	0.00

Sampling Information, Plant Statistics and Assumptions

Pollutants Sampled
Methanol,
Mono-Ethanol Amine (MEA),
Propylene Glycol, and
Copper

Sampling Locations

(1) The vacuum pump exhaust;

(2) The vapor space within the treatment cylinder;

(3) A bundle consists of two half packs of 8 ft. material of the treated wood within an exhausted enclosure;

(4) A bundle consists of two half packs of 8 ft. material of the untreated wood within an exhausted enclosure;

(5) The NW 100-C storage tank vapor space;

(6) The Carbo NT storage tank vapor space; and

(7) The Nature Wood working tank vapor space.

Sampling Methods
Sampling at all locations (with the exception of the vapor space within treatment cylinder) in accordance with National Institute of Occupational Safety & Health (NIOSH) sampling methods.

Methanol:	NIOSH Method 2000
MEA:	NIOSH Method 2007
Propylene Glycol:	NIOSH Method 5523
Copper:	NIOSH Method 7029

Whole air samples were taken for gas chromatographic (GC) analysis of the vapor space within the treatment cylinder for methanol, MEA, and propylene glycol in accordance with 40 CFR 60, Appendix A, Method 18 8.2.1.1.2. Copper samples of the treatment cylinder vapor space were obtained in accordance with NIOSH Method 7029.

Sampling Test Duration
Each pollutant at each location was sampled for 1 hour (for sampling locations 1, 5, 6, and 7 as listed above), which is approximately equivalent to the length of an average charge of wood. Three 1-hour samples (3 charges) were taken for each target pollutant at each sampling location.
For the treated and untreated wood bundles, samples were collected over the course of the entire week. Also redundant full day, 24-hour, samples were collected for the treated wood.
Grab samples of the treatment cylinder vapor space were collected in Tedlar bags.

Sampling Information, Plant Statistics and Assumptions

Plant Information

Treatment Cylinder volume empty is 2,255 ft^3
Treatment cylinder Size is Approximately 6.5 feet by 82 feet.
Treatment Cylinder is 16,870 gallons when empty.
A charge is on average 10 bundles of 8 ft. material (each bundle consists of 2 half packs).
Treatment Cylinder and Tanks are unbaffled
Ancillary equipment is sized proportional to treatment cylinder

Wood is on the treatment plant property on average 30 days. For analysis purposes an assumption was made that emissions would occur within the first five days as the wood dried. When extrapolated over a thirty day period, it represents a very conservative estimate because as the wood dries actual emission rates would decrease.

Information for wood tested in enclosure for treated and untreated wood:
Enclosure- Rated fan capacity of 50 cfm
Amount of wood tested is 117.4 ft^3/bundle (a bundle or 2 half packs of 8 ft. material)

Assumptions

One-half of the detection limit was used for all pollutants except copper, when applicable (e.g. non detected).
For the vacuum pump exhaust- A worst case (most conservative) estimate of two times the void space volume was used to calculate mass emissions to account for the piping between the cylinder and pump. Actual volume is less.
For the vacuum pump exhaust calculations (Table 2-3), the void space volume is based upon the average of two charges of the wood displacement volume and the treatment cylinder total volume when empty.
For the treatment cylinder calculations (Table 2-4), the void space volume is based upon the wood displacement volume and the treatment cylinder total volume when empty.
Total Board Volume (ft^3) was for Run 1: 1,197; Run 2: 1,265; and Run 3: 1,176.
For EPA Tanks model assumed a typical working solution composition of 2,500 gallons per charge, a Carbo-NT solution concentration of 0.45 (11.25 gallons per batch), and an NW 100-C concentration of 0.90 percent (22.5 gallons per batch).
EPA Tanks Model 4.0.9d used.
Tanks- Vertical Fixed Roof-20,000 gallon tanks
The inputs for Tanks are provided on Tanks 4.0 Reports located in Appendix D. This includes tank dimensions, liquid height, turnovers, throughput, shell/roof color and condition, roof characteristics, and mixture/component data.

APPENDIX B - Attachment #3

MicroPro™ Wood Preservative System

MicroPro™ Wood Preservative is a waterborne, copper-based preservative system developed to provide long term protection of wood exposed in exterior applications. The MicroPro™ system is based on the well established effectiveness of copper combined with an organic quaternary compound (Quat) and is applied to wood by pressure impregnation.

There are three separate treating solution varieties which utilize MicroPro™ product as one or more components. MicroPro™ "neat" treating solution will contain varying concentrations of copper and quat, while MicroShades™ cedar honey brown and red brown treating solutions will contain copper, quat and one of two colors. The MicroShades™ solutions also require addition of a pigment additive, MicroShades™ PA, in order to consistently color board surfaces. All treating solutions require the addition of Cleanwood® mold inhibitor at a concentration of 45 ppm.

MicroPro™ 200C
Description: A viscous pale turquoise suspension with a latex paint-line texture and odor
Concentration: 41.7% expressed as CuO
Density (25° C): 8.0 lbs/gallon
Specific Gravity (25° C): 1.76
Active Density: 6.11 pounds CuO per gallon
Delivery Method: Truckloads of approximately 19585 active pounds (3200 gallons)

Carbo-NT
Description: A viscous amber to pale yellow liquid with a slight ammonia odor
Concentration: 48% expressed as DDAC (Didecyl dimethyl ammonium chloride)
Density (25° C): 8.0 lbs/gallon
Specific Gravity (25° C): 0.96
Active Density: 3.84 pounds DDAC per gallon
Delivery Method: Truckloads of approximately 21600 active pounds (5600 gallons) or totes of approximately 960 active gallons (250 gallons)

Cleanwood® Mold Inhibitor
Description: An amber-gold slightly viscous liquid with a pungent odor
Concentration: 14.1% actives
Density (25° C): 10.84 lbs/gallon
Specific Gravity (25° C): 1.3
Active Density: 1.53 active pounds per gallon
Delivery Method: Totes of approximately 2755 total pounds (250 gallons) or drums of approximately 275 total pounds (55 gallons)

APPENDIX B – Attachment #3 (continued)

MicroShades™ Cedar Honey-Brown (CHB)
Description: Cedar honey brown opaque, aqueous dispersion with no odor
Concentration: 40% functional pigment
Density (25° C): 11.66 lbs/gallon
Specific Gravity (25° C): 1.4
Active Density: 4.71 functional pounds per gallon
Delivery Method: Totes of approximately 1485 functional pounds (315 gallons)

MicroShades™ Redwood Red-Brown (RB)
Description: Red brown opaque, aqueous dispersion with no odor.
Concentration: 51.4% functional pigment
Density (25° C): 13.9 lbs/gallon
Specific Gravity (25° C): 1.67
Active Density: 7.14 functional pounds per gallon
Delivery Method: Totes of approximately 2265 functional pounds (315 gallons)

MicroShades™ Pigment Additive (PA)
Description: Odorless milky white liquid
Concentration: 25% functional pigment
Density (25° C): 8.33 lbs/gallon
Specific Gravity (25° C): 1.0
Active Density: 2.09 functional pounds per gallon
Delivery Method: Totes of approximately 685 functional pounds (325 gallons)

APPENDIX B - Attachment #4

Treating Process Description
MicroPro™ 200C

The basic treating process is simple and highly controlled.

The lumber, timbers and plywood to be treated are loaded onto lumber trams. The lumber is moved into a large horizontal treating cylinder via small rail. The cylinder door is sealed, and a vacuum is applied to remove most of the air from the cylinder and the wood cells. Preservative solution (MicroPro™ 200C) is then pumped into the cylinder the pressure raised to about 150 pounds per square inch, forcing MicroPro™ 200C into the wood.

Following pressure release, the solution is pumped back into a storage tank for later re-use. A vacuum is drawn within the treating cylinder to remove excess solution from the wood to control drippage following treatment. At the end of the process, the cylinder door is opened and the lumber is pulled out. The area immediately under the rail is called a steel chemical containment drip track area. The drip track area is built of steel plate and is sloped to allow drippage to flow back to the steel-lined normally wetted process pit under the door of the cylinder. Liquid materials collected in the normally wetted process pit are returned to the process tankage for re-use. Although not required for this preservative chemical, the steel chemical containment drip track area is constructed and operated in a manner similar to the Federal Regulations found in 40 CFR Parts 260, 261, 262, and 265.

After the treated material has set on the drip track area and the lumber has become surface dry, the product is ready for storage and/or shipment to the customer.

This plant will use only Osmose MicroPro™ 200C as the chemical to treat the lumber. The MicroPro™ 200C is purchased in the form of liquid concentrate. The MicroPro™ 200C concentrate is introduced into the treating system by direct piping into the primary work tank. The chemical unloading area will have a concrete floor and curbing to prevent spills to the environment.

Osmose will inform the plant when a delivery is to be made. Deliveries of chemical product will be made under onsite supervision during the plant's normal daytime operating hours.

This treating process uses water as the carrier. A slight odor of latex paint may be found in the immediate area of the treating cylinder. Odors are generally not detected outside the treating building.

The following is additional information regarding the "state-of-the-art total containment" construction of this facility. We reiterated that, in fact, all of the volume of the largest process tank would be contained within the immediate tank farm spill containment area within the treating building.

APPENDIX B - Attachment #4 (continued)

Treating Process Description
MicroPro™ 200C

Critical design criteria features for proper containment include:

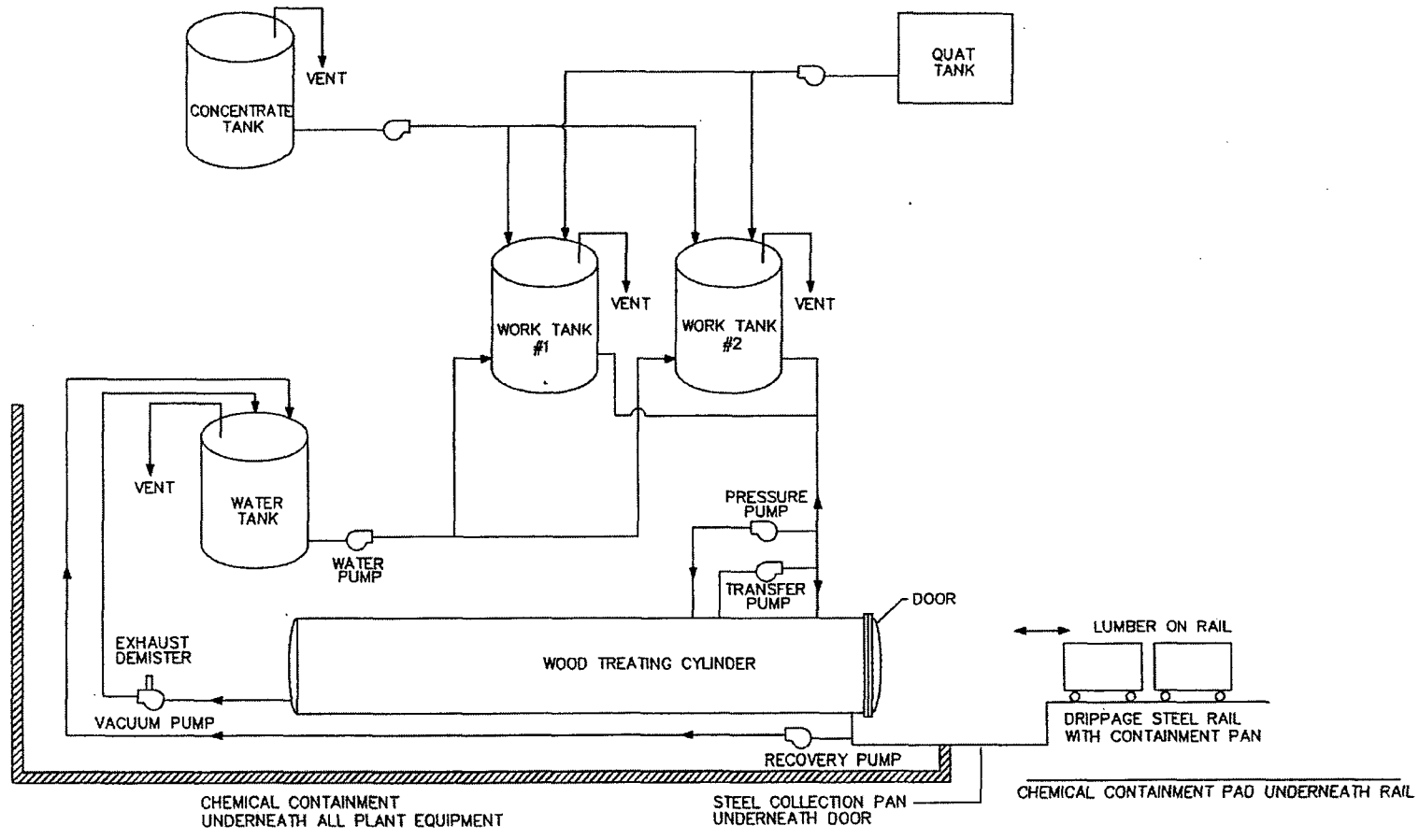
The floor of the containment system will collect liquid and drain it back to collection sumps for recycle back to process.

This wood preserving system utilizes water which allows all liquid collected in the building to be recycled back to process and used as makeup for the treating solution.

There are no underground pipes or drains from this facility and the facility is a "Zero Discharge" self-contained facility under roof.

The plant equipment (tanks, pumps, cylinders, etc.) will be contained in a steel or concrete chemical containment system designed to hold a minimum of 100 percent of the volume of the largest vessel.

ATTACHMENT #5



NOTE:
1. ALL PIPING AND PROCESS EQUIPMENT IS ABOVE GROUND AND CONTAINED IN THE STEEL CHEMICAL CONTAINMENT SYSTEM.

PROCESS FLOW DIAGRAM
TYPICAL OSMOSE MicroPro 200C WOOD TREATING PLANT

SCALE: NONE DATE: 7-31-06

APPENDIX B

Attachment #6

Material Safety Data Sheets

MicroPro 200C
Carbo-NT
MicroShades Cedar Honey Brown
MicroShades Green
MicroShades PA
MicroShades Red Brown

Osmose MATERIAL SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET: **MicroPro 200C**

SECTION I

MSDS NUMBER:	217-osm
MSDS CODE:	OSM
SYNONYMS:	N/A
MANUFACTURED BY:	Osmose, Inc.
EPA REGISTRATION NUMBER:	3008-92
VENDOR:	N/A
EMERGENCY PHONE:	CHEMTREC: 1(800) 424-9300
OTHER CALLS:	716-882-5905
ADDRESS:	980 Ellicott Street, Buffalo NY 14209
MSDS PREPARED BY:	Teri Muchow
DATE PREPARED:	January 25, 2006
DATE LAST REVISED:	October 10, 2007 (replaces January 31, 2007)

CHEMTREC'S EMERGENCY TELEPHONE NUMBER IS TO BE USED ONLY IN THE EVENT OF CHEMICAL EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE, OR ACCIDENT INVOLVING CHEMICALS.

HAZARD SUMMARY

CAUTION! Harmful if swallowed or absorbed through skin.

Eyes - ***May cause irritation.***

Skin - **Certain individuals may be sensitive to copper. May cause irritation**

Ingestion - ***May be harmful swallowed. May cause burning pain in mouth, esophagus and stomach.***

Inhalation - **May cause irritation to the upper respiratory tract.**

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

TRADE NAME: MicroPro 200C INGREDIENT NAME	CAS	OSHA PEL	ACGIH TLV	OTHER	%
Copper Carbonate*	12069-69-1	1 mg/m^3 Copper dusts & mists as Cu 0.1 mg/m^3 Copper fume as Cu	1 mg/m^3 Copper dusts & mists as Cu 0.2 mg/m^3 Copper fume as Cu	N/A	57.6%
Dispersant	N/A - Mixture	None Established	None Established	N/A	7 – 10 %
Sodium Nitrite	7632-00-0	N/A	N/A	RQ = 100 lbs.	2.0 %
Water	7732-18-5	None	None	N/A	15 - 20 %

*Copper oxide equivalent 41.70%; Copper Metallic Equivalent 33.31%

SECTION III - CHEMICAL CHARACTERISTICS

BOILING POINT	MELTING POINT	FREEZING POINT	SPECIFIC GRAVITY ($H_20 = 1$)	THEORETICAL VOC CONTENT (PERCENT OF WEIGHT)	
Not Determined	N/A	Not Determined	1.78 – 1.92	Not Determined	
WEIGHT PER GALLON	pH:	VAPOR PRESSURE	VAPOR DENSITY	DENSITY	EVAPORATION RATE BASIS (N-BUAC) = 1
14.9 – 16.0 lbs/gal.	9.21	Not Determined	Not Determined	See specific gravity	Not Determined
SOLUBILITY IN WATER: Soluble		REACTIVITY IN WATER: N/A			
APPEARANCE AND ODOR:	Light green opaque, aqueous dispersion. Latex paint-like odor.				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	METHOD	FLAMMABLE LIMITS IN AIR (%)	AUTOIGNITION TEMPERATURE
Not Determined	N/A	N/A	N/A

Osmose MATERIAL SAFETY DATA SHEET

NFPA CODES	HEALTH	2	***HMIS CODES:***	HEALTH	2
	FLAMMABILITY	0		FLAMMABILITY	0
	REACTIVITY	0		REACTIVITY	0
	OTHER	N/A		PROTECTION	D
EXTINGUISHER MEDIA:	Use extinguishing agents appropriate for surrounding fire.				

SPECIAL FIRE FIGHTING PROCEDURES: *When responding to a fire, wear NIOSH/MSHA approved self-contained breathing apparatus* and protective clothing. Move container from fire area if it can be done without risk. Avoid inhalation of material or combustion by-products.

UNUSUAL FIRE AND EXPLOSION HAZARDS: *Stay upwind and keep out of low areas.*

SECTION V - REACTIVITY DATA

IS THIS CHEMICAL STABLE UNDER NORMAL CONDITIONS OF HANDLING/STORAGE (Y/N)? Y
CONDITIONS TO AVOID (REGARDING STABILITY): None Known
INCOMPATIBILITY (MATERIALS TO AVOID): Sodium hypobromite, acetylene, hydrazine, nitromethane, strong acids and reducing agents.
HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may produce acrid smoke and toxic fumes.
HAZARDOUS POLYMERIZATION POSSIBLE (Y/N)? N
CONDITIONS TO AVOID (REGARDING POLYMERIZATION): N/A

SECTION VI - HEALTH HAZARDS

EMERGENCY OVERVIEW: Harmful if swallowed or absorbed through skin. Avoid contact with skin, eyes or clothing. Wear goggles, face shield or safety glasses and rubber gloves when handling. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum or using tobacco. Remove contaminated clothing and wash before reuse. ROUTES OF ENTRY: Skin contact and eye contact.
SIGNS AND SYMPTOMS OF ACUTE OVEREXPOSURE:

Swallowing
May cause burning pain in mouth, esophagus and stomach. Hemorrhagic gastritis, nausea, vomiting, abdominal pain, metallic taste and diarrhea may occur. If vomiting does not occur immediately systemic copper poisoning may occur. Symptoms may include capillary damage, headache, cold sweat, weak pulse, kidney and liver damage, central nervous excitation followed by depression, jaundice, convulsions, blood effects, paralysis and coma. Death could occur from shock or renal failure.

Skin Exposure
Certain individuals may be sensitive to copper. May cause irritation

Eye Contact
May cause irritation.

Inhalation
May cause irritation to the upper respiratory tract. Symptoms may include coughing, sore throat and shortness of breath.

CHRONIC OVEREXPOSURE: Prolonged or repeated skin exposure to copper may cause dermatitis.
CHEMICAL LISTED AS A CARCINOGEN OR POTENTIAL CARCINOGEN?:

- NATIONAL TOXICOLOGY PROGRAM (Y/N): N
- IARC MONOGRAPHS (Y/N): N
- OSHA (Y/N): N

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None known
ACUTE AND CHRONIC TOXICITY:

- Oral LD_{50} (rat): > 2,000 mg/kg
- Acute Dermal LD_{50} (rat): > 2,000 mg/kg
- Acute Inhalation LC_{50} (rat): > 2.06 mg/L
- Skin Irritation (rabbit): Slightly irritating to the skin
- Eye Irritation (rabbit): Minimally irritating to the eye.
- Skin sensitization (Guinea pig): Not a sensitizer

EMERGENCY AND FIRST AID PROCEDURES

EMERGENCY PHONE NUMBER OF MANUFACTURER: CHEMTREC 1(800) 424-9300

Chemically contaminated personnel must be taken for medical attention. Rescuers should be taken for medical attention if necessary. Take a copy of label and MSDS to physician or health-care professional with victim.

Osmose MATERIAL SAFETY DATA SHEET

1.	If in eyes:	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
2.	If on skin or clothing:	Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
3.	If swallowed:	Call a poison control center or doctor immediately for treatment advice. Have a person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.
4.	If inhaled:	Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth to mouth if possible. Call a poison control center or doctor for further treatment advice.

NOTES TO PHYSICIAN: Take appropriate action to counteract symptoms.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

UNITED STATES DEPARTMENT OF TRANSPORTATION SHIPPING DESCRIPTION:

MicroPro 200C contains sodium nitrite, a listed hazardous substance with a RQ value of 100 pounds. If shipping 312 gallons or greater in a single package, the proper shipping description is:

Environmentally hazardous substance, liquid, n.o.s., 9, UN3082, PGIII, RQ (contains sodium nitrite)

If shipping less than 312 gallons in single package, the material can be shipped as non-regulated.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep containers closed when not in use. Do not contaminate drinking water, food or feed additive.
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Wear appropriate protective equipment and NIOSH/MSHA approved respirator where mists of vapors of unknown concentrations may be generated (self-contained breathing apparatus preferred). Dike and contain spill with inert material (sand, earth, etc.) and transfer the liquid and solid separately to containers for recovery or disposal. Keep spill out of sewers and open bodies of water.
WASTE DISPOSAL METHODS: Dispose of in compliance with all Federal, Sate and local lays and regulations.
CONTAINER DISPOSAL: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION: As necessary to meet exposure limits stated in Section II. Refer to the MSDSs of all products used in conjunction with this product.
VENTILATION REQUIREMENTS: In processes where mists or vapors may be generated, proper ventilation must be provided in accordance with good ventilation practices.
PROTECTIVE GLOVES: Rubber gloves to prevent skin contact.
EYE PROTECTION: Wear chemical splash goggles or face-shield where there is a potential for eye contact. Use safety glasses with side shields under typical conditions, where face or eye contact is unlikely.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Eye wash; safety shower; protective clothing (long sleeves, coveralls or other, as appropriate), when needed, to prevent skin contact.
WORK/HYGIENIC PRACTICES: As with all chemicals, avoid getting this solution on you or in you. Protective clothing must be changed when it shows signs of contamination. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. Applicators must not eat or drink, or use tobacco products during those parts of the application process that may expose them to the wood treatment formulation (e.g., manually opening/closing cylinder doors, moving trams out of cylinders, mixing chemicals, handling freshly treated wood).

NOTE: For additional control measures, refer to the MSDSs of all products used in conjunction with this product. If the use of another product requires a higher level of protective equipment, then the PPE requirements of that product should be followed.

Osmose MATERIAL SAFETY DATA SHEET

SECTION IX - REGULATORY INFORMATION:

SARA/TITLE III

SECTION 302:
N/A

SECTION 304:
Sodium nitrite has a SARA/CERCLA RQ of 100 pounds. Spill or releases resulting in the loss of this ingredient at or above its RQ requires immediate notification to the National Response Center and to your Local Emergency Response Planning Committee.

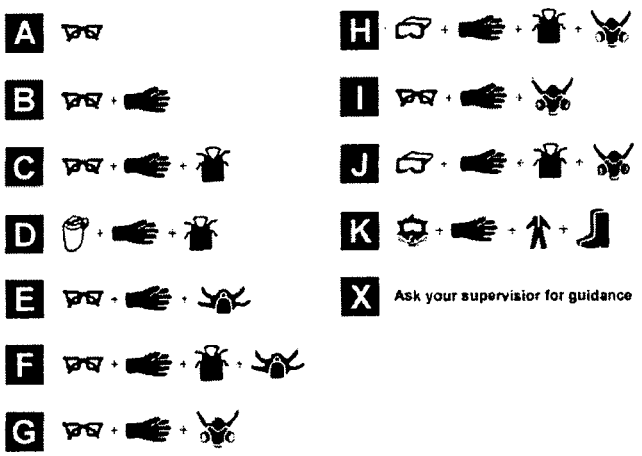
SECTION 311 & 312:
Storage of this product will subject you to reporting under Section 311 and 312 of SARA. Under Section 311 you are required to submit material safety data sheets to your Local Emergency Planning Committee (LEPC), your State Emergency Response Commission (SERC) and your local fire department. Under Section 312 you are required to submit a Tier I or II Inventory Form to your LEPC, SERC and local fire department by March 1st of each year.

SECTION 312 - HAZARD CATEGORIES:
Immediate (Acute) Health: Yes
Delayed (Chronic) Health: No
Fire Hazard: No
Reactive Hazard: No
Sudden Release of Pressure: No

SECTION 313:
This portion of the act requires submission of annual reports of releases of the following components of this material if the *threshold reporting quantities as listed in 40 CFR 372, are met or exceeded: Copper Carbonate* (CAS #12069-69-1) is reportable as a copper compound; Sodium Nitrite is a SARA 313 listed chemical. CAS numbers and weight percents are found in Section 2.

CALIFORNIA PROPOSITION 65 – This product is not regulated under California Proposition 65.

HAZARDOUS MATERIALS INFORMATION SYSTEM (HMIS)
PERSONAL PROTECTION INDEX



N/A = Not Applicable

NOTICE: **The information herein is given in good faith but no warranty, expressed or implied, is made, and Osmose, Inc. expressly disclaims liability from reliance on such information. Information on this form is furnished for the purpose of compliance with the Occupational Safety and Health Act of 1970 and shall not be used for any other purpose. Use or dissemination of all or any part of this information for any other purpose may result in a violation of law or constitute grounds for legal action.**

Osmose MATERIAL SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET: **Carbo-NT**

SECTION I

MSDS NUMBER:	186-osm
MSDS CODE:	OSM
SYNONYMS:	N/A
MANUFACTURED FOR:	Osmose, Inc.
EPA REGISTRATION NUMBER:	6836-304-3008
VENDOR:	N/A
EMERGENCY PHONE:	CHEMTREC: 1(800) 424-9300
OTHER CALLS:	716-882-5905
ADDRESS:	980 Ellicott Street, Buffalo NY 14209
MSDS PREPARED BY:	Teri Muchow
DATE PREPARED:	June 18, 2003
DATE LAST REVISED:	July 27, 2006 (replaces December 22, 2005)

**CHEMTREC'S EMERGENCY TELEPHONE NUMBER IS TO BE USED ONLY IN THE EVENT OF CHEMICAL EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE, OR ACCIDENT INVOLVING CHEMICALS.*

HAZARD SUMMARY

DANGER! CORROSIVE – May cause severe irritation or burns to the eyes, skin, gastrointestinal tract, and respiratory system.

Eyes - ***Corrosive to eyes. Severely irritating to the eyes and may cause eye burns. May cause permanent eye injury.***

Skin - **Corrosive to the skin. Severely irritating to the skin and may cause chemical burns to the skin.**

Ingestion - **May be harmful or fatal if swallowed. Ingesting may produce chemical burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract.**

Inhalation - **Inhalation of vapors, mists or sprays can cause severe irritation or chemical burns of the nose, throat and lungs.**

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

TRADE NAME: Carbo-NT INGREDIENT NAME	CAS	OSHA PEL	ACGIH TLV	OTHER	%
Didecyl dimethyl ammonium carbonate and Didecyl dimethyl ammonium bicarbonate	Proprietary	None Established	None Established	N/A	50%*
N-Dialkyl-N, N-dimethylamine	Proprietary	None Established	None Established	N/A	1%
Methanol	67-56-1	200 ppm TWA	200 ppm TLV 250 ppm STEL	RQ = 5000 pounds	3%
Propylene glycol	57-55-6	N/A	N/A	N/A	9%
Water	7732-18-5	None	None	N/A	36%

**equivalent to approximately 48% Didecyl dimethyl ammonium chloride (DDAC)*

SECTION III - CHEMICAL CHARACTERISTICS

BOILING POINT	MELTING POINT	FREEZING POINT	SPECIFIC GRAVITY (H_20 = 1)	THEORETICAL VOC CONTENT (PERCENT OF WEIGHT)	
Not known	N/A	-10°C	0.96 @ 25°C	10.4% nominal, 14.4% maximum	
WEIGHT PER GALLON	pH:	VAPOR PRESSURE	VAPOR DENSITY	DENSITY	EVAPORATION RATE BASIS (N-BUAC) = 1
8.0 lbs/gal @ 77°F	9 - 11	Not Available	Not Known	See specific gravity.	Not Known
PERCENT VOLATILE (BY WEIGHT)	VISCOSITY	SOLUBILITY IN WATER	REACTIVITY IN WATER	APPEARANCE & ODOR	
49%	350 CPS@ 21°C	Soluble	N/A	Color may vary from amber to pale yellow liquid; slight amine odor.	

Osmose MATERIAL SAFETY DATA SHEET

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	METHOD	FLAMMABLE LIMITS IN AIR (%)	AUTOIGNITION TEMPERATURE
> 200°F	Pensky-Martin	Not available	Not available

NFPA CODES	HEALTH	2	***HMIS CODES:***	HEALTH	2
	FLAMMABILITY	1		FLAMMABILITY	1
	REACTIVITY	0		REACTIVITY	0
	OTHER	N/A		PROTECTION	D
EXTINGUISHER MEDIA:	Alcohol foam, CO_2, dry chemical, water				

SPECIAL FIRE FIGHTING PROCEDURES: Must wear NIOSH/MSHA approved self-contained breathing apparatus and protective clothing. Cool fire-exposed containers with water spray.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Products of combustion are toxic.

SECTION V - REACTIVITY DATA

IS THIS CHEMICAL STABLE UNDER NORMAL CONDITIONS OF HANDLING/STORAGE (Y/N)? Y
CONDITIONS TO AVOID (REGARDING STABILITY): None Known
INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizing or reducing agents.
HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may produce toxic vapors/fumes of amines and other organic materials, and oxides of carbon and nitrogen.
HAZARDOUS POLYMERIZATION POSSIBLE (Y/N)? N
CONDITIONS TO AVOID (REGARDING POLYMERIZATION): N/A

SECTION VI - HEALTH HAZARDS

EMERGENCY OVERVIEW: Corrosive. Causes irreversible eye damage and skin burns. May be fatal if swallowed or inhaled. Do not get *in eyes, on skin or clothing. Do not breathe vapor. Wash thoroughly with soap and water after handling and before eating, drinking or using* tobacco. Harmful if absorbed through the skin.
ROUTES OF ENTRY: Skin contact and eye contact.
SIGNS AND SYMPTOMS OF ACUTE OVEREXPOSURE: There is no information available on effects of overexposure. Based upon animal toxicity information available for this and closely related materials, the following effects can be anticipated:

EYES	Direct eye contact may produce severe irritation and/or chemical burns with possibly irreversible tissue damage.
SKIN:	Direct skin contact may produce severe irritation and/or chemical burns with possibly irreversible tissue damage.
INGESTION:	This product may be harmful or fatal if swallowed. Ingestion can cause immediate burning pain in the mouth, throat and abdomen with severe swelling of the larynx. Ingestion may cause skeletal muscle paralysis affecting the ability to breathe; circulatory shock; and/or convulsions.
INHALATION:	This product may be harmful by inhalation.

CHRONIC OVEREXPOSURE: None known
CHEMICAL LISTED AS A CARCINOGEN OR POTENTIAL CARCINOGEN?:

- NATIONAL TOXICOLOGY PROGRAM (Y/N): N
- IARC MONOGRAPHS (Y/N): N
- OSHA (Y/N): N

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None known
ACUTE AND CHRONIC TOXICITY: The toxicology information provided below is for this material and closely related materials:

- Oral LD_{50} (rat): 245 mg/kg
- Skin Irritation (rabbit): Corrosive
- Photosensitization (Guinea pig): Not a sensitizer or photoallergen

GENOTOXICITY/MUTAGENICITY: For N,N-Dialkyl-N-, N-dimethylammonium chloride –

- Ames test (in vitro – Salmonella sp.): Not mutagenic.
- CHO/HGPRT Assay (*in vitro* –CHO cells): Not mutagenic.
- Unscheduled DNA Synthesis (invitro – CHO cells): No increase in activity
- Chromosome Aberration (in vitro – CHO cells): Not clastogenic with or without metabolic *activation.*

REPRODUCTIVE TOXICITY INFORMATION: For N,N-Dialkyl-N, N-dimethylammonium chloride:

- two generation reproductive/developmental study (rat-oral): No evidence of reproductive or developmental toxicity effect was observed at exposure doses ranging from 10 – 50 mg/kg/day.
- Developmental (rabbit – oral): No evidence of developmental toxic effects was noted at exposure doses ranging from 10 – 50 mg/kg/day administered from day 6 through 15 of gestation.

Osmose MATERIAL SAFETY DATA SHEET

EMERGENCY AND FIRST AID PROCEDURES

EMERGENCY PHONE NUMBER OF MANUFACTURER: CHEMTREC 1(800) 424-9300

Chemically contaminated personnel must be taken for medical attention. Rescuers should be taken for medical attention if necessary. Take a copy of label and MSDS to physician or health-care professional with victim.

1. INHALATION: If inhaled, remove from area to fresh air. Get immediate medical attention. If not breathing, clear airway and start artificial respiration. If victim is having trouble breathing, give supplemental oxygen, if available.
2. EYE CONTACT: Immediately flush eyes with large amounts of running water for at least 15 minutes. Hold eyelids apart to ensure rinsing of the entire surface of the eye and lids with water. Get immediate medical attention. If physician is not available, flush for additional 15 minutes and then transport victim to medical care.
3. SKIN CONTACT: Wash with plenty of running water, and soap if available, for 15 minutes. Immediately remove contaminated clothing and shoes. Get immediate medical attention. For dermal overexposure, burn cream may help prevent irritation from blistering.
4. INGESTION: Immediately give 3 – 4 glasses of milk (if unavailable, give water). DO NOT induce vomiting. If vomiting does occur, give fluids again. Get medical attention. Have physician determine if patient's condition allows for induction of vomiting or evacuation of the stomach. Do not give anything by mouth to a convulsing or unconscious person.

NOTES TO PHYSICIAN: *Probable mucosal damage may contraindicate the use of gastric lavage. Preventive measures against* circulatory shock should be followed, as well as, measures to support respiration including manually or mechanically, including providing oxygen, if needed.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

UNITED STATES DEPARTMENT OF TRANSPORTATION SHIPPING DESCRIPTION:
Corrosive liquid, n.o.s., 8, UN1760, PGIII (N, N-Dialkyl-N, N-dimethylammonium bicarbonate/carbonate)

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Maximum storage temperature is 140°F. Keep containers closed when not in use. Do not contaminate drinking water, food or feed by storage or disposal. **Remove contaminated clothing immediately and dispose of properly. Do not re-use contaminated clothing.**
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Danger! Corrosive liquid! Wear appropriate protective equipment including gloves (rubber, neoprene or nitrile), and impervious shirt and pants (Tyvec). Where mists or vapors of unknown concentrations may be generated, use NIOSH approved respirator (self-contained breathing apparatus preferred). In the event of a spill or release, detergent (oil emulsifier) can be used to clean spill area. Dike and contain spill with inert material (sand, earth, etc.) and transfer the liquid and solid separately to containers for recovery or disposal. Keep spill out of sewers and open bodies of water.
WASTE DISPOSAL METHODS: Dispose of in compliance with all Federal, Sate and local laws and regulations. Incineration is the preferred method.
CONTAINER DISPOSAL: Empty containers retain product residues and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat or flame. They may explode and cause injury. Follow all MSDS precautions in handling empty containers. Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION: *In processes where mists or vapors may be generated, a NIOSH/MSHA jointly approved respirator is* advised in the absence of proper environmental controls. Individuals who enter pressure treatment cylinders and other related equipment that are contaminated with the wood treatment solution (e.g., cylinders that are in operation or are not free of the treatment solution) must wear a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G) or a NIOSH approved respirator with an organic vapor (OV) cartridge or canister with any R, P or HE prefilter. If this product is used in conjunction with a product that requires a higher level of respiratory protection, the more protective respirator must be worn.
VENTILATION REQUIREMENTS: In processes where mists or vapors may be generated, proper ventilation must be provided in accordance with good ventilation practices.
PROTECTIVE GLOVES: Prevent skin contact. Wear chemical resistant (rubber, neoprene or nitrile) gloves for routine industrial use. Use double gloves for spill response.
EYE PROTECTION: Prevent eye contact. Wear chemical splash goggles and a face shield when there is a potential for eye contact (splashes, sprays, mists). Use chemical splash goggles to protect the eyes for routine industrial use. The eye protection worn must be compatible with respiratory protection system employed. Ensure eyewash/safety shower stations are available near areas where this product is used.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Prevent skin contact. Wear chemical resistant (i.e. rubber, nitrile, neoprene, Tyvek, etc.) body protection appropriate for task – apron or complete suit. Wear chemical resistant boots to protect the feet. Individuals who enter treatment cylinders and other related equipment contaminated with wood treatment solutions must wear protective clothing (including coveralls, jacket, gloves, and boots) impervious to wood treatment solutions.

Osmose MATERIAL SAFETY DATA SHEET

WORK/HYGIENIC PRACTICES: As with all chemicals, avoid getting this solution on you or in you. Wash hands after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product. **Remove contaminated clothing immediately and dispose of properly. Do not re-use contaminated clothing.** Use ventilation and other engineering controls to minimize exposure to mists or sprays of this product.

SECTION IX – EXOLOGICAL INFORMATION

AQUATIC ECOTOXICITY:

LC_{50} (*rainbow trout – 96 hour – Static*): *0.810 mg/l*
LC_{50} (bluegill sunfish – 96 hour – Static/Renewal): 0.28 mg/l
LC_{50} (Sheepshead Minnow – 96 hour Static/Renewal): 1.110 mg/l
EC_{50} (Daphnia magna – 48 hour – Static): 0.073 mg/l
LC_{50} (mysid shrimp – 96 hour – static): 0.066 mg/l

SECTION X - REGULATORY INFORMATION:

SARA/TITLE III ;SECTION 312 - HAZARD CATEGORIES:
Immediate (Acute) Health: Yes **Reactive Hazard: No**
Delayed (Chronic) Health: No **Sudden Release of Pressure: No**
Fire Hazard: Yes

SECTION 302:
N/A

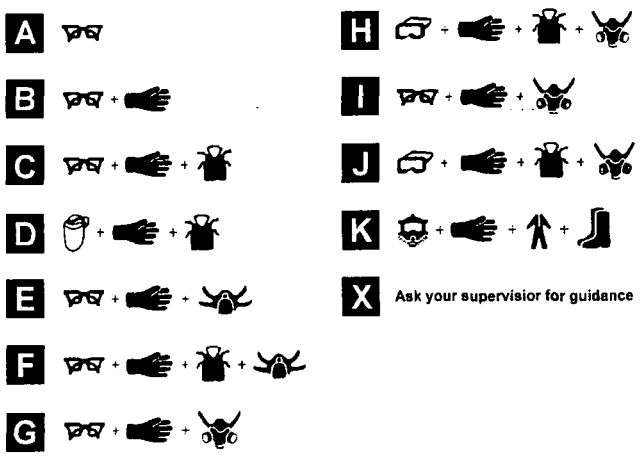
SECTION 304:
N/A

SECTION 311 & 312:
Storage of Carbo-NT will subject you to reporting under Section 311 and 312 of SARA. Under Section 311 you are required to submit *material safety data sheets to your Local Emergency Planning Committee (LEPC), your State Emergency Response Commission (SERC)* and your local fire department. Under Section 312 you are required to submit a Tier I or II Inventory Form to your LEPC, SERC and local fire department by March 1st of each year.

SECTION 313:
This portion of the act requires submission of annual reports of releases of the following components of this material if the threshold reporting quantities as listed in 40 CFR 372, are met or exceeded:
Methanol, CAS #67-56-1; Typical Maximum Concentration 3%.

CALIFORNIA PROPOSITION 65 – This product contains N-Nitrosodimethylamine (CAS #62-75-9) at 100 ppb. This chemical is known to the State of California to cause cancer.

HAZARDOUS MATERIALS INFORMATION SYSTEM (HMIS)
PERSONAL PROTECTION INDEX



N/A = Not Applicable

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Osmose MATERIAL SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET: **MicroShades Cedar Honey Brown**

SECTION I

MSDS NUMBER:	224-osm
MSDS CODE:	OSM
SYNONYMS:	N/A
MANUFACTURED BY:	Osmose, Inc.
EPA REGISTRATION NUMBER:	N/A
VENDOR:	N/A
EMERGENCY PHONE:	CHEMTREC: 1(800) 424-9300
OTHER CALLS:	716-882-5905
ADDRESS:	980 Ellicott Street, Buffalo NY 14209
MSDS PREPARED BY:	*Teri Muchow*
DATE PREPARED:	January 26, 2006
DATE LAST REVISED:	January 12, 2007 (replaces August 16, 2006)

**CHEMTREC'S EMERGENCY TELEPHONE NUMBER IS TO BE USED ONLY IN THE EVENT OF CHEMICAL EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE, OR ACCIDENT INVOLVING CHEMICALS.*

HAZARD SUMMARY

CAUTION – May cause eye or skin irritation. May be harmful if swallowed.

Eyes - **May cause slight irritation.**
Skin - **May cause slight irritation.**
Ingestion - **May be harmful if swallowed.**
Inhalation - **May cause irritation.**

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

TRADE NAME: MicroShades Cedar Honey Brown INGREDIENT NAME	CAS	OSHA PEL	ACGIH TLV	OTHER	%
Red Iron Oxide	1309-37-1	10 mg/m3 (total dust)	10 mg/m3 (total dust)		< 5%
Yellow Iron Oxide	51274-00-1	10 mg/m3 (total dust)	10 mg/m3 (total dust)	N/A	35 – 40%
Surfactant	N/A - Mixture	None Established	None Established	N/A	< 10%
Antifoam	N/A - Mixture	None Established	None Established	N/A	< 1 %
Methine Dye	N/A – Mixture	None Established	None Established	N/A	< 1%
Water	7732-18-5	None	None	N/A	> 50%

SECTION III - CHEMICAL CHARACTERISTICS

BOILING POINT	MELTING POINT	FREEZING POINT	SPECIFIC GRAVITY (H_2O = 1)	THEORETICAL VOC CONTENT (PERCENT OF WEIGHT)
Not Determined	Not Determined	Not Determined	1.38 – 1.50	Not Determined

WEIGHT PER GALLON	pH:	VAPOR PRESSURE	VAPOR DENSITY	DENSITY	EVAPORATION RATE BASIS (N-BUAC) = 1
11.5 – 12.5 lbs/gal	Not Determined	Not Determined	Not Determined	See specific gravity	Not Determined

SOLUBILITY IN WATER:	*Soluble*	REACTIVITY IN WATER:	N/A
APPEARANCE AND ODOR:	Cedar honey brown opaque, aqueous dispersion. No odor.	Viscosity:	50 to 500 cPs @ 70°F

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	METHOD	FLAMMABLE LIMITS IN AIR (%)	AUTOIGNITION TEMPERATURE
Non-combustible	N/A	N/A	N/A

Osmose MATERIAL SAFETY DATA SHEET

NFPA CODES	HEALTH	1	*HMIS CODES:*	HEALTH	1
	FLAMMABILITY	0		FLAMMABILITY	0
	REACTIVITY	0		REACTIVITY	0
	OTHER	N/A		PROTECTION	D
EXTINGUISHER MEDIA:	Water, dry chemical foam, or alcohol-resistant foam.				

SPECIAL FIRE FIGHTING PROCEDURES: As in any fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known.

SECTION V - REACTIVITY DATA

IS THIS CHEMICAL STABLE UNDER NORMAL CONDITIONS OF HANDLING/STORAGE (Y/N)? Y
CONDITIONS TO AVOID (REGARDING STABILITY): None Known
INCOMPATIBILITY (MATERIALS TO AVOID): None known.
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon dioxide and carbon monoxide.
HAZARDOUS POLYMERIZATION POSSIBLE (Y/N)? N
CONDITIONS TO AVOID (REGARDING POLYMERIZATION): N/A

SECTION VI - HEALTH HAZARDS

EMERGENCY OVERVIEW: Caution. May cause skin & eye irritation.
ROUTES OF ENTRY: Skin contact and eye contact.
SIGNS AND SYMPTOMS OF ACUTE OVEREXPOSURE:

Eyes - May cause irritation.

Skin - May cause irritation.

Ingestion - May be harmful if swallowed.

Inhalation - May cause irritation.

CHRONIC OVEREXPOSURE: None known.
CHEMICAL LISTED AS A CARCINOGEN OR POTENTIAL CARCINOGEN?:

- NATIONAL TOXICOLOGY PROGRAM (Y/N): N
- IARC MONOGRAPHS (Y/N): N
- OSHA (Y/N): N

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None known
ACUTE AND CHRONIC TOXICITY: No acute toxicity data is available on this formulated product, however the below data is available on the individual ingredients used to formulate this pigment.

- Oral LD_{50} (rat): > 10 g/kg (rats) for yellow iron oxide
- Oral LD_{50} (rat): > 2,000 mg/kg for surfactant

EMERGENCY AND FIRST AID PROCEDURES

EMERGENCY PHONE NUMBER OF MANUFACTURER: CHEMTREC 1(800) 424-9300

1. INHALATION: Remove to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention.
2. EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Seek medical attention.
3. SKIN CONTACT: Immediately wash skin with plenty of soap and water for at least 15 minutes. Remove dirty clothes and shoes and thoroughly clean before reuse.
4. INGESTION: Never give anything by mouth to an unconscious person. Do not induce vomiting unless directed to do so by a physician.

NOTES TO PHYSICIAN: Treat symptomatically and supportively.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

UNITED STATES DEPARTMENT OF TRANSPORTATION SHIPPING DESCRIPTION:
Not Regulated.

Osmose MATERIAL SAFETY DATA SHEET

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Wash thoroughly after handling. Keep container tightly closed. Wear appropriate personal protective equipment as specified in Section VIII. Store in a tightly closed container in a cool, dry location.
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Containment Procedures:	Stop the flow of material, if this is without risk. Wear appropriate protective equipment and clothing during clean-up. Contain discharge by booming on water or diking on ground. Prevent entry into sewers, drains, underground or confined spaces, water intakes and waterways.
Clean-Up Procedures:	Absorb spill with inert material. Shovel material into appropriate container for disposal. Sweep up or gather material and place in appropriate container for disposal. Wash spill area thoroughly. Wear appropriate protective equipment during clean-up.
Evacuation Procedures:	Evacuation should not be necessary.
Special Procedures:	Wear appropriate personal protective equipment. Follow all Local, State and Federal Regulations for disposal.

WASTE DISPOSAL METHODS: Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.
CONTAINER DISPOSAL: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION: While the use of this pigment does not necessitate the use of a respirator, the wood preservatives it is being used with may. Refer to the MSDS's of all products used in conjunction with this pigment.
VENTILATION REQUIREMENTS: In processes where mists or vapors may be generated, proper ventilation must be provided in accordance with good ventilation practices.
PROTECTIVE GLOVES: *Wear appropriate protective gloves to prevent skin exposure.*
EYE PROTECTION: Wear safety glasses with side shields or chemical safety goggles to prevent eye exposure.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Wear appropriate protective clothing to prevent skin exposure. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
WORK/HYGIENIC PRACTICES: Wash thoroughly after skin contact and before eating, drinking, using tobacco products, or using restrooms.
NOTE: For additional control measures, refer to the MSDS's of all products used in conjunction with this pigment. If the use of another product requires a higher level of protective equipment, then the PPE requirements of that product should be followed.

SECTION IX - REGULATORY INFORMATION:

SARA/TITLE III SECTION 312 - HAZARD CATEGORIES:

Immediate (Acute) Health: No **Reactive Hazard: No**
***Delayed (Chronic) Health:* No** ***Sudden Release of Pressure:* No**
Fire Hazard: No

SECTION 302:
N/A

SECTION 304:
N/A

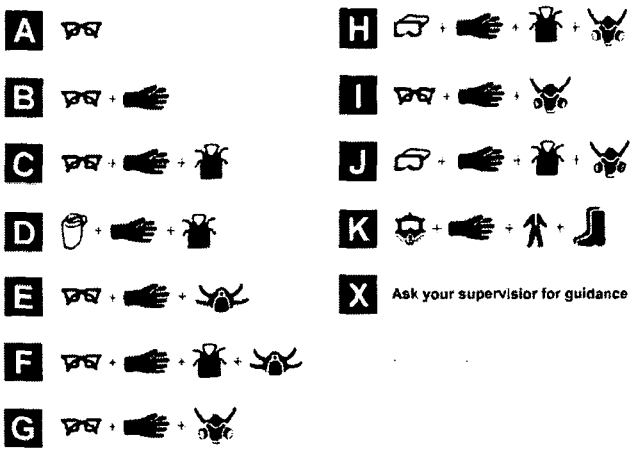
SECTION 311 & 312:
N/A

SECTION 313:
N/A

CALIFORNIA PROPOSITION 65 – This product does not contain ingredients subject to California Proposition 65.

Osmose MATERIAL SAFETY DATA SHEET

HAZARDOUS MATERIALS INFORMATION SYSTEM (HMIS)
PERSONAL PROTECTION INDEX



N/A = Not Applicable

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Osmose MATERIAL SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET: **MicroShades Green**

SECTION I

MSDS NUMBER:	221-osm
MSDS CODE:	OSM
SYNONYMS:	N/A
MANUFACTURED BY:	Osmose, Inc.
EPA REGISTRATION NUMBER:	N/A
VENDOR:	N/A
EMERGENCY PHONE:	CHEMTREC: 1(800) 424-9300
OTHER CALLS:	716-882-5905
ADDRESS:	980 Ellicott Street, Buffalo NY 14209
MSDS PREPARED BY:	Teri Muchow
DATE PREPARED:	January 26, 2006
DATE LAST REVISED:	March 5, 2008 (replaces January 8, 2008)

**CHEMTREC'S EMERGENCY TELEPHONE NUMBER IS TO BE USED ONLY IN THE EVENT OF CHEMICAL EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE, OR ACCIDENT INVOLVING CHEMICALS.*

HAZARD SUMMARY

CAUTION – May cause eye or skin irritation. May be harmful if swallowed.

Eyes - **May cause irritation.**

Skin - **May cause irritation.**

Ingestion - **May be harmful if swallowed.**

Inhalation - **May cause irritation.**

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

TRADE NAME: MicroShades Green INGREDIENT NAME	CAS	OSHA PEL	ACGIH TLV	OTHER	%
Iron Oxides	Mixture	10 mg/m3 (total dust)	10 mg/m3 (total dust)	N/A	40 – 45
Carbon Black	1333-86-4	3.5 mg/m3	3.5 mg/m3		1 - 5
Dispersant	N/A - Mixture	None Established	None Established	N/A	10 - 15
Water	7732-18-5	None	None	N/A	35 - 40

SECTION III - CHEMICAL CHARACTERISTICS

BOILING POINT	MELTING POINT	FREEZING POINT	SPECIFIC GRAVITY (H_20 = 1)	THEORETICAL VOC CONTENT (PERCENT OF WEIGHT)
Not Determined	Not Determined	Not Determined	Approx. 1.58	Not Determined

WEIGHT PER GALLON	pH:	VAPOR PRESSURE	VAPOR DENSITY	DENSITY	EVAPORATION RATE BASIS (N-BUAC) = 1
Approx. 13 lbs/gal.	Not Determined	Not Determined	Not Determined	See specific gravity	Not Determined

SOLUBILITY IN WATER:	Soluble	REACTIVITY IN WATER:	N/A
APPEARANCE AND ODOR:	Green opaque, aqueous dispersion. No odor.	VISCOSITY:	125 cps

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	METHOD	FLAMMABLE LIMITS IN AIR (%)	AUTOIGNITION TEMPERATURE
Non-combustible	N/A	N/A	N/A

Osmose MATERIAL SAFETY DATA SHEET

NFPA CODES	HEALTH	1	HMIS CODES:	HEALTH	1
	FLAMMABILITY	0		FLAMMABILITY	0
	REACTIVITY	0		REACTIVITY	0
	OTHER	N/A		PROTECTION	D
EXTINGUISHER MEDIA:	Water, dry chemical foam, or alcohol-resistant foam.				

SPECIAL FIRE FIGHTING PROCEDURES: As in any fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known.

SECTION V - REACTIVITY DATA

IS THIS CHEMICAL STABLE UNDER NORMAL CONDITIONS OF HANDLING/STORAGE (Y/N)? Y
CONDITIONS TO AVOID (REGARDING STABILITY): None Known
INCOMPATIBILITY (MATERIALS TO AVOID): None known.
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon dioxide, carbon monoxide and oxides of sulfur.
HAZARDOUS POLYMERIZATION POSSIBLE (Y/N)? N
CONDITIONS TO AVOID (REGARDING POLYMERIZATION): N/A

SECTION VI - HEALTH HAZARDS

EMERGENCY OVERVIEW: Caution. May cause skin & eye irritation.
ROUTES OF ENTRY: Skin contact and eye contact.
SIGNS AND SYMPTOMS OF ACUTE OVEREXPOSURE:

Eyes - May cause irritation.

Skin - May cause irritation.

Ingestion - May be harmful if swallowed.

Inhalation - May cause irritation.

CHRONIC OVEREXPOSURE: None known.
CHEMICAL LISTED AS A CARCINOGEN OR POTENTIAL CARCINOGEN?:

- NATIONAL TOXICOLOGY PROGRAM (Y/N): N
- IARC MONOGRAPHS (Y/N): N
- OSHA (Y/N): N

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None known
ACUTE AND CHRONIC TOXICITY: No acute toxicity data is available on this formulated product, however the below data is available on the individual ingredients used to formulate this pigment.

- Oral LD_{50} (rat): > 10,000 mg/kg (rats) for yellow iron oxide
- Oral LD_{50} (rat): > 2,000 mg/kg for dispersant
- Oral LD_{50} (rat): > 8,000 mg/kg for carbon black

EMERGENCY AND FIRST AID PROCEDURES

EMERGENCY PHONE NUMBER OF MANUFACTURER: CHEMTREC 1(800) 424-9300

1. INHALATION: Remove to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention.
2. EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Seek medical attention.
3. SKIN CONTACT: Immediately wash skin with plenty of soap and water for at least 15 minutes. Remove dirty clothes and shoes and thoroughly clean before reuse.
4. INGESTION: Never give anything by mouth to an unconscious person. Do not induce vomiting unless directed to do so by a physician.

NOTES TO PHYSICIAN: Treat symptomatically and supportively.

Osmose MATERIAL SAFETY DATA SHEET

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

UNITED STATES DEPARTMENT OF TRANSPORTATION SHIPPING DESCRIPTION:
Not Regulated.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Wash thoroughly after handling. Keep container tightly closed. Wear appropriate personal protective equipment as specified in Section VIII. Store in a tightly closed container and in a cool, dry location.
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Containment Procedures:	Stop the flow of material, if this is without risk. Wear appropriate protective equipment and clothing during clean-up. Contain discharge by booming on water or diking on ground. Prevent entry into sewers, drains, underground or confined spaces, water intakes and waterways.
Clean-Up Procedures:	Absorb spill with inert material. Shovel material into appropriate container for disposal. Sweep up or gather material and place in appropriate container for disposal. Wash spill area thoroughly. Wear appropriate protective equipment during clean-up.
Evacuation Procedures:	Evacuation should not be necessary.
Special Procedures:	*Wear appropriate personal protective equipment. Follow all Local, State and Federal Regulations for* disposal.

WASTE DISPOSAL METHODS: Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.
CONTAINER DISPOSAL: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION: While the use of this pigment does not necessitate the use of a respirator, the wood preservatives it is being used with may. Refer to the MSDS's of all products used in conjunction with this pigment.
VENTILATION REQUIREMENTS: In processes where mists or vapors may be generated, proper ventilation must be provided in accordance with good ventilation practices.
PROTECTIVE GLOVES: Wear appropriate protective gloves to prevent skin exposure.
EYE PROTECTION: Wear safety glasses with side shields or chemical safety goggles to prevent eye exposure.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Wear appropriate protective clothing to prevent skin exposure. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
WORK/HYGIENIC PRACTICES: Wash thoroughly after skin contact and before eating, drinking, using tobacco products, or using restrooms.
NOTE: For additional control measures, refer to the MSDS's of all products used in conjunction with this pigment. If the use of another product requires a higher level of protective equipment, then the PPE requirements of that product should be followed.

SECTION IX - REGULATORY INFORMATION:

SARA/TITLE III SECTION 312 - HAZARD CATEGORIES:

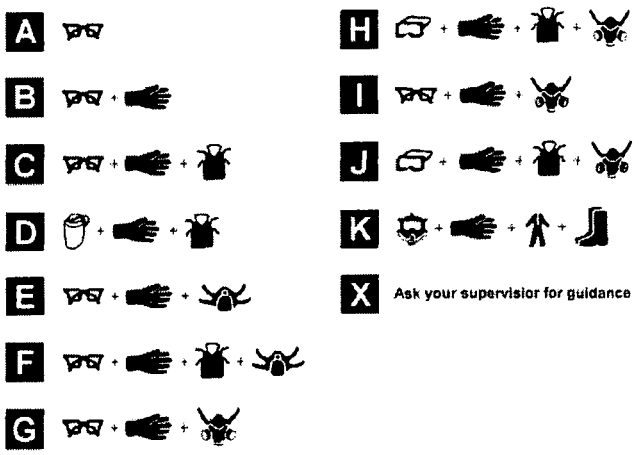
Immediate (Acute) Health: No **Reactive Hazard: No**
Delayed (Chronic) Health: No **Sudden Release of Pressure: No**
Fire Hazard: No

SECTION 302:
N/A
SECTION 304:
N/A
SECTION 311 & 312:
N/A
SECTION 313:
N/A

CALIFORNIA PROPOSITION 65 – This product does not contain ingredients subject to California Proposition 65.

Osmose MATERIAL SAFETY DATA SHEET

HAZARDOUS MATERIALS INFORMATION SYSTEM (HMIS)
PERSONAL PROTECTION INDEX



N/A = Not Applicable

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Osmose MATERIAL SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET: **MicroShades PA**

SECTION I

MSDS NUMBER:	229-osm
MSDS CODE:	OSM
SYNONYMS:	N/A
MANUFACTURED BY:	Osmose, Inc.
EPA REGISTRATION NUMBER:	N/A
VENDOR:	N/A
EMERGENCY PHONE:	CHEMTREC: 1(800) 424-9300
OTHER CALLS:	716-882-5905
ADDRESS:	980 Ellicott Street, Buffalo NY 14209
MSDS PREPARED BY:	Teri Muchow
DATE PREPARED:	March 29, 2006
DATE LAST REVISED:	October 3, 2007 (replaces July 12, 2006)

**CHEMTREC'S EMERGENCY TELEPHONE NUMBER IS TO BE USED ONLY IN THE EVENT OF CHEMICAL EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE, OR ACCIDENT INVOLVING CHEMICALS.*

HAZARD SUMMARY

CAUTION – May cause eye or skin irritation.

Eyes - **May cause eye irritation and burning sensation.**

Skin - **May cause skin irritation.**

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

TRADE NAME: MicroShades PA INGREDIENT NAME	CAS	OSHA PEL	ACGIH TLV	OTHER	%
Polyvinyl Alcohol Solution (Contains 21% Acetic acid ethenyl ester, polymer with ethanol, CAS # 25213-24-5)	*N/A – Mixture*	*None*	*None*	N/A	65 – 70%
Cationic Acrylic Emulsion	Proprietary	None	None	N/A	30 – 35%

SECTION III - CHEMICAL CHARACTERISTICS

BOILING POINT	MELTING POINT	FREEZING POINT	SPECIFIC GRAVITY (H_2O = 1)	THEORETICAL VOC CONTENT (PERCENT OF WEIGHT)
Not Determined	Not Determined	Not Determined	Approx. 1	Not Determined

WEIGHT PER GALLON	pH:	VAPOR PRESSURE	VAPOR DENSITY	DENSITY	EVAPORATION RATE BASIS (N-BUAC) = 1
Approx. 8.33 lbs/gal.	Not Determined	Not Determined	Not Determined	See specific gravity	Not Determined

SOLUBILITY IN WATER:	Soluble	REACTIVITY IN WATER:	N/A
APPEARANCE AND ODOR:	Milky white liquid. No odor.	Viscosity:	Not Determined

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	METHOD	FLAMMABLE LIMITS IN AIR (%)	AUTOIGNITION TEMPERATURE
Not Determined	N/A	Not Determined	Not Determined

NFPA CODES	HEALTH	1	***HMIS CODES:***	HEALTH	1
	FLAMMABILITY	0		FLAMMABILITY	0
	REACTIVITY	0		REACTIVITY	0
	OTHER	N/A		PROTECTION	D

EXTINGUISHER MEDIA: Water, dry chemical foam, or alcohol-resistant foam.

Osmose MATERIAL SAFETY DATA SHEET

SPECIAL FIRE FIGHTING PROCEDURES: As in any fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known.

SECTION V - REACTIVITY DATA

IS THIS CHEMICAL STABLE UNDER NORMAL CONDITIONS OF HANDLING/STORAGE (Y/N)? Y
CONDITIONS TO AVOID (REGARDING STABILITY): None known.
INCOMPATIBILITY (MATERIALS TO AVOID): Keep away from reactive metals (sodium, zinc, copper, calcium, etc.)
HAZARDOUS DECOMPOSITION PRODUCTS: Oxides of carbon.
HAZARDOUS POLYMERIZATION POSSIBLE (Y/N)? N
CONDITIONS TO AVOID (REGARDING POLYMERIZATION): N/A

SECTION VI - HEALTH HAZARDS

EMERGENCY OVERVIEW: Caution. May cause skin & eye irritation.
ROUTES OF ENTRY: Skin contact and eye contact.
SIGNS AND SYMPTOMS OF ACUTE OVEREXPOSURE:

Eyes -	May cause eye irritation and burning sensation.
Skin -	May cause skin irritation.
Ingestion -	No adverse health effects have been observed.
Inhalation -	No adverse health effects have been observed.

CHRONIC OVEREXPOSURE: None known.
CHEMICAL LISTED AS A CARCINOGEN OR POTENTIAL CARCINOGEN?:

- NATIONAL TOXICOLOGY PROGRAM (Y/N): N
- IARC MONOGRAPHS (Y/N): N
- OSHA (Y/N): N

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None known
ACUTE AND CHRONIC TOXICITY: No acute toxicity data is available on this formulated product.

EMERGENCY AND FIRST AID PROCEDURES

EMERGENCY PHONE NUMBER OF MANUFACTURER: CHEMTREC 1(800) 424-9300

1. INHALATION:	Remove to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention.
2. EYE CONTACT:	Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Seek medical attention.
3. SKIN CONTACT:	Immediately wash skin with plenty of soap and water for at least 15 minutes. Remove dirty clothes and shoes, and thoroughly clean before reuse.
4. INGESTION:	Never give anything by mouth to an unconscious person. Do not induce vomiting unless directed to do so by a physician.

NOTES TO PHYSICIAN: Treat symptomatically and supportively.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

UNITED STATES DEPARTMENT OF TRANSPORTATION SHIPPING DESCRIPTION:
Not Regulated.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Wash thoroughly after handling. Wear appropriate personal protective equipment as specified in Section VIII. Use in appropriately ventilated areas. Keep containers closed when not in use. Always open containers slowly to allow any excess pressure to vent. Avoid breathing vapor. Destroy contaminated leather clothing. Spilled polymer solution is very slippery. Use care to avoid falls.

Osmose MATERIAL SAFETY DATA SHEET

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Containment Procedures:	Stop the flow of material, if this is without risk. Wear appropriate protective equipment and clothing during clean-up. Contain discharge by booming on water or diking on ground. Prevent entry into sewers, drains, underground or confined spaces, water intakes and waterways.
Clean-Up Procedures:	Absorb spill with inert material. Shovel material into appropriate container for disposal. Sweep up or gather material and place in appropriate container for disposal. Wash spill area thoroughly. Wear appropriate protective equipment during clean-up.
Evacuation Procedures:	Evacuation should not be necessary.
Special Procedures:	Wear appropriate personal protective equipment. Follow all Local, State and Federal Regulations for disposal.

WASTE DISPOSAL METHODS: Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.
CONTAINER DISPOSAL: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION: While the use of this product does not necessitate the use of a respirator, the products it is being used with may. Refer to the MSDS's of all products used in conjunction with MicroShades PA.
VENTILATION REQUIREMENTS: In processes where mists or vapors may be generated, proper ventilation must be provided in accordance with good ventilation practices.
PROTECTIVE GLOVES: Wear appropriate protective gloves to prevent skin exposure.
EYE PROTECTION: Wear safety glasses with side shields or chemical safety goggles to prevent eye exposure.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Wear appropriate protective clothing to prevent skin exposure. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
WORK/HYGIENIC PRACTICES: Wash thoroughly after skin contact and before eating, drinking, using tobacco products, or using restrooms.
NOTE: For additional control measures, refer to the MSDS's of all products used in conjunction with MicroShades PA. If the use of another product requires a higher level of protective equipment, then the PPE requirements of that product should be followed.

SECTION IX - REGULATORY INFORMATION:

SARA/TITLE III SECTION 312 - HAZARD CATEGORIES:

Immediate (Acute) Health: Yes **Reactive Hazard: No**
Delayed (Chronic) Health: No **Sudden Release of Pressure: No**
Fire Hazard: No

SECTION 302:
N/A

SECTION 304:
N/A

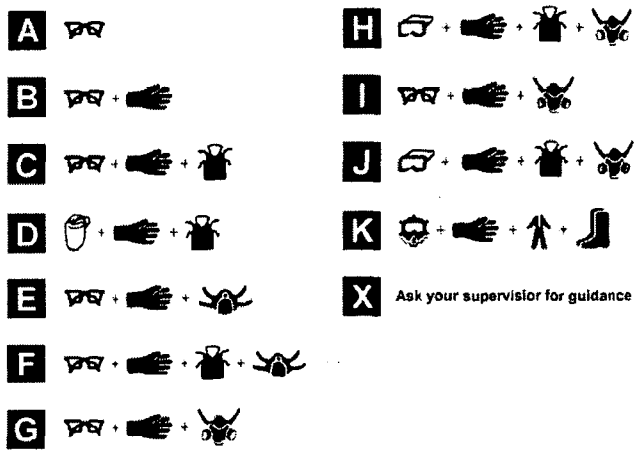
SECTION 311 & 312:
N/A

SECTION 313:
N/A

CALIFORNIA PROPOSITION 65 – This product does not contain ingredients subject to California Proposition 65.

Osmose MATERIAL SAFETY DATA SHEET

HAZARDOUS MATERIALS INFORMATION SYSTEM (HMIS)
PERSONAL PROTECTION INDEX



N/A = Not Applicable

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Osmose MATERIAL SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET: **MicroShades Red Brown**

SECTION I

MSDS NUMBER:	222-osm
MSDS CODE:	OSM
SYNONYMS:	N/A
MANUFACTURED BY:	Osmose, Inc.
EPA REGISTRATION NUMBER:	N/A
VENDOR:	N/A
EMERGENCY PHONE:	CHEMTREC: 1(800) 424-9300
OTHER CALLS:	716-882-5905
ADDRESS:	980 Ellicott Street, Buffalo NY 14209
MSDS PREPARED BY:	Teri Muchow
DATE PREPARED:	January 26, 2006
DATE LAST REVISED:	August 16, 2006

**CHEMTREC'S EMERGENCY TELEPHONE NUMBER IS TO BE USED ONLY IN THE EVENT OF CHEMICAL EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE, OR ACCIDENT INVOLVING CHEMICALS.*

HAZARD SUMMARY

CAUTION – May cause eye or skin irritation. May be harmful if swallowed.

Eyes - **May cause slight irritation.**

Skin - **May cause slight irritation.**

Ingestion - **May be harmful if swallowed.**

Inhalation - **May cause irritation.**

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

TRADE NAME: MicroShades Red Brown INGREDIENT NAME	CAS	OSHA PEL	ACGIH TLV	OTHER	%
Red Iron Oxide	1309-37-1	10 mg/m3 (total dust)	10 mg/m3 (total dust)		35 – 40 %
Yellow Iron Oxide	51274-00-1	10 mg/m3 (total dust)	10 mg/m3 (total dust)	N/A	10 – 15%
Carbon Black	1333-86-4	3.5 mg/m3	3.5 mg/m3		< 2 %
Surfactant	N/A - Mixture	None Established	None Established	N/A	< 10%
Antifoam	N/A - Mixture	None Established	None Established	N/A	< 1 %
Water	7732-18-5	None	None	N/A	> 50%

SECTION III - CHEMICAL CHARACTERISTICS

BOILING POINT	MELTING POINT	FREEZING POINT	SPECIFIC GRAVITY (H_20 = 1)	THEORETICAL VOC CONTENT (PERCENT OF WEIGHT)
Not Determined	Not Determined	Not Determined	1.62 – 1.74	Not Determined

WEIGHT PER GALLON	pH:	VAPOR PRESSURE	VAPOR DENSITY	DENSITY	EVAPORATION RATE BASIS (N-BUAC) = 1
13.5 – 14.5 lbs/gal	Not Determined	Not Determined	Not Determined	See specific gravity	Not Determined

SOLUBILITY IN WATER:	Soluble	REACTIVITY IN WATER:	N/A
APPEARANCE AND ODOR:	Red brown opaque, aqueous dispersion. No odor.	Viscosity:	172.2 cp @ 71°F

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	METHOD	FLAMMABLE LIMITS IN AIR (%)	AUTOIGNITION TEMPERATURE
Non-combustible	N/A	N/A	N/A

Osmose MATERIAL SAFETY DATA SHEET

NFPA CODES	HEALTH	1	HMIS CODES:	HEALTH	1
	FLAMMABILITY	0		FLAMMABILITY	0
	REACTIVITY	0		REACTIVITY	0
	OTHER	N/A		PROTECTION	D
EXTINGUISHER MEDIA:	Water, dry chemical foam, or alcohol-resistant foam.				

SPECIAL FIRE FIGHTING PROCEDURES: As in any fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known.

SECTION V - REACTIVITY DATA

IS THIS CHEMICAL STABLE UNDER NORMAL CONDITIONS OF HANDLING/STORAGE (Y/N)? Y
CONDITIONS TO AVOID (REGARDING STABILITY): None Known
INCOMPATIBILITY (MATERIALS TO AVOID): None known.
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon dioxide and carbon monoxide.
HAZARDOUS POLYMERIZATION POSSIBLE (Y/N)? N
CONDITIONS TO AVOID (REGARDING POLYMERIZATION): N/A

SECTION VI - HEALTH HAZARDS

EMERGENCY OVERVIEW: Caution. May cause skin & eye irritation.
ROUTES OF ENTRY: Skin contact and eye contact.
SIGNS AND SYMPTOMS OF ACUTE OVEREXPOSURE:

Eyes - May cause irritation.

Skin - May cause irritation.

Ingestion - May be harmful if swallowed.

Inhalation - May cause irritation.

CHRONIC OVEREXPOSURE: None known.
CHEMICAL LISTED AS A CARCINOGEN OR POTENTIAL CARCINOGEN?:

- NATIONAL TOXICOLOGY PROGRAM (Y/N): N
- IARC MONOGRAPHS (Y/N): N
- OSHA (Y/N): N

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None known
ACUTE AND CHRONIC TOXICITY: No acute toxicity data is available on this formulated product, however the below data is available on the individual ingredients used to formulate this pigment.

- Oral LD_{50} (rat): > 10 g/kg (rats) for yellow iron oxide
- Oral LD_{50} (rat): > 2,000 mg/kg for surfactant

EMERGENCY AND FIRST AID PROCEDURES

EMERGENCY PHONE NUMBER OF MANUFACTURER: CHEMTREC 1(800) 424-9300

1. INHALATION: Remove to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention.
2. EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Seek medical attention.
3. SKIN CONTACT: Immediately wash skin with plenty of soap and water for at least 15 minutes. Remove dirty clothes and shoes and thoroughly clean before reuse.
4. INGESTION: Never give anything by mouth to an unconscious person. Do not induce vomiting unless directed to do so by a physician.

NOTES TO PHYSICIAN: Treat symptomatically and supportively.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

UNITED STATES DEPARTMENT OF TRANSPORTATION SHIPPING DESCRIPTION:
Not Regulated.

Osmose MATERIAL SAFETY DATA SHEET

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Wash thoroughly after handling. Keep container tightly closed. Wear appropriate personal protective equipment as specified in Section VIII. Store in a tightly closed container in a cool, dry location.
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Containment Procedures:	Stop the flow of material, if this is without risk. Wear appropriate protective equipment and clothing during clean-up. Contain discharge by booming on water or diking on ground. Prevent entry into sewers, drains, underground or confined spaces, water intakes and waterways.
Clean-Up Procedures:	Absorb spill with inert material. Shovel material into appropriate container for disposal. Sweep up or gather material and place in appropriate container for disposal. Wash spill area thoroughly. Wear appropriate protective equipment during clean-up.
Evacuation Procedures:	Evacuation should not be necessary.
Special Procedures:	Wear appropriate personal protective equipment. Follow all Local, State and Federal Regulations for disposal.

WASTE DISPOSAL METHODS: Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.
CONTAINER DISPOSAL: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION: While the use of this pigment does not necessitate the use of a respirator, the wood preservatives it is being used with may. Refer to the MSDS's of all products used in conjunction with this pigment.
VENTILATION REQUIREMENTS: In processes where mists or vapors may be generated, proper ventilation must be provided in accordance with good ventilation practices.
PROTECTIVE GLOVES: Wear appropriate protective gloves to prevent skin exposure.
EYE PROTECTION: Wear safety glasses with side shields or chemical safety goggles to prevent eye exposure.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Wear appropriate protective clothing to prevent skin exposure. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
WORK/HYGIENIC PRACTICES: Wash thoroughly after skin contact and before eating, drinking, using tobacco products, or using restrooms.
NOTE: For additional control measures, refer to the MSDS's of all products used in conjunction with this pigment. If the use of another product requires a higher level of protective equipment, then the PPE requirements of that product should be followed.

SECTION IX - REGULATORY INFORMATION:

SARA/TITLE III SECTION 312 - HAZARD CATEGORIES:

Immediate (Acute) Health: No
Delayed (Chronic) Health: No
Fire Hazard: No
Reactive Hazard: No
Sudden Release of Pressure: No

SECTION 302:
N/A

SECTION 304:
N/A

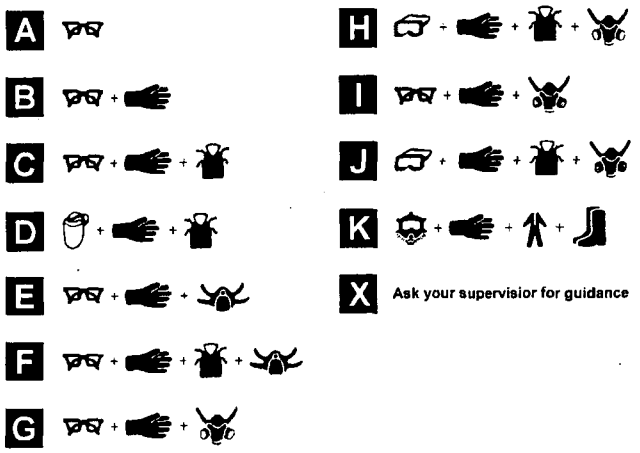
SECTION 311 & 312:
N/A

SECTION 313:
N/A

CALIFORNIA PROPOSITION 65 – This product does not contain ingredients subject to California Proposition 65.

Osmose MATERIAL SAFETY DATA SHEET

HAZARDOUS MATERIALS INFORMATION SYSTEM (HMIS)
PERSONAL PROTECTION INDEX



N/A = Not Applicable

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APPENDIX C

EXAMPLE TYPICAL OSMOSE WATERBORNE CCA TREATING PLANT AIR EMISSION ESTIMATES

APPENDIX C

The following calculations were used to estimate air emissions for a typical Osmose waterborne CCA treating plant with a cylinder that is 6½' x 82', totaling 2,720 cubic feet. These calculations will be used in an engineering extrapolation to determine the air emissions for the Great Southern Wood of Florida cylinder that is 6'0" x 52'0", totaling 1,470 cubic feet.

Example Typical Osmose Waterborne CCA Treating Plant Air Emission Estimates

I. Background Data

A. Air emissions from chromated copper arsenate (inorganic metals) waterborne wood preserving plants are negligible.

1. The RPAR PEL monitoring program requires personal monitoring for employees with the greatest potential for exposure to chemicals. These employees also work within the immediate vicinity of the plant process equipment including the air emission vents. A PEL monitoring survey of Osmose customer plants has shown results to be generally below 5 $\mu g/M^3$ of arsenic. In fact, an eight-hour time weighted average for personnel monitoring conducted on sixteen employees with the greatest potential for exposure to airborne emissions at five similar Osmose CCA waterborne wood preserving facilities averaged to 2.06 μg As/M^3 air.

   With the above in mind, the EPA RPAR Personnel Monitoring also monitors the ambient immediate process area workplace emissions. Also, please note that EPA requires only arsenic monitoring under the PEL program because it has a much higher tendency to be emitted than either chrome or copper. Therefore, this RPAR PEL monitoring indicates that process vent and fugitive emissions from this type of wood preserving plant are negligible.

2. Vapor Pressure (measure of tendency to evaporate) of CCA inorganic metals is negligible.

   a. Arsenic = 1 mm Hg @ 372°C (elevated temperature; 100°C = boiling for water).

   b. Chromium = 1 mm Hg @ 907°C (elevated temperature; 100°C = boiling for water).

Notes:
1. CCA plants are operated at ambient temperatures.
2. Above taken from EPA Doc. 560/4-88-002 December 1987 entitled "Waste Treatment Efficiencies for the Toxic Chemical Release Inventory Form".

APPENDIX C (continued)

II. Plant Data – Assume a large typical Osmose single treating cylinder plant.

A. Assume preservative solution moved with air (worst case).

B. Assume large cylinder 6½' diameter by 82' long = 2720 ft^3.

C. Assume one charge/hr. and plant operates two shifts (worst case) = 16 charges/day.

D. Assume vacuum cycle time/charge (charge = 1 hr.) is ½ hr.

E. Assume one work tank 30,000 gallons.

F. Assume one concentrate tank 10,000 gallons.

G. Vacuum pump produces 700 ft^3/min.

H. Cylinder fill/empty time = approximately 4 minutes.

III. Two Potentially Significant Air Emission Sources

A. Process vacuum pump emission*

1. Air monitoring at a similar CCA plant (S.P.)
   a. Cr 0.00 $\mu g/M^3$
   b. Cu 5.38 $\mu g/M^3$
   c. As 2.04 $\mu g/M^3$

2. These results based on an eight-hour shift with five charges and a time weighted average.

B. Work tank vent emissions* - Note: One work tank per cylinder is in use at a time.

1. Air monitoring at a similar CCA plant (S.P.)
   a. Cr 12.46 $\mu g/M^3$
   b. Cu 14.00 $\mu g/M^3$
   c. As 11.32 $\mu g/M^3$

2. These results are based on an eight-hour shift with five charges and a time weighted average.

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* The most current plant design has one discharge vent to the atmosphere, which is from the water storage tank. Recent arsenic monitoring showed results at 8.76 $\mu g/M^3$, which are still less than the above calculations. The above calculations would be considered to be worst case scenario.

IV. Vacuum Pump Air Emission Estimate for Waterborne CCA Plant

A. Data

1. Cylinder 6½' x 82' = 2720 ft^3.
2. Run eight charges per shift.
3. Two shifts per day.
4. Vacuum pump @ 700 ft^3/min.

B. Calculations

1. Arsenic

$$\frac{2.04\ \mu g.\ TWA^{**}}{M^3} \times \frac{8\ hrs.\ monitored\ @\ S.P.}{4\ hrs.\ vac.\ pump\ runs} \times \frac{700\ ft^3\ vac.\ pump\ vol.}{1\ min.}$$

$$\times \frac{8\ hrs.\ plt.\ vac.\ pump\ run}{24\ hrs.} \times \frac{1\ gm}{1{,}000{,}000\ Mg} \times \frac{1\ kg.}{1000\ gm} \times \frac{2.2\ lbs.}{1\ kg.}$$

$$\frac{1\ M^3}{35.3\ ft^3} \times \frac{60\ min.}{1\ hr.} \times \frac{24\ hrs.}{day} = 8.54 \times 10^{-5}\ lbs./day$$

or 3.56×10^{-6} lbs./hr. of As emitted

or 0.026 lbs./yr. of As emitted based on 300 operating days/yr.

2. Copper

$$\frac{5.38\ \mu g.\ TWA^{**}}{M^3} \times \frac{8\ hrs.\ monitored\ @\ S.P.}{4\ hrs.\ vac.\ pump\ runs} \times \frac{700\ ft^3\ vac.\ pump\ vol.}{1\ min.}$$

$$\times \frac{8\ hrs.\ plt.\ vac.\ pump\ run}{24\ hrs.} \times \frac{1\ gm}{1{,}000{,}000\ Mg} \times \frac{1\ kg.}{1000\ gm} \times \frac{2.2\ lbs.}{1\ kg.}$$

$$\frac{1\ M^3}{35.3\ ft^3} \times \frac{60\ min.}{1\ hr.} \times \frac{24\ hrs.}{day} = 2.25 \times 10^{-4}\ lbs./day$$

or 9.38×10^{-6} lbs./hr. of Cu emitted

or 0.068 lbs./yr. of Cu emitted based on 300 operating days/yr.

** TWA = Eight-hour Time Weighted Average

3. Chromium

   Emission is 0 lbs./yr. based on monitoring.

V. Work Tank Emission Estimate for Waterborne CCA Plant

A. Data

1. Cylinder 6½' x 82' = 2,720 ft^3.

2. Run eight charges per shift.

3. Two shirts per day.

4. Vacuum pump at 700 ft^3/min.

B. Calculations:

1. Approximately 55% represents a void for liquid (returned to work tank during blow back).

   2,720 ft^3 x .55 = 1496 ft^3 or 1496 ft^3 x 7.48 $\frac{\text{gallon}}{ft^3}$ = 11,190 gallons

   or 1496 ft^3 x $\frac{1\ M^3}{35.3\ ft^3}$ = $\frac{42.38\ M^3}{\text{charge}}$ emitted from working emissions

2. Cylinder blow back emissions to work tank per charge.

   a. Assume air up cylinder to 15 psi to blow back (30 psia).

   b. Air emitted from cylinder to work tank at atmosphere pressure.

   c. $P_1V_1 = P_2V_2$
   P_1 = 30 psia
   V_1 = 42.38 M^3/charge
   P_2 = 15 psia
   V_2 = unknown

   $\frac{30\ \text{psia} \times 42.38\ M^3/\text{charge}}{15\ \text{psia}} = V_2$

   $V_2 = \frac{84.76\ M^3}{\text{charge}}$ Blow Back Air Emitted Per Charge

APPENDIX C (continued)

3. Total air emitted to work tank during each charge.

   a. Working emission (air displaced in work tank by returning liquid) = 42.38 M^3/charge.

   b. Cylinder blow back emissions to work tank = 84.76 M^3/charge.

      Total 127.14 M^3/charge.

4. Work Tank Emissions

   a. Arsenic

$$\frac{11.32\ \mu g\ TWA^{**}}{M^3} \times \frac{8\ charges/8\ hr.\ shift}{5\ charges/8\ hrs.\ at\ S.P.} \times$$

$$\frac{127.14\ M^3\ air/charge}{4\ min.\ blow\ back\ time/charge} \times \frac{64\ min.\ blow\ back\ time}{24\ hrs.}$$

$$\times \frac{1\ gm}{1{,}000{,}000\ \mu g} \times \frac{1\ kg.}{1{,}000\ gm.} \times \frac{2.2\ lbs.}{1\ kg.} = 3.34 \times 10^{-6}\ lbs./day$$

or 1.4×10^{-7} lbs./hr.

or 0.001 lbs./yr. of As emitted from work tank based on 300 operating days/yr.

   b. Copper

$$\frac{14.00\ \mu g\ TWA^{**}}{M^3} \times \frac{8\ charges/8\ hr.\ shift}{5\ charges/8\ hrs.\ at\ S.P.} \times$$

$$\frac{127.14\ M^3\ air/charge}{4\ min.\ blow\ back\ time/charge} \times \frac{64\ min.\ blow\ back\ time}{24\ hrs.}$$

$$\times \frac{1\ gm}{1{,}000{,}000\ \mu g} \times \frac{1\ kg.}{1{,}000\ gm.} \times \frac{2.2\ lbs.}{1\ kg.} = 4.18 \times 10^{-6}\ lbs./day$$

or 1.74×10^{-7} lbs./hr.

or 0.001 lbs./yr. of Cu emitted from work tank based on 300 operating days/yr.

** TWA = Eight-hour Time Weighted Average

APPENDIX C (continued)

c. Chromium

$$\frac{12.46\ \mu g\ TWA^{**}}{M^3} \times \frac{8\ charges/8\ hr.\ shift}{5\ charges/8\ hrs.\ at\ S.P.} \times$$

$$\frac{127.14\ M^3\ air/charge}{4\ min.\ blow\ back\ time/charge} \times \frac{64\ min.\ blow\ back\ time}{24\ hrs.}$$

$$\times \frac{1\ gm}{1{,}000{,}000\ \mu g} \times \frac{1\ kg.}{1{,}000\ gm.} \times \frac{2.2\ lbs.}{1\ kg.} = 3.72 \times 10^{-6}\ lbs./day$$

or 1.55×10^{-7} lbs./hr.

or 0.001 lbs./yr. of Cr emitted from work tank based on 300 operating days/yr.

VI. Summary of Estimated Air Emissions Based on Available Monitoring and Reasonable Engineering Estimates for the Two Significant Potential Sources. Other Potential Sources Not Considered Significant.

A. Arsenic Emissions Estimated

1.	Vacuum Pump	0.026 lbs./yr.
2.	Work Tank	0.001 lbs./yr.
		0.027 lbs./yr. x 46%*** = 0.012 lbs./yr.
	Total	0.027 lbs./yr. - 0.012 = 0.015 lbs./yr. arsenic

B. Copper Emissions Estimated

1.	Vacuum Pump	0.068 lbs./yr.
2.	Work Tank	0.001 lbs./yr.
		0.069 lbs./yr. x 46%*** = 0.032 lbs./yr.
	Total	0.069 lbs./yr. - 0.032 = 0.037 lbs./yr. copper

C. Chromium Emissions Estimated

1.	Vacuum Pump	0.000 lbs./yr.
2.	Work Tank	0.001 lbs./yr.
		0.001 lbs./yr. x 46%*** = 0.0005 lbs./yr.
	Total	0.001 lbs./yr. - 0.0005 = 0.0054 lbs./yr. chromium

*** Please Note: The Great Southern Wood of Florida facility will be about 46% smaller than the plant used in the above example. To make the calculations of the estimate more accurate, we have reduced the calculations by 46% to the final calculations.

VII. Summary

The estimated air emissions for arsenic, copper and chromium also indicate that emissions of these chemicals from an Osmose waterborne CCA wood preserving facility are negligible. This confirms PEL monitoring results conducted as part of the EPA-Industry RPAR Agreement. It also confirms expectations based on the low vapor pressure of these metals and their use at ambient temperatures.

APPENDIX C

ATTACHMENT #1

CCA TREATING PROCESS DESCRIPTION

The basic treating process is simple and highly controlled.

The lumber, timbers and plywood to be treated are loaded onto a lumber transfer case. The lumber is moved into a large, horizontal treating cylinder via small rail. The cylinder door is sealed, and a vacuum is applied to remove most of the air from the cylinder and the wood cells. Preservative solution (Chromated Copper Arsenate (CCA) Type C) is then pumped into the cylinder and the pressure raised to about 150 pounds per square inch, forcing CCA into the wood.

Following pressure release, the solution is pumped back into a storage tank for later re-use. A vacuum is drawn within the treating cylinder to remove excess solution from the wood to control drippage following treatment. At the end of the process, the cylinder door is opened and the lumber is pulled out. The area immediately under and adjacent to the rail is called a concrete chemical containment drip pad area. The drip pad area is built of properly designed concrete and is sloped to allow drippage to flow back to the steel-lined, normally wetted process pit under the door of the cylinder. Liquid materials collected in the normally wetted process pit are returned to the process tankage for re-use. The concrete chemical containment drip pad area is constructed and operated according to the Federal Regulations found in 40 CFR Parts 260, 261, 262, and 265.

After the treated material has set on the drip pad area and the lumber has become surface dry, the product is ready for storage and/or shipment to the customer.

This plant will use only Osmose K-33 (CCA Type C) as the chemical to treat the lumber. The CCA Type C is purchased in the form of liquid concentrate containing 60% of the CCA oxides. The CCA Type C is delivered to the treating facility via tank trucks owned and maintained by Osmose. All tanker trucks meet Federal DOT Spec. MC312 and are licensed or permitted in each state they pass through or travel to. The tankers are reinforced at all critical areas such as hatches, gauges, and nozzles. Reinforced tanker design allows them to withstand a rollover condition and still maintain a structural integrity, which provides additional spill control safety. The concentrate is transferred directly from the tanker to the concentrate storage tank.

Osmose will inform the plant when a delivery is to be made. Deliveries of CCA concentrate will be made under onsite supervision during the plant's normal daytime operating hours.

APPENDIX C – Attachment #1 (continued)

This treating process uses water as the carrier and contains no hydrocarbons or volatile materials. In fact, this process has no odor or other objectionable emissions. Since chromated copper arsenate is not volatile, emissions of these substances are also considered negligible.

Typical personnel monitoring conducted at similar CCA wood preserving facilities prove direct employee exposure is within levels determined safe by the EPA and OSHA.

This plant was designed so that the volume of the largest tank would be contained within the immediate tank farm spill containment area within the treating building.

APPENDIX C

ATTACHMENT #2

Material Safety Data Sheets

K-33 Wood Preservative
Cleanwood Mold Inhibitor

APPENDIX C – Attachment #2 (K-33 Wood Preservative)

Osmose MATERIAL SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET: **K-33 (60%) WOOD PRESERVATIVE**

SECTION I

MSDS NUMBER:	73-Osm
MSDS CODE:	Osm
SYNONYMS:	CCA Type C; Chromated Copper Arsenate
MANUFACTURED BY:	Osmose, Inc.
EPA REGISTRATION NUMBER:	3008-34
VENDOR:	Osmose, Inc.
EMERGENCY PHONE:	CHEMTREC: 1(800) 424-9300
OTHER CALLS:	(716) 882-5905
ADDRESS:	980 Ellicott Street, Buffalo, NY 14209
MSDS PREPARED BY:	Teri Muchow
DATE PREPARED: **DATE LAST REVISED:**	May 20, 1999 July 27, 2006 (replaces June 21, 2006)

ADDITIONAL INFORMATION

CHEMTREC'S EMERGENCY TELEPHONE NUMBER IS TO BE USED ONLY IN THE EVENT OF CHEMICAL EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE, OR ACCIDENT INVOLVING CHEMICALS.

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

TRADE NAME: K-33 (60%) Wood Preservative INGREDIENT NAME	CAS	OSHA PEL	ACGIH TLV	OTHER	%
Arsenic Acid (expressed as As_2O_5)	7778-39-4	0.01 mg/m^3 as As	0.01 mg/m^3 as As	RQ = 1 lb.	20.00
Chromic Acid (water soluble)	1333-82-0	0.1 mg/m^3 as CrO_3 5 µ/m^3 as Cr(VI) *(equivalent to .005 mg/m^3)*	0.05 mg/m^3 as Cr	RQ = 10 lbs.	29.90
Cupric Oxide	1317-39-1	1 mg/m^3 as Cu	1 mg/m^3 as Cu	RQ = N/A	10.50

ADDITIONAL INFORMATION

- The OSHA PEL for Chromium as CrO_3 is the Acceptable Ceiling Concentrate Limit.
- Pesticide Applicators are exempt from the OSHA Arsenic Standard 29 CFR 1910.18.
- Pesticide Applicators are exempt from the OSHA Chromium (VI) Standard 29 CFR 1910.1026.

SECTION III - CHEMICAL CHARACTERISTICS

BOILING POINT	MELTING POINT	FREEZING POINT	SPECIFIC GRAVITY (H_20 = 1)	PERCENT VOLATILE BY VOLUME	THEORETICAL VOC CONTENT (PERCENT OF WEIGHT)
> 100 °C	N/A	N/A	1.83	40% (water)	N/A
WEIGHT PER GALLON	**pH:**	**VAPOR PRESSURE**	**VAPOR DENSITY**	**DENSITY**	**EVAPORATION RATE BASIS (N-BUAC) = 1**
15.3 pounds/gallon	< 1	N/A	N/A	N/A	N/A
SOLUBILITY IN WATER: 100%			REACTIVITY IN WATER: N/A		
APPEARANCE AND ODOR:	Dark red-orange liquid. No odor.				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	METHOD	FLAMMABLE LIMITS IN AIR (%)	AUTOIGNITION TEMPERATURE
N/A	N/A	N/A	N/A

NFPA CODES			***HMIS CODES:***		
	HEALTH	3		HEALTH	3
	FLAMMABILITY	0		FLAMMABILITY	0
	REACTIVITY	1		REACTIVITY	1
	OTHER	OX COR		PROTECTION	B*

EXTINGUISHER MEDIA: Water fog and/or carbon dioxide.

*See personal protection index on page 4.

Osmose MATERIAL SAFETY DATA SHEET

SPECIAL FIRE FIGHTING PROCEDURES: This product will not burn; 60% aqueous solution. When heated to decomposition, arsenic may be emitted. If this material is involved in a fire or explosion, carbon dioxide or water may be used as an extinguishing agent. Wear complete fire service protection equipment, including full-face MSHA/NIOSH approved self-contained breathing apparatus. For further information regarding protective equipment, emergency responders should refer to 29CFR Appendix B to 1910.120 and the NFPA standards on chemical protective clothing.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Chromic acid content of this product is a strong oxidizing agent; contact with strong reducing agents may cause an explosion. May cause fire on contact with combustible materials. Closed containers may explode when exposed to extreme heat (fire).

SECTION V - REACTIVITY DATA

IS THIS CHEMICAL STABLE UNDER NORMAL CONDITIONS OF HANDLING/STORAGE (Y/N)? Y
CONDITIONS TO AVOID (REGARDING STABILITY): Reducing Agents
INCOMPATIBILITY (MATERIALS TO AVOID): Strong reducing agents. Aluminum and zinc in an acid medium.
HAZARDOUS DECOMPOSITION PRODUCTS: Under certain conditions where aluminum and zinc (e.g. galvanized steel) are present, arsine gas may be generated.
HAZARDOUS POLYMERIZATION POSSIBLE (Y/N)? N
CONDITIONS TO AVOID (REGARDING POLYMERIZATION): N/A

SECTION VI - HEALTH HAZARDS

ROUTES OF ENTRY: The principal routes of exposure for this solution are by skin or eye contact. If the pesticide application process generates mist or particles, inhalation is an additional significant route of exposure. This solution is highly corrosive, as indicated by its pH. Skin or eye contact may result in severe burns. Chronic skin exposure may result in skin ulcers. Inhalation of this solution is highly irritating, and acute exposure by inhalation may result in chemical pneumonitis.
SIGNS AND SYMPTOMS OF ACUTE OVEREXPOSURE: Highly irritating to skin and eyes. Repeated dermal exposure may cause dermatitis. Toxic by ingestion, causes gastroenteritis, esophageal pain, vomiting and anuria or oliguria.
CHRONIC OVEREXPOSURE: Repeated dermal exposure may cause dermatitis.
CHEMICAL LISTED AS A CARCINOGEN OR POTENTIAL CARCINOGEN?: N

- NATIONAL TOXICOLOGY PROGRAM (Y/N): N
- IARC MONOGRAPHS (Y/N): N
- OSHA (Y/N): N

(For CARCINOGEN information, see Chronic Effects Notes following the First Aid Section.)

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Individuals with an existing (or history of) disease of the skin, kidney, liver, lungs or nervous system may be at greater risk of developing either acute or chronic health effects.
TOXICOLOGICAL INFORMATION: Oral LD50 = > 50 mg/Kg; Dermal LD50 = < 200 mg/Kg

EMERGENCY AND FIRST AID PROCEDURES

EMERGENCY PHONE NUMBER OF MANUFACTURER: CHEMTREC 1(800) 424-9300

1. INHALATION: For acute inhalation, remove the victim from exposure, restore breathing and seek medical attention immediately.
2. EYE CONTACT: Immediately flush with large quantities of water. Seek medical attention as soon as possible.
3. SKIN CONTACT: Immediately flush skin with large volumes of water. Seek medical attention as soon as possible.
4. INGESTION: *Immediately seek medical attention; do not induce vomiting to an unconscious person. If conscious, give one glass* of milk, preferably containing 2 ounces of milk of magnesia or 3 egg whites, or give lime water or 1 tablespoon salt in warm water; induce vomiting.

ADDITIONAL INFORMATION

NOTES TO PHYSICIAN: Treat for arsenic pentoxide (As_2O_5) and chromium trioxide (CrO_3) exposure. Severe arsenic poisoning from occupational exposure is unlikely. If it should occur, administer BL (dimercaprol) 10% in oil, IM, 3 mg/kg for each injection - day 1 and 2, every four hours; day 3, every 6 hours; day 4-14, every 12 hours. Consider gastric lavage (if vomiting has not already occurred).

CHRONIC EFFECTS: IARC, NTP and OSHA do not consistently distinguish among arsenic or chromium compounds, but list inorganic arsenic and chromium and certain specific chromium compounds as human carcinogens. Such listings have been based upon cancer in human populations following long term consumption of inorganic trivalent arsenic, inhalation and skin contact with inorganic trivalent arsenical compounds and the combined inhalation of arsenic trioxide, sulfur dioxide and other particulate from ore smelting in arsenic trioxide production. In 1993, ACGIH listed "Arsenic, elemental [7440-38-2] and inorganic compounds (except Arsine), as As" as a confirmed human carcinogen. In addition, cancers in humans have followed long term occupational exposure to certain non-water soluble hexavalent chromium. This product does not contain trivalent arsenic or non-water-soluble hexavalent chromium compounds. Furthermore, epidemiology studies and cross sectional health studies of treating plant workers would indicate that this product is not a carcinogen when used in accordance with customary practices found in the wood preserving industry.

For pesticide applicators, read and understand the label thoroughly. The EPA PEL program is part of the label.

Osmose MATERIAL SAFETY DATA SHEET

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

UNITED STATES DEPARTMENT OF TRANSPORTATION SHIPPING DESCRIPTION:
Corrosive liquid, toxic, n.o.s., 8 (6.1), UN2922, PGII (Arsenic Acid, Chromic Acid), RQ

CANADA'S TRANSPORTATION OF DANGEROUS GOODS SHIPPING DESCRIPTION:
Corrosive liquid, toxic, n.o.s., (Arsenic Acid, Chromic Acid), Class 8, (6.1), UN2922, PGII, RQ

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Engineering controls are the preferred method for controlling exposure to chemicals. If engineering controls are not feasible, then personal protective equipment should be utilized. Read Osmose Operations manual.
OTHER PRECAUTIONS Launder contaminated clothing before reuse. If interior of shoes are contaminated, either directly or through penetration, delayed skin burns may occur, therefore discard. READ PRODUCT LABEL!
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Avoid contact with solution. Prevent spread of the spill or leak. Recover or neutralize free standing liquid with Osmose Neutralizing compound or sawdust. Collect absorbent and contaminated soil in DOT approved containers. This material is toxic to fish and other wildlife; do not allow it to contaminate waterways. Individuals involved in clean-up should be protected from contact with the solution by using appropriate protective equipment.
WASTE DISPOSAL METHODS: Dispose in accordance with all Federal (Resource Conservation and Recovery Act), State and Local laws. Excess chemical and waste material collected from a release or spill must be disposed of in an approved hazardous waste disposal site in accordance with RCRA guidelines. Containers may be triple rinsed and then buried in a sanitary landfill or removed to a drum reclaimer. The RQ for this material is one pound. In the event of a spill exceeding the RQ, the same must be reported to the National Response Center (1-800-424-8802).

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION: *If the exposure limits exceed the recommended limits listed in Section II of this MSDS, refer to OSHA Arsenic* Standard (29 CFR 1910.1018), the OSHA Chromium Standard (29CFR 1910.1026) and OSHA Respiratory Protection regulations (29CFR 1910.134). In addition, all respiratory requirements detailed on the Osmose K-33 (60%) Wood Preservative label must be followed when using this product.
VENTILATION REQUIREMENTS: As necessary in order not to exceed PEL's.
PROTECTIVE GLOVES: Handlers must wear chemical-resistant gloves (such as Barrier Laminate, Butyl Rubber, Neoprene Rubber, Nitrile Rubber)
EYE PROTECTION: *Chemical goggles or face shield.*
OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Handlers must wear coveralls worn over long-sleeved shirt and long pants. Individuals who enter pressure treatment cylinders and other related equipment that is contaminated with the wood treatment solution (e.g. cylinders that are in operation or are not free of the treatment solution) must wear protective clothing, including overalls, jacket, gloves and boots, impervious to the wood treatment formulation.
WORK/HYGIENIC PRACTICES: User should wash hands before eating, drinking, chewing gum, using tobacco products or using the toilet. User should remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Applicators must not eat, drink, or use tobacco products during those parts of the application process that may expose them to the wood treatment formulation (e.g. manually opening/closing cylinder doors, moving trams out of cylinders, mixing chemicals, and handling freshly treated wood).

SECTION IX -- REGULATORY INFORMATION:

SARA/TITLE III ;SECTION 312 - HAZARD CATEGORIES:

Immediate (Acute) Health: YES **Reactive Hazard: NO**
Delayed (Chronic) Health YES **Sudden Release of Pressure: NO**
Fire Hazard: No

SARA/SECTION 302:
N/A - For explanation refer to Part C of the Osmose Health and Safety Manual.

SARA/SECTION 304:
If you have a release (outside the boundaries of your facility) which is greater than the RQ values listed in Section II of this MSDS, then report immediately to your Local Emergency Planning Committee and your State Emergency Response Commission in addition to reporting to the National Response Center (800-424-8802).

SARA/SECTION 311 & 312:
Storage of Osmose K-33 will subject you to reporting under Section 311 and 312 of SARA. Under Section 311 you are required to submit material safety data sheets to your Local Emergency Planning Committee (LEPC), your State Emergency Response Commission (SERC) and *your local fire department. Under Section 312 you are required to submit a Tier I or II Inventory Form to your LEPC, SERC and local fire* department by March 1st of each year. Again, refer to the Osmose Health and Safety Manual for more information.

Osmose MATERIAL SAFETY DATA SHEET

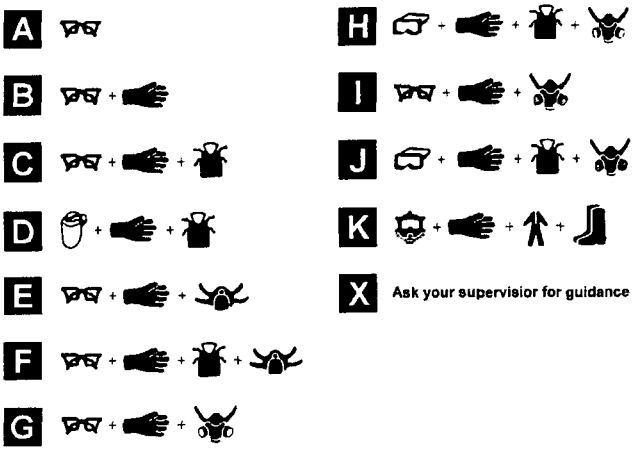
SARA/SECTION 313:
This product contains a chemical which is either listed in Section 313 or is included in a chemical category listed in Section 313, and is present at or above de minimis concentrations. The following listed chemicals are present:

- Arsenic Acid (CAS #7778-39-4) as an Arsenic Compound
- Chromic Acid (CAS #1333-82-0) as a Chromium Compound
- Cupric Oxide (CAS #1317-39-1) as a Copper Compound

For percent of chemical in the product, refer to Section II of the MSDS.

CALIFORNIA PROPOSITION 65:
Osmose K-33-C (60%) contains inorganic arsenic and hexavalent chromium, chemicals known to the State of California to cause cancer. This product contains inorganic oxides of arsenic, which is known to the State of California to cause reproductive toxicity.

HAZARDOUS MATERIALS INFORMATION SYSTEM (HMIS)
PERSONAL PROTECTION INDEX



N/A = Not Applicable

NOTICE: ***The information herein is given in good faith but no warranty, expressed or implied, is made, and Osmose, Inc. expressly disclaims liability from reliance on such information.***

Information on this form is furnished for the purpose of compliance with the Occupational Safety and Health Act of 1970 and shall not be used for any other purpose. Use or dissemination of all or any part of this information for any other purpose may result in a violation of law or constitute grounds for legal action.

Osmose MATERIAL SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET - **CLEANWOOD MOLD INHIBITOR**

SECTION I

MSDS NUMBER:	24-OSM
MSDS CODE	Osm
SYNONYMS:	N/A
MANUFACTURED FOR:	Osmose, Inc.
EPA REGISTRATION NUMBER:	707-128-3008
VENDOR:	N/A
EMERGENCY PHONE:	CHEMTREC: 1(800) 424-9300
OTHER CALLS:	(716) 882-5905
ADDRESS:	980 Ellicott Street, Buffalo, New York 14209
MSDS PREPARED BY:	Teri Muchow
DATE PREPARED: **DATE LAST REVISED:**	October 26, 1989 November 21, 2005 (replaced July 28, 2004)

CHEMTREC'S EMERGENCY TELEPHONE NUMBER IS TO BE USED ONLY IN THE EVENT OF CHEMICAL EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE, OR ACCIDENT INVOLVING CHEMICALS.

HAZARD SUMMARY

DANGER! CORROSIVE – Causes Severe eye and skin burns. May cause sensitization by skin contact. Irritating to respiratory system.

Eyes - **Corrosive to eyes. Severely irritating to the eyes and may cause eye burns. May cause permanent eye injury.**

Skin - **Corrosive to the skin. Severely irritating to the skin and may cause chemical burns to the skin. May cause allergic skin sensitization of susceptible persons.**

Ingestion - **May be harmful or fatal if swallowed. Ingesting may produce chemical burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract.**

Inhalation - **Inhalation of vapors, mists or sprays can cause irritation or burns of the nose, throat and lungs.**

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

TRADE NAME: CLEANWOOD® INGREDIENT NAME	CAS	OSHA PEL	ACGIH TLV	OTHER	%
1) 5-Chloro-2-methyl-4-Isothiazolin-3-one	26172-55-4	N/A	N/A	RQ 100 lbs. Manufacturer recommended TWA of 0.076 mg/m^3, and STEL of 0.23 mg/m^3.	10-12
2) 2-Methyl-4-Isothiazolin-3-one	2682-20-4	N/A	N/A	RQ 100 lbs. Manufacturer recommended TWA of 1.5 mg/m^3, and STEL of 4.5 mg/m^3.	3-5
3) Magnesium Chloride	7786-30-3	N/A	N/A	N/A	10 max.
4) Magnesium Nitrate	10377-60-3	N/A	N/A	N/A	16 – 21
5) Water	7732-18-5	N/A	N/A	N/A	60-64

SECTION III - CHEMICAL CHARACTERISTICS

BOILING POINT	MELTING POINT	FREEZING POINT	SPECIFIC GRAVITY (H_20 = 1)	PERCENT VOLATILE BY VOLUME	THEORETICAL VOC CONTENT (PERCENT OF WEIGHT)
212°F/100°C	-27°F/-33°C	Unknown	1.33 @ 25°C/77°F	60%-64% water	0 %
WEIGHT PER GALLON	pH:	VAPOR PRESSURE	VAPOR DENSITY (air = 1)	DENSITY	EVAPORATION RATE BASIS (BAC) = 1
10.84 lbs/gal	1.0 – 3.0	0.0027 mm Hg (Isothiazolone)	.62 est.	N/A	<1

SOLUBILITY IN WATER Complete		REACTIVITY IN WATER:	N/A
APPEARANCE AND ODOR:	Amber-gold slightly viscous liquid; pungent odor.	VISCOSITY:	16 CPS @ 25°C/77°F

Osmose MATERIAL SAFETY DATA SHEET

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	METHOD	FLAMMABLE LIMITS IN AIR (%)	AUTOIGNITION TEMPERATURE
N/A	N/A	N/A	N/A

NFPA CODES	HEALTH	3	***HMIS CODES:***	HEALTH	3
	FLAMMABILITY	0		FLAMMABILITY	0
	REACTIVITY	0		REACTIVITY	0
	OTHER	Corrosive		PROTECTION	D
EXTINGUISHER MEDIA:	Use extinguishing media appropriate for surrounding fire.				

SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus (pressure-demand MSHA/NIOSH approved or equivalent) and full protective gear. Use water spray to cool fire-exposed containers. Minimize exposure. DO NOT Breathe fumes. Contain run-off.
UNUSUAL FIRE AND EXPLOSION HAZARDS: *Avoid exposure to fumes and vapors from a fire - can possibly include sulfur dioxide and* hydrogen chloride and oxides of nitrogen.

SECTION V - REACTIVITY DATA

IS THIS CHEMICAL STABLE UNDER NORMAL CONDITIONS OF HANDLING/STORAGE (Y/N)? Y
CONDITIONS TO AVOID (REGARDING STABILITY): Evaporation to dryness: nitrates can explode.
INCOMPATIBILITY (MATERIALS TO AVOID): Avoid contact with oxidizing agents, reducing agents, amines and mercaptans.
HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may yield hydrogen chloride, sulfur dioxide and oxides of nitrogen.
HAZARDOUS POLYMERIZATION POSSIBLE (Y/N)? N
CONDITIONS TO AVOID (REGARDING POLYMERIZATION): N/A

SECTION VI - HEALTH HAZARDS

ROUTES OF ENTRY: Inhalation, dermal absorption, skin contact and eye contact.
SIGNS AND SYMPTOMS OF ACUTE OVEREXPOSURE:

Eyes - Corrosive to eyes. Severely irritating to the eyes and may cause eye burns. May cause permanent eye injury.
Skin - Corrosive to the skin. Severely irritating to the skin and may cause chemical burns to the skin. May cause allergic skin sensitization of susceptible persons. May be fatal if absorbed through the skin.
Ingestion - May be harmful or fatal if swallowed. Ingesting may produce chemical burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract.
Inhalation - Harmful if inhaled. Inhalation of vapors, mists or sprays can cause irritation or burns of the nose, throat and lungs.

CHRONIC OVEREXPOSURE: Allergic contact dermatitis observed. Collective data indicate non-mutagenic; not teratogenic.
CHEMICAL LISTED AS A CARCINOGEN OR POTENTIAL CARCINOGEN?:

- NATIONAL TOXICOLOGY PROGRAM (Y/N): N
- IARC MONOGRAPHS (Y/N) N
- OSHA (Y/N) N:

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: N/A
TOXICOLOGICAL DATA:

Dermal LD50 - rabbit: 660 mg/kg
Oral LD50 - rat: 457 mg/Kg
Eye Irritation - rabbit: corrosive
Skin Irritation - rabbit: corrosive
Inhalation LC50 (4hr) - rat; 0.33 mg/L ai

EMERGENCY AND FIRST AID PROCEDURES

EMERGENCY PHONE NUMBER OF MANUFACTURER: CHEMTREC 1(800) 424-9300

1. INHALATION: Move subject to fresh air. Give artificial respiration if breathing has stopped. If symptoms persist, call a physician.
2. EYE CONTACT: Flush with large amount of water for at least 30 minutes and continuously until medical attention is obtained. Get prompt medical attention.
3. SKIN CONTACT: IMMEDIATELY get under a safety shower. Remove contaminated clothing. Wash off with soap and water. Immediate medical attention is required. Do not take clothing home to be laundered. Discard contaminated clothing, shoes, belts and other articles of leather.
4. INGESTION: If swallowed, give 2 glasses of water to drink. Immediately see a physician. Never give anything by mouth to unconscious person.
Note to Physician: *Material is corrosive. It may not be advisable to induce vomiting. Possible mucosal damage may contraindicate* the use of gastric lavage. Measures against circulatory shock and convulsions may be necessary.

Osmose MATERIAL SAFETY DATA SHEET

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

US SHIPPING DESCRIPTION: Corrosive liquid, toxic, n.o.s., 8 (6.1), UN2922, PGII (5-Chloro-2-methyl-4-isothiazolin-3-one)

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: The material is corrosive. For personal protection see Section VIII. The recommended storage temperature for this material is between 1°C and 55°C (34°F to 131°F). The minimum recommended storage temperature for this material is -10°C/14°F. Store in a well ventilated area. The product as supplied evolves gas (largely carbon dioxide) slowly. To prevent the buildup of pressure the product is packaged in specially vented containers. Keep this product in the original container when not in use. Container must be stored and transported in an upright position to prevent spilling the contents through the vent. Do not store this material in steel containers. Do not store this material near food, feed or drinking water.
OTHER PRECAUTIONS: CONTAINERS MAY BE HAZARDOUS WHEN EMPTY. Since emptied containers retain product residue (vapors and/or liquid) follow all MSDS and label warnings even after container is emptied. Expiration date is based only on retention of >95% actives during storage at 20°C - 25°C (68°F - 77°F).
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Personal Precautions – Wear a NIOSH approved (or equivalent) respirator (with organic vapor/acid gas cartridge and a dust/mist filter) during spill clean-ups and deactivation of this material. MATERIAL IS CORROSIVE. Protective clothing, including chemical splash goggles and face shield, nitrile or butyl rubber full length gloves, rubber apron, or clothing made of nitrile or butyl rubber overshoes must be worn during spill clean-ups and deactivation of this material. If material comes in contact with the skin during clean-up operations, IMMEDIATELY remove all contaminated clothing and wash exposed skin areas with soap and water. **Remove contaminated clothing immediately and dispose of properly. Do not re-use contaminated clothing.** See "First Aid Measures" for further information.
Methods for Clean Up – WARNING! KEEP SPILLS AND CLEAN-UP RESIDUALS OUT OF MUNICIPAL SEWERS AND OPEN BODIES OF WATER. Adsorb the spill with spill pillows or inert solids such as clay or vermiculite, and transfer contaminated materials to suitable containers for disposal. Deactivate spill area with freshly prepared solution of 5% sodium bicarbonate and 5% sodium hypochorite in water. Apply solution to the spill area at a ratio of 10 volumes deactivation solution per estimated volume of residual spill to *deactivate any residual active ingredient. Let stand for 30 minutes. Flush the spill area with copious amounts of water to chemical sewer* (if in accordance with local procedures, permits and regulations). DO NOT add deactivation solution to the waste pail to activate the adsorbed material.
WASTE DISPOSAL METHODS: When discarded this material is a hazardous waste (RCRA #D002, Corrosive), incinerate liquid and contaminated diking material, at a permitted facility, in accordance with state and local regulations.

ENVIRONMENTAL TOXICITY:
Octanol/Water Coefficient = 0.401 (log P) for Component No. 1
Octanol/Water Coefficient = 0.486 (log P) for Component No. 2

Biodradation (aquatic metabolism): Component No. 1 t ½ anerobic = 4.8 hr
Component No. 1 t ½ aerobic = 17.3 hr.
Component No. 2 t ½ aerobic = 9.1 hr

Acute Fish 96 Hr LC50, Rainbow Trout: 0.19 mg/L ai
Acute Fish 96 Hr LC50, Bluegill Sunfish: 0.28 mg/L ai
Acute Daphnia 48 Hr EC50: 0.16 mg/L ai
Acute Algal EC50, Selenastrum: 18 ug/L ai
Acute Algal EC 50, Skeletonema: 3 ug/L ai
Activated Sludge Respiration Inhibition EC50: 4.5 mg/L ai

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION: *Typical use of this material does not result in workplace exposures that exceed the exposure limits listed* in the Exposure Limit Information Section. For those special workplace conditions where the listed exposure limits are exceeded, a respiratory protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements must be followed. For concentrations up to 10 times the exposure limit, wear a properly fitted NIOSH approved (or equivalent) half-mask or full facepiece air purifying respirator equipped with organic vapor cartridges and N95 filters. If oil mist is present, use R95 or P95 filters. For those unlikely situations where exposure *may greatly exceed the listed exposure limits (i.e. greater than 10-fold), or in any emergency situation, wear a properly fitted* NIOSH approved (or equivalent) self-contained breathing apparatus in the pressure demand mode or a full facepiece airline respirator in the pressure demand mode with emergency escape provision. See SECTION VII, Accidental Release Measures, for respirator and protective clothing requirements for spill clean-up and decontamination of this material.
VENTILATION REQUIREMENTS: Use local exhaust ventilation with a minimum capture velocity of 150 ft/min. (0.75 m/sec.) at the point of dust or mist evolution. *Refer to the current edition of* Industrial Ventilation: A manual of Recommended Practice published by the American Conference of Governmental Industrial Hygienists for information on the design, installation, use, and maintenance of exhaust systems.
PROTECTIVE GLOVES: NOTE - Material is a skin sensitizer and if not treated after exposure will cause chemical burns. Chemical-resistant gloves should be worn whenever this material is handled. The glove(s) listed below may provide protection against permeation. (Gloves of other chemically resistant materials may not provide adequate protection): Butyl rubber, nitrile rubber, PVC gloves >1 mm thickness. Gloves should be removed and replaced immediately if there is any indication of degradation or chemical breakthrough. Rinse and remove gloves immediately after use. Wash hands with soap and water.
EYE PROTECTION: Prevent eye contact. Use chemical splash goggles and face shield (ANSI Z87.1 or approved equivalent). Eye protection worn must be compatible with respiratory protection system employed.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Prevent skin contact. Wear as appropriate: chemical impervious apron, complete suit protecting against chemicals. Also recommend that eye wash facility be in the area of use, an emergency shower, and impervious (rubber) overshoes.

Osmose MATERIAL SAFETY DATA SHEET

WORK/HYGIENIC PRACTICES: Do not handle material near food, feed or drinking water. Shower or bathe at the end of working. **Remove contaminated clothing immediately and dispose of properly. Do not re-use contaminated clothing.**

SECTION IX REGULATORY INFORMATION

SARA/TITLE III ;SECTION 312 - HAZARD CATEGORIES:
Immediate (Acute) Health: YES **Reactive Hazard:** NO
Delayed (Chronic) Health NO **Sudden Release of Pressure:** NO
Fire Hazard: NO

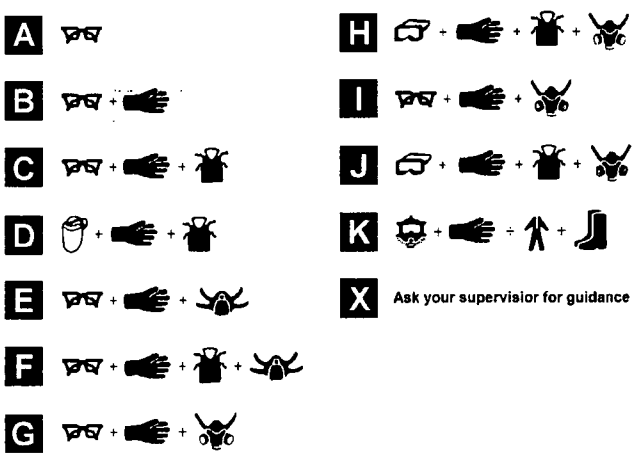
SARA/TITLE III: SECTION 313 INFORMATION (40 CFR 372)
This product contains a chemical which is listed in Section 313 at or above de minimis concentrations. The following listed chemicals are present:

- magnesium nitrate (10377-60-3) as nitrate compound

CERCLA INFORMATION (40 CFR 302.4)
This material has a reportable quantity under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Superfund Amendments and Reauthorization Act (SARA) Title III Section 304. The material's hazardous waste number is D002 (Corrosivity) and its Reportable Quantity is 100 lbs. Releases of this material in excess of its reportable quantity must be reported to the National Response Center (1-800-424-8802) and to the appropriate state and local emergency response organizations.

US Toxic Substance Control Act (TSCA)
This product is subject to regulation under the US Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and is therefore exempt from US Toxic Substances Control Act (TSCA) Inventory listing requirements.

HAZARDOUS MATERIALS INFORMATION SYSTEM (HMIS)
PERSONAL PROTECTION INDEX



N/A = Not Applicable

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