

**HAZARDOUS WASTE SECTION - COMPLIANCE BRANCH
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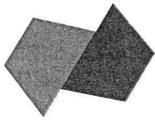
Date of Document: 10/18/2013

Author(s) of Document: David Kerschner

Inspector Name: N/A

Suborganization:

County (if not on report): Guilford



October 18, 2013

Jenny Patterson, CHMM
Eastern Region Compliance Supervisor
Hazardous Waste Section - Division of Waste Management
North Carolina DENR
1646 Mail Service Center
Raleigh, NC 27699-1646

Subject: RCRA Subpart W Generator Drip Pad Closure Report Submittal
Fortress Wood Products
Greensboro, North Carolina
ID NO. NCD981920648

Dear Ms. Patterson:

On behalf of Fortress Wood Products (FWP), I have enclosed two copies of the "*RCRA Subpart W Drip Pad Generator Closure Report*" for the Fortress wood preserving facility located at 1 Metals Drive in Greensboro, North Carolina.

As described in this Closure Report, FWP has permanently discontinued wood preserving operations at its Greensboro facility. FWP has completed the drip pad decontamination and KU Resources completed the post-decontamination rinseate sampling in accordance with the April 17, 2013 "*RCRA Subpart W Drip Pad Generator Closure Plan*."

The results of the rinseate sampling confirm the effectiveness of the decontamination process. Consequently, we request that NC DENR acknowledge FWP's completion of the RCRA Subpart W drip pad closure process.

As discussed in the Closure Plan, and as we also discussed in our September 23, 2013 telephone conversation, the Greensboro facility has been in operation since 1985, a significant amount of time before the RCRA Subpart W requirements became effective. Historical (pre-Subpart W) environmental quality impacts that may be present in the drip pad area are not associated with the operation of the RCRA Subpart W-regulated unit, and will be appropriately addressed as part of the planned redevelopment of the property, pursuant to applicable North Carolina regulations governing the redevelopment of former industrial properties.

Please let us know if there are any questions or comments regarding the closure documentation, or if you would like to meet to discuss the drip pad closure and redevelopment issues.

Sincerely,

David R. Kerschner, CPG
Principal
dkerschner@kuresources.com

cc: Scott Fulcher – FWP

**RCRA SUBPART W DRIP PAD
GENERATOR CLOSURE REPORT
FORTRESS WOOD PRODUCTS
GREENSBORO, NORTH CAROLINA
U.S. EPA ID NO. NCD981920648**

Prepared for:
**FORTRESS WOOD PRODUCTS
101 E. COMMONWEALTH BLVD.
MARTINSVILLE, VIRGINIA 24115**

OCTOBER 2013



KU Resources, Inc.
Innovative Solutions, Outstanding Support.

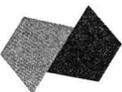
22 South Linden Street | Duquesne, PA 15110
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www.kuresources.com

**RCRA SUBPART W DRIP PAD
GENERATOR CLOSURE REPORT
FORTRESS WOOD PRODUCTS
GREENSBORO, NORTH CAROLINA
U.S. EPA ID NO. NCD981920648**

Prepared for:
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101 E. COMMONWEALTH BLVD.
MARTINSVILLE, VIRGINIA 24115**

Prepared by:
**KU RESOURCES, INC.
22 SOUTH LINDEN STREET
DUQUESNE, PENNSYLVANIA 15110**

OCTOBER 2013



PROFESSIONAL ENGINEER CERTIFICATION OF CLOSURE

I, Harold P. McCutcheon, a North Carolina Professional Engineer, hereby certify that I have reviewed the Generator Closure Report for the RCRA Subpart W Drip Pad at the Fortress Wood Products facility (Facility) located at 1 Metals Drive, Greensboro, North Carolina; that I am familiar with the rules and regulations of the North Carolina Department of Environment & Natural Resources (DENR) pertaining to closure of such a Drip Pad; and that the closure of the aforementioned Drip Pad has been performed in accordance with the Facility's April 2013 Closure Plan.



October 18, 2013

Harold P. McCutcheon, P.E.
North Carolina Professional Engineer No.039350
Chief Engineer
KU Resources, Inc.
22 South Linden Street
Duquesne, PA 15110
412-469-9331

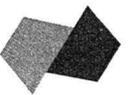


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Appendix A Drip Pad Certification Documentation, July 17, 2012

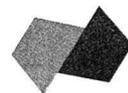
Appendix B MSDSs for Treating Solutions

Appendix C NCDENR and U.S. EPA RCRA Subpart W Drip Pad Closure Guidance

Appendix D Post-Decontamination Photographs

Appendix E Cleaning Residuals Disposal Documentation

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1.0 INTRODUCTION

The Fortress Wood Products (FWP) wood treating facility in Greensboro, North Carolina historically treated lumber products using a chromated copper arsenate (CCA) wood preserving solution. As part of the process, treated wood was retained on a concrete pad originally constructed in 1984. In response to Resource Conservation and Recovery Act (RCRA) Subpart W regulations, this concrete pad was expanded in the early 1990s, upgrades were made to the concrete pad in accordance with Subpart W, and a roof was constructed over the entire drip pad area. Upon completion of this work, the drip pad was certified by a North Carolina Professional Engineer as a RCRA Subpart W drip pad.

Subsequent to the initial Subpart W certification, the Subpart W drip pad has been operated as a temporary accumulation unit (hazardous wastes accumulate on the drip pad for a period of 90 days or less) throughout its operating history. Wood preserving process wastes generated by the facility have been identified as listed hazardous waste F035 (associated with wood preserving operations using arsenic or chromium), pursuant to Federal and State hazardous waste regulations.

In 2003, through an agreement between the treated wood industry and United States Environmental Protection Agency (U.S. EPA), the use of CCA as a wood preservative was significantly reduced within the industry. In November 2003, in anticipation of this agreement, the use of CCA was discontinued at the Greensboro facility and the facility's wood preserving process was converted to Alkaline Copper Quaternary (ACQ), a copper-based wood preservative. As part of this conversion, the facility removed all remaining CCA treating solutions and process residuals, and thoroughly cleaned the process equipment, including the Subpart W drip pad. Materials resulting from the conversion cleaning process were either shipped to another wood preserving facility as a treating solution, or were manifested off site as F035 listed hazardous waste.

The facility subsequently changed wood preservatives from ACQ to Micronized Copper Quaternary (MCQ) and then to Micronized Copper Azole (MCA), both of which are also copper-based. Although the post-CCA copper-based treating solutions used by the facility do not in and of themselves result in the generation of a listed or characteristic hazardous waste, in accordance with U.S. EPA guidance, wastes generated by the drip pad operations subsequent to the wood preservative chemical conversion and cleaning process have been managed and manifested off site as F035 listed hazardous waste, because the "full closure" of the drip pad has not been administratively completed.

FWP recently completed the construction and start-up of a new wood preserving facility in High Point, North Carolina that replaced the Greensboro facility and resulted in the permanent discontinuation of wood preserving operations at Greensboro. The Greensboro property is located in an area having a high potential for redevelopment. Consequently, FWP intends to move the Greensboro Subpart W drip pad to a "full closure" status. FWP also intends to market the property for ultimate redevelopment.

On April 17, 2013, FWP submitted an *“Amended RCRA Subpart W Drip Pad Generator Closure Plan”* (KU Resources, 2013) to the North Carolina Department of Environment and Natural Resources (DENR). The generator closure approach presented in that Closure Plan was based on U.S. EPA and DENR guidance, as well as experience with “full closure” activities at similar facilities. The Amended Closure Plan superseded the Closure Plan that had been maintained in the facility’s files, pursuant to DENR’s request. FWP did not receive a response from DENR regarding that submittal, and elected to move forward with implementation of the Amended Closure Plan in conjunction with general facility decommissioning activities associated with the permanent discontinuation of facility operations.

This Report describes the drip pad closure process that has been implemented at the Greensboro facility, pursuant to the Amended Closure Plan.

2.0 SUBPART W DRIP PAD INFORMATION

The Greensboro wood preserving facility was originally constructed and operated in 1984 by the Southern Converting Company, on property where Southern Converting Company had previously conducted other unrelated operations. FWP purchased and began operating the facility in November 1987. Wood preserving operations at the facility ceased in 2013, and the operating equipment has been removed.

In response to the RCRA Subpart W regulations, the existing concrete pad that was constructed in 1984 was upgraded in the fall of 1993. At that time, the original concrete pad was expanded, and the expanded portion of the drip pad was constructed with a synthetic liner and leak detection system. As part of this process, the existing drip pad was cleaned, inspected for cracks, and repaired as appropriate following the inspection. Surface coating was then applied to the entire (original and expansion) drip pad surface. A roof was also constructed over the entire drip pad as part of the drip pad expansion project. Upon completion of this work, the drip pad has been operated as a RCRA Subpart W surface coated drip pad pursuant to 40 CFR 265.443(a). (The Federal regulations cited herein have been incorporated by reference in 15A NCAC 13A.) An engineer's inspection has been performed and the certification has been updated on an annual basis, as required by Subpart W. Copies of these annual certifications have been forwarded to DENR by the certifying engineer since at least 2008.

An elevated concrete platform on the drip pad houses the conveyor ("tram") rails that were used to move lumber into and out of the treating cylinder. This elevated tram rail structure, and the concrete pad to the southwest of the elevated structure, constitute the Subpart W drip pad. The concrete pad located to the northeast side of the tram rails was used for loading untreated wood onto the tram, did not come into contact with wood preservatives or treated wood, and is not considered part of the drip pad.

A copy of the most recent annual certification report (July 17, 2012) is included in Appendix A. Material Safety Data Sheets (MSDSs) for the treating solutions that have been used at the facility are included in Appendix B.

3.0 WOOD PRESERVATIVE CHEMICAL CONVERSION ACTIVITIES

During the facility's November 2003 conversion process from the CCA wood preservative to MCA (the copper-based wood preservative), the preservative manufacturer stressed the importance of thoroughly cleaning CCA residues from all process equipment (including tanks, sumps, treating cylinder, trams, and drip pad components) to prevent severe deleterious effects of chemical incompatibilities between the CCA and the new treating solution. The cleaning procedures were as follows:

- Residual CCA preservative was removed from all tanks and shipped via tanker truck as a product (wood preservative solution) to an operating facility that continued to use CCA.
- Tanks, sumps, other equipment, and the drip pad were cleaned using high-pressure water wash. The wash water was collected and also shipped via tanker truck as a product to an operating facility that continued to use CCA.
- Heavy solids within the various vessels were removed using a vacuum truck. Vessels were then again cleaned using high-pressure water wash and residual liquids and solids were removed using a vacuum truck. The washing/removal process was continued until each tank and sump was clean and dry; typically, requiring three cleaning cycles.
- Following initial tank cleaning, the associated piping was flushed with clean water into the respective tank(s). Piping was flushed no less than two times, but usually three times or more. Flush liquids were then removed from the receiving tanks, and the tanks were then again cleaned and rinsed, and the liquids removed. This process resulted in the tanks being rinsed as many as five or six times.
- Solids and unusable treating solutions resulting from the cleaning process were drummed and manifested for off-site disposal as F035 hazardous waste.
- Subsequent use of the system with the new solutions resulted in additional cleaning of system components. For example, the copper quaternary solution is more corrosive than CCA, and contains constituents that are also found in industrial detergents. As a result, use of the system would result in continued reduction of any CCA constituents remaining in the process equipment.

As a result of the process cleaning activities, 20 drums (8,000 pounds) of hazardous waste were shipped under manifest for disposal on November 19, 2003, and an additional 19 drums (7,600 pounds) of hazardous waste were shipped under manifest for disposal on January 28, 2004.

Because FWP did not intend to pursue full closure of the Subpart W drip pad at the time of the 2003 wood preservative conversion, no analytical samples were collected to document the cleaning process.

4.0 SUBPART W DRIP PAD CLOSURE ACTIVITIES

4.1 Closure Approach

Following process conversion from CCA in 2003, all solid waste generated in the treating process had been managed as listed hazardous waste F035 because Subpart W “full closure” activities had not been administratively completed.

The closure process that was performed for the Greensboro Subpart W Drip Pad was intended to demonstrate that the drip pad no longer contains CCA residuals that are at concentrations of regulatory interest and can be certified as fully closed pursuant to Subpart W, and U.S. EPA and DENR drip pad closure guidelines (included as Appendix C).

Because the drip pad was operated as an accumulation unit, generator closure of the drip pad was performed. Although generators are not required to comply with the notification or certification standards of 40 CFR 265.112 and 40 CFR 265.115, the closure must still comply with the closure performance standards of 40 CFR 265.111, the disposal/decontamination requirements of 40 CFR 262.34 and 40 CFR 265.114, and the unit-specific closure requirements of 40 CFR 265.445. Excerpts from the applicable rules are provided below:

40 CFR 265.111 Closure performance standard.

The owner or operator must close the facility in a manner that:

(a) Minimizes the need for further maintenance, and (b) Controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere.

40 CFR 265.114 Disposal or decontamination of equipment, structures and soils.

During the partial and final closure periods, all contaminated equipment, structures and soil must be properly disposed of, or decontaminated unless specified otherwise in §§265.197, 265.228, 265.258, 265.280, or 265.310. By removing all hazardous wastes or hazardous constituents during partial and final closure, the owner or operator may become a generator of hazardous waste and must handle that hazardous waste in accordance with all applicable requirements of part 262 of this chapter.

40 CFR 265.445 Closure.

(a) At closure, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components (pad, liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste and leakage, and manage them as hazardous waste.

To satisfy the rules, the closure approach consisted of decontamination of the surface of the drip pad by hydro blasting the surface, and collection/analysis of representative rinsewater samples to confirm the effectiveness of decontamination.

4.2 Potential Historical (Pre-Subpart W) Environmental Quality Impacts

The Greensboro facility had been in operation since 1984, a significant amount of time before the RCRA Subpart W requirements were promulgated, and a significant amount of time before the F035 hazardous waste listing for CCA was promulgated. During this pre-Subpart W period of operation, it could be expected that there were releases of CCA residuals to the environment beneath and around the current drip pad area. As a result of the facility's compliance with the Subpart W drip pad construction, operation, maintenance, inspection, and certification requirements, releases to the environment from the drip pad as a Subpart W regulated unit would not be expected.

Historical (pre-Subpart W) environmental quality impacts that may be present in the drip pad area are not associated with the operation of the regulated unit and, therefore, was not addressed through the Subpart W closure process. Further, any such historical releases would not have been classified as F035 listed hazardous waste at the time that any releases would have occurred. These historical conditions will be appropriately addressed as part of the planned redevelopment of the property, pursuant to applicable North Carolina regulations governing the redevelopment of former industrial properties.

4.3 Drip Pad Decontamination

Drip pad decontamination was performed to a visual ("stain free") target standard. Decontamination was performed using high-pressure water in areas exhibiting no to moderate surface staining, and using a "turbo blaster" (very high-pressure water) for the elevated tram platform that exhibited heavier staining. Cleaning was performed to a visible stain-free surface target for the drip pad; however, some staining remained on the elevated tram platform following multiple passes of the turbo blaster. Following completion of cleaning, the surfaces were rinsed with potable water.

Water generated during decontamination activities was collected using a high-vacuum unit, and routed to a vacuum box, where solids were "dropped out." The water, along with final rinse water, was then routed to empty chemical "totes" and was subsequently removed from the facility and transported to another FWP facility for use as make-up water in its wood preserving process. Solids were removed from the vacuum box and placed in steel DOT drums for ultimate off-site disposal as F035 listed hazardous waste.

Photographs showing the drip pad and elevated tram platform following decontamination activities are included in Appendix D. Documentation regarding the disposition of cleaning residuals is included in Appendix E. Note that material generated during plant decommissioning activities was co-disposed with the drip pad cleaning residuals, and the documentation covers disposal from both sources.

4.4 Confirmation of Drip Pad Decontamination

4.4.1 Methodology

Following final rinsing of the drip pad surface, a representative rinseate sample was collected from the drip pad and from the elevated tram platform. The samples were generated by pouring distilled water into a bottomless stainless steel pan that was gravity sealed to the concrete surface with a gasket attached to the base of the bottomless pan. The water was allowed to stand on the cleaned concrete surface for at least three minutes before the sample was withdrawn and placed in a laboratory supplied pre-preserved (with nitric acid) sample container. Both samples were submitted for laboratory analysis of total (unfiltered) chromium, arsenic, and copper pursuant to the "North Carolina Guidelines for Converting a Wood Treatment Facility from Use of CCA to a Non-CCA Process Which Does Not Produce Hazardous Waste." Pursuant to those guidelines, drip pad decontamination is considered to be complete when the rinse water analytical results meet the following 15A NCAC 2L groundwater standards.

The rinseate sampling results, and the DENR 2L groundwater standards that were used for comparison purposes to determine the effectiveness of drip pad decontamination, are as follows:

CONSTITUENT	DENR 2L STANDARD (µg/L)	DRIP PAD RINSEATE (µg/L)	TRAM RAIL RINSEATE (µg/L)
Chromium	10 µg/L	<5	3.5J
Arsenic	10 µg/L	<10	<10
Copper	1,000 µg/L	2.7J	21J

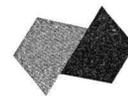
NOTE: "J" denotes an estimated value less than the RL but greater than or equal to the MDL.

The laboratory analytical report is included in Appendix F.

4.4.2 Drip Pad Decontamination Results

The sample results for the representative rinseate samples were all below the DENR 2L Groundwater standards, demonstrating that the drip pad/elevated tram platform have been effectively decontaminated; therefore, meeting the closure performance standard.

The combination of the drip pad construction details, routine waste removal/inspections, and ongoing annual engineer's assessments of the drip pad demonstrate that the drip pad has been designed, maintained, and operated in compliance with Subpart W such that releases to the environment would not occur. However, as discussed in the Amended Closure Plan and in Section 4.2 above, it is possible that soil quality impacts in the drip pad area may have occurred prior to the promulgation of the Subpart W regulations, when the drip pad operation and maintenance practices were not in place. These historical conditions will be appropriately addressed as part of the planned redevelopment of the property, pursuant to applicable North Carolina regulations governing the redevelopment of former industrial properties.



5.0 CONCLUSIONS

The following conclusions can be drawn from the drip pad closure process undertaken at the Fortress Greensboro facility:

- The waste removal/decontamination activities completed for the RCRA Subpart W drip pad and subsequent sample results demonstrate that all hazardous waste has been removed from the drip pad and the drip pad surface has been effectively decontaminated.
- The closure requirements of 40 CFR 265.111 and 265.114 and 40 CFR 265.445 have been met.
- The combination of the drip pad construction details and ongoing annual engineer's assessments of the drip pad, and the routine waste removal/inspections demonstrate that the drip pad has been designed, maintained, and operated such that releases from the drip pad, as a Subpart W unit, to the environment would not occur.

It is concluded that the closure of the Subpart W drip pad at the Greensboro, North Carolina facility is complete.

Any soil quality impacts that may exist in the vicinity of the drip pad as the result of historical (pre-Subpart W) operations will be appropriately addressed as part of the planned redevelopment of the property, pursuant to applicable North Carolina regulations governing the redevelopment of former industrial properties.

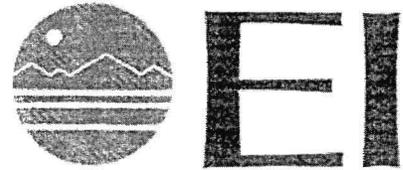
APPENDICES



Appendix A
Drip Pad Certification Documentation
July 17, 2012



July 17, 2012



Pete Haskins
Fortress Wood Products
1 Metals Dr
Greensboro, NC 27407

RE: RCRA Drip Pad Inspection
Fortress Wood Products, Greensboro, NC
EI Project No. ENMO120101.00

Dear Mr. Haskins:

The EI Group, Inc. (EI) has been contracted to conduct the RCRA-required assessment of the RCRA drip pads at Fortress Wood Product's Greensboro, North Carolina wood treatment facility. This assessment was conducted to satisfy the requirements of 40 CFR 265.441. Based on the information available and the conditions present during the field inspection, the drip pad at the Greensboro facility met the applicable requirements of Subpart W.

The initial annual inspection of the drip pad was conducted by Michael L. Walker, P.E. of EI on Wednesday, May 16, 2012. However, localized delamination of the surface of the drip pad in the center of the pad was observed and immediate efforts were undertaken to develop and implement a remedy. Carolina ProWash was contracted to do the repair work, which included chemical cleaning, cutting out the damaged surface concrete coat, applying a new surface coating, and resealing the entire pad. The repairs were completed on July 1 and a re-inspection was conducted on July 3, 2012, prior to the reinitiating treatment operations. The treatment facilities were operating during the inspection. Additionally, Fortress Wood Products has discontinued use of CCA at the Greensboro facility in favor of treating wood using ACQ in November 2003.

The unlined pad is located adjacent to the treatment building (west side of building). The pad is constructed of concrete and is sloped toward the drainage sump near the treatment building. There is a curb around the entire perimeter of each pad. (40 CFR 265.443(a))

At the time of the re-inspection, the pad appeared to be in good condition, free of unrepaired cracks, gaps, corrosion, or other deterioration that could cause drippage to be released from the drip pad. (40 CFR 265.443(c)) Again, the delaminated areas repaired and the entire surface re-sealed. Although the slope of the pad directs drippage toward the collection sump, there was a minimal amount of ponding water noted. The entire perimeter of each pad is bermed, thereby preventing the runoff of material (40 CFR 265.443(d)). The run-on of rain or other precipitation from the surrounding yard is prevented by the berms and the grade around the pad (40 CFR 265.443(e)). The configuration of the pad with its roof covering prevents rain fall from being captured by the pad (40 CFR 265.443(f)).

Employees appear to manage operations effectively. Any collected liquid is returned for reuse as it is collected thus preventing overflow (40 CFR 265.443(h)). Residues are cleaned from the pad surfaces promptly and all cleaning activities are documented on a Record of Clean-up form (40 CFR

Mr. Pete Haskins
Fortress Wood Products
July 17, 2012
Page 2

265.443(i)). The facility is generally operated to minimize tracking of material from the pad (40 CFR 265.443(j)). The Drip Pad Log shows that each charge of wood is held on the pads for an adequate duration so that drippage ceases before the material is moved. (40 CFR 265.443(k)) Since the pad is covered by a roof, stormwater does not present an overflow or release issue (40 CFR 265.443(l)). Regular inspections monitor conditions to prevent leaks from the pad (40 CFR 265.443(m)).

Finally, regular inspections are conducted as required and records are in good condition (40 CFR 265.443(n) and 254.444(b)). The Storage Yard Drippage Contingency Plan/Record of Clean-up provides a record for pad cleaning activities. The Hazardous Waste Weekly Inspection Log records the conditions associated with the waste drums and storage area. Also, the operating log that records process activities is maintained.

In summary, the pad appears to be in good condition and good housekeeping is practiced. It is recommended that the pad be re-sealed regularly (as dictated by the product manufacturer and ware, particularly in the high traffic area at the center of the pad. This will help prevent damage to the surface concrete coating.

EL appreciates the opportunity to provide this assessment and serve the needs of Fortress Wood Products. Please feel free to contact me at your convenience with any questions or comments.

Sincerely,

The EI Group, Inc.



Michael L. Walker, P.E., CEM, LEED-AP
Vice President, Energy & Environment

MLW/

cc: Jenny Patterson, NCDENR
585 Waughtown St
Winston-Salem, NC 27107

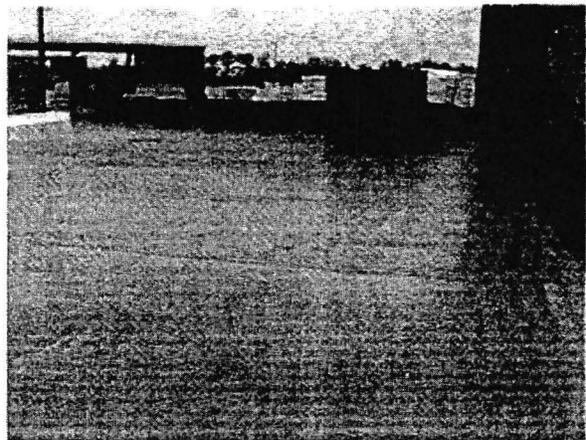
Bradley Bailey
401 Oberlin Rd, Suite 150
1646 Mail Service Center
Raleigh, NC 27699-1646



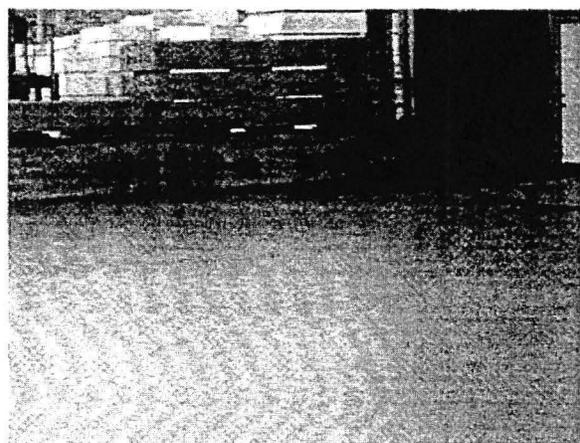
Professional Engineer's Seal



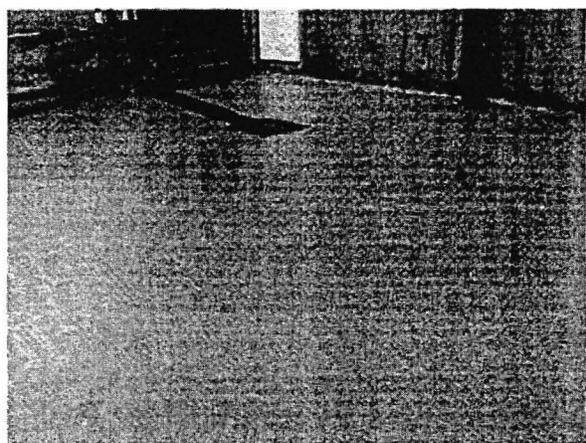
Delaminated area prior to repair



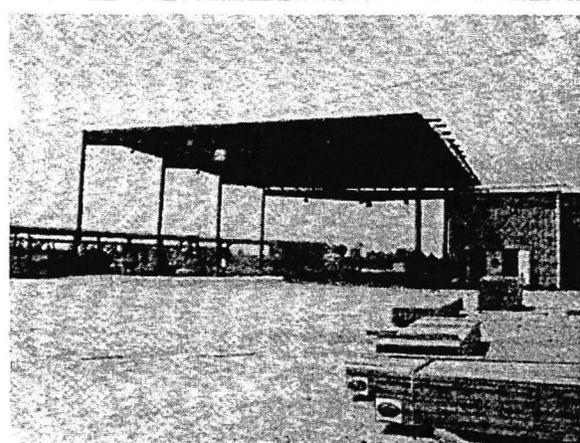
Repaired drip pad



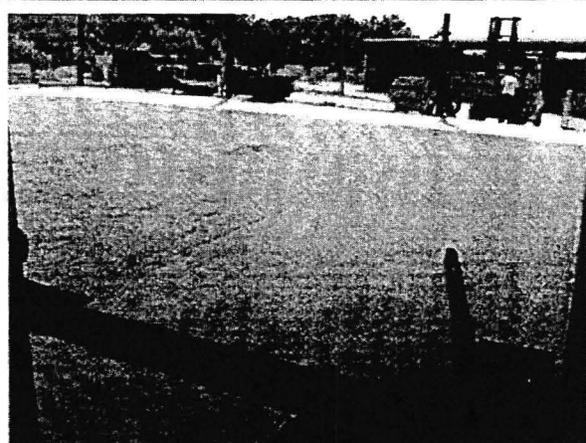
Repaired drip pad near rail



Repaired delaminated area



Covered drip pad operating at time at of inspection



Repaired drip pad - View from cylinder

Appendix B
MSDSs for Treating Solutions



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.
DIVISION:	Wood Preserving Division
EPA REGISTRATION NUMBER:	3008-34
VENDOR:	Osmose, Inc.
EMERGENCY PHONE:	CHEMTREC: 1(800) 424-9300 (716) 882-5905
OTHER CALLS:	(716) 882-5905
ADDRESS:	980 Ellicott Street, Buffalo, NY 14209
MSDS PREPARED BY:	Teri Muchow
DATE PREPARED:	May 20, 1999
DATE LAST REVISED:	February 16, 2000

★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 ₂ O ₃)	7778-39-4	.5 mg/M ³ as As	.01 mg/M ³ as As	RQ = 1 pound	20.00
Chromic Acid (water soluble)	1333-82-0	.1 mg/M ³ as Cr	.05 mg/M ³ as Cr	RQ = 10 pounds	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 is the Acceptable Ceiling Concentrate Limit.
- Pesticide Applicators are exempt from the OSHA Arsenic Standard 29 CFR 1910.18.

SECTION III - CHEMICAL CHARACTERISTICS

BOILING POINT	MELTING POINT	FREEZING POINT	SPECIFIC GRAVITY (H ₂ O = 1)	PERCENT VOLATILE BY VOLUME	THEORETICAL VOC CONTENT (PERCENT OF WEIGHT)
> 100 °C	N/A	N/A	1.83	60% (water)	N/A
WEIGHT PER GALLON	pH	EVAPORATION PRESSURE	EVAPORATION DENSITY	EVAPORATION DENSITY	EVAPORATION RATE BASIS (N-BAUC) = 1
15.3 pounds/gallon	< 1 at 1% solution	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	HEALTH	FLAMMABILITY	REACTIVITY
	3	0	1
OTHER	OX	COR	
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



① 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. If it appears that the victim may not receive medical attention within 15 minutes, and 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 (As₂O₅) and chromium trioxide (CrO₃) 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 [7440-39-2] 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, UN2922, PGIII (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, PGIII, 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: When respiratory exposure can exceed 0.01 mg/M³, 29 CFR 1910.1018 states that a half-mask air purifying respirator equipped with high efficiency particulate filters is recommended. When environmental airborne concentrations are greater than this level, consult 29 CFR 1910.1010 for guidelines and appropriate respiratory protection. Read product label.

VENTILATION REQUIREMENTS: As necessary in order not to exceed PEL's.

LOCAL EXHAUST: Sufficient

PROTECTIVE GLOVES: 29 CFR 1910.1018 requires that workers wear gloves (NBR, natural rubber, neoprene, coated vinyl or PVC).

EYE PROTECTION: Chemical goggles and face shield.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: An apron and other equipment necessary to avoid dermal contact.

WORK/HYGIENIC PRACTICES: Wash hands with soap and water before eating, drinking, smoking, and after work.

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

SECTION 302:

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

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).

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.

CALIFORNIA PROPOSITION 65:

Osmose K-33-C(50%) 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.

Osmose MATERIAL SAFETY DATA SHEET

HAZARDOUS MATERIALS INFORMATION SYSTEM (HMIS) PERSONAL PROTECTION INDEX

A		H	 +  +  + 
B	 + 	I	 +  + 
C	 +  + 	J	 +  +  + 
D	 +  + 	K	 +  +  + 
E	 +  + 	X	Ask your supervisor for guidance
F	 +  +  + 		
G	 +  + 		

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: **NW 100-C**

SECTION I

MSDS NUMBER:	194-OSM
MSDS CODE:	OSM
SYNONYMS:	N/A
MANUFACTURED BY:	Osmose, Inc.
EPA REGISTRATION NUMBER:	3008-87
VENDOR:	N/A
EMERGENCY PHONE:	CHEMTREC: 1(800) 424-9300
OTHER CALLS:	1(800) 686-6676
ADDRESS:	980 Ellicott Street, Buffalo NY 14209
MSDS PREPARED BY:	Teri Muchow
DATE PREPARED:	September 15, 2003
DATE LAST REVISED:	January 19, 2007 (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. 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 severe irritation or chemical burns of the nose, throat and lungs.

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

TRADE NAME: NW 100-C	CAS	OSHA PEL TWA	ACGIH TLV	OTHER	%
Monoethanolamine (85%)	141-43-5	3 ppm 6 mg/m3	3 ppm TWA 6 ppm STEL	N/A	36 - 37
Copper as elemental*	Proprietary Source	Copper fume, 0.1 mg/m3 Copper dusts & mists, 1 mg/m3	Copper fume, 0.2 mg/m3 TWA Copper dusts & mists, 1 mg/m3 TWA	N/A	9.0
Water	7732-18-5	N/A	N/A	N/A	36 - 39

*From mixed copper ethanolamine complexes, copper oxide equivalent approximately 11.3 %

SECTION III - CHEMICAL CHARACTERISTICS

BOILING POINT	MELTING POINT	FREEZING POINT	SPECIFIC GRAVITY (H ₂ O = 1)	THEORETICAL VOC CONTENT (PERCENT OF WEIGHT)	
Not Available	Not Available	Not Available	Approximately 1.226	0%	
WEIGHT PER GALLON	pH:	VAPOR PRESSURE	VAPOR DENSITY	DENSITY	EVAPORATION RATE BASIS (N-BUAC) = 1
Approximately 10.23 lbs/gal. @25°C	9 - 10	Not Available	Not Available	See specific gravity.	Not Available
SOLUBILITY IN WATER: Soluble			REACTIVITY IN WATER: N/A		
APPEARANCE AND ODOR: Blue solution with a faint, amine-like odor.					

Osmose MATERIAL SAFETY DATA SHEET

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	METHOD	FLAMMABLE LIMITS IN AIR (%)	AUTOIGNITION TEMPERATURE
Not Applicable	Not Applicable	Not Applicable	Not Applicable
NFPA CODES			
HEALTH	3	HMIS CODES:	HEALTH 3
FLAMMABILITY	0		FLAMMABILITY 0
REACTIVITY	0		REACTIVITY 0
OTHER	N/A		PROTECTION D*
EXTINGUISHER MEDIA:	Use methods for surrounding fire.		*goggles/face shield, gloves, protective clothing

SPECIAL FIRE FIGHTING PROCEDURES: This product is not flammable. Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Move fire-exposed containers if it can be done without risk to firefighters. If possible, firefighters should control run-off water to prevent environmental contamination. Decontaminate equipment with soapy water before returning to service.

UNUSUAL FIRE AND EXPLOSION HAZARDS: This solution severely irritates contaminated tissue and presents a contact hazard to firefighters. When involved in a fire, this material may decompose and produce irritating vapors and toxic gases (carbon monoxide, carbon dioxide, copper compounds, and nitrogen oxides.) This product must be substantially preheated before ignition can occur.

SECTION V - REACTIVITY DATA

IS THIS CHEMICAL STABLE UNDER NORMAL CONDITIONS OF HANDLING/STORAGE (Y/N)? Y

CONDITIONS TO AVOID (REGARDING STABILITY): Avoid extreme heat and contact with incompatible materials.

INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizing agents, strong acids, and materials that are not compatible with water.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, and sodium oxides.

HAZARDOUS POLYMERIZATION POSSIBLE (Y/N)? N

CONDITIONS TO AVOID (REGARDING POLYMERIZATION): N/A

SECTION VI - HEALTH HAZARDS

EMERGENCY OVERVIEW: This is a blue, corrosive, solution with a faint, ammonia-like odor. The primary health hazard associated with overexposure to this product is moderate to severe irritation of skin, eyes, or other contaminated tissues. Burns may occur if contact is prolonged or concentrated. This solution would require substantial preheating before ignition would occur. The products of thermal decomposition include irritating vapors and toxic gases (including carbon monoxide, carbon dioxide, copper compounds, and nitrogen oxides). This product is not reactive under typical emergency circumstances. Emergency responders must wear personal protective equipment appropriate for the situation to which they are responding.

ROUTES OF ENTRY: Main routes of overexposure for this product would be via inhalation of mists or sprays of this product, as well as contact with skin or eyes.

SIGNS AND SYMPTOMS OF ACUTE OVEREXPOSURE:

EYES:	Depending on the duration of overexposure, contact with the eyes will cause irritation, pain, reddening, and may result in blindness. Low vapor concentration from the Amine Compound component can cause a visual disturbance, known as "blue haze" or "halo vision". Vision may become foggy or blurred, with halos around lights. This condition normally clears within several days of exposure, unless eye exposure is intense, in which case the condition may take days to clear and may be accompanied by an abnormal sensitivity to light referred to as photophobia.
SKIN:	Depending on the duration of skin contact, skin overexposures will cause reddening, discomfort, irritation, ulceration, and chemical burns. Depending on the duration of overexposure, chapping, flaking, and chemical burns may result. Repeated overexposure may lead to dermatitis (inflamed, dry skin). An allergic response (i.e., the development of rashes and welts) may occur in sensitive individuals. Skin absorption is also a potential route of overexposure to the Amine Compound component of this product.
INGESTION:	Ingestion is not anticipated to be a significant route of overexposure for this solution. If this product is swallowed, irritation and burns of the mouth, throat, esophagus, and other tissues of the digestive system will occur immediately upon contact. Symptoms of such overexposure may include gastric distress, nausea, vomiting, and diarrhea. Severe ingestion overexposures may be fatal.
INHALATION:	This solution is corrosive; if vapors, mists, or sprays of this product are inhaled moderate to severe irritation or burns to the nose, throat, and lungs may occur, depending on duration and concentration of exposure. Symptoms of such overexposure can include wheezing, shortness of breath, and other breathing difficulties. Due to the presence of the Inorganic Carbon Compound, which is a powerful cerebral vasodilator, inhalation of high concentrations of vapors of this product may cause an increase in respiration and heart rate. Symptoms may include labored breathing, increased blood pressure, a feeling of slight choking, visual disturbance intoxication, mental disturbances and ringing in the ears. The Inorganic Carbon Compound component will initially stimulate respiration rate. Continued inhalation exposure will result in a depressed respiration rate; unconsciousness can occur if the level of Inorganic Carbon Compound reaches between 5 and 8%. Chronic inhalation overexposures to vapors of this product may result in liver and kidney disorders and adverse effects on the lungs. Severe inhalation overexposures can lead to chemical pneumonitis, pulmonary edema, and death. Repeated low-level inhalation of mists or sprays may result in bronchitis or other adverse respiratory conditions.

Osmose MATERIAL SAFETY DATA SHEET

CHRONIC OVEREXPOSURE: Repeated contact with this material may produce dermatitis and chapping. Repeated low-level inhalation of mists or sprays may result in bronchitis or other adverse respiratory conditions. An allergic skin response (i.e. the development of rashes and welts) may occur in sensitive individuals. Chronic inhalation overexposures may result in liver and kidney disorders and adverse effects on the lungs.

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: Skin disorders may be aggravated by exposure to this product. Overexposures to aerosols, mists, or sprays of this product may aggravate respiratory conditions, liver disorders, and kidney problems. Additionally, any disorder involving the "Target Organs" may be aggravated by overexposures to this substance.

ACUTE TOXICITY:

Acute Dermal LD50 (Rats):	> 5,000 mg/kg
Acute Oral LD50 (Rats):	Is between 500 and 2,000 mg/kg
Acute Inhalation LC50:	> 2.06 mg/l
Primary Skin Irritation:	Corrosive to Skin
Primary Eye Irritation:	Study not conducted due to corrosivity to skin.
Dermal Sensitization (Guinea Pig):	Is not a contact sensitizer.



EMERGENCY AND FIRST AID PROCEDURES



① **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.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

UNITED STATES DEPARTMENT OF TRANSPORTATION SHIPPING DESCRIPTION:

Corrosive liquids, n.o.s., 8, UN1760, PGIII (Alkaline Copper Complex)

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: All employees who handle this material should be trained to handle it safely. Avoid breathing vapors or mists generated by this product. Use in a well-ventilated location. Open containers slowly, on a stable surface. Containers of this product must be properly labeled. Empty containers may contain residual liquid or vapors, therefore empty containers should be handled with care. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Store away from incompatible materials. Material should be stored in secondary containers, or in a diked area, as appropriate. Keep container tightly closed when not in use. Floors should be sealed to prevent absorption of this material. If appropriate, post warning signs in storage and use areas. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. If this product is transferred into another container, only use portable containers and dispensing equipment (faucet, pump, drip can) approved for corrosive, basic liquids. Recommended storage temperature is 10-30°C (50-86°F). Transfer material into properly labeled containers. Periodically inspect tanks and other containers of this product for leaks or damage. Ensure that dikes and berms surrounding tanks of this product are in good condition. Empty tanks, containers, pipelines, or process equipment may contain residual liquid; therefore, they must be handled with care.

OTHER PRECAUTIONS: During maintenance of contaminated equipment, make certain that application equipment is locked and tagged-out safely. Always use this product in areas where adequate ventilation is provided. Decontaminate equipment before maintenance begins. Do not get preservatives in your eyes, on your skin, or on your clothing. Do not inhale vapors or mists of this product. Use this product with adequate ventilation. All work practices should minimize the generation of splashes and aerosols. **Remove contaminated clothing immediately and dispose of properly. Do not re-use contaminated clothing.** Wash hands thoroughly after handling product. Keep out of reach of children. Read product label. Review Section VI of this MSDS for Emergency and First Aid Procedures.

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. Keep upwind and out of low areas. Contain discharge by booming on water or diking on ground. Absorb/adsorb residual materials and clean-up with non-sparking tools. Prevent entry into sewers, drains, underground or confined spaces, water intakes and waterways. See product label for more information.
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. See product label for more information.
Evacuation Procedures:	Isolate area. Keep unnecessary personnel away.
Special Procedures:	Wear appropriate personal protective equipment. Follow all Local, State and Federal Regulations for disposal.

WASTE DISPOSAL METHODS: You must test your waste using methods described in 40 CFR Part 261 to determine if it meets applicable definitions of hazardous waste. Wastes of this product should be tested for D002 (Characteristic/Corrosivity). This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority. Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below exposure limits listed in Section 2. If respiratory protection is needed, use only protection authorized in the US Federal OSHA Standard (29 CFR 1910.134), and applicable State regulations. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998). Individuals who enter treatment cylinders and other related equipment contaminated with wood treatment solutions must wear properly fitting, well-maintained, high efficiency respirators that are MSHA/NIOSH-approved for ammonia.

VENTILATION REQUIREMENTS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided in Section 2. Exhaust directly to the outside. Use local exhaust ventilation, and process enclosure if necessary, to control mist formation. Supply sufficient replacement air to make up for air removed by system.

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.

WORK/HYGIENIC PRACTICES: 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 concentrate or solutions (i.e. manually opening/closing cylinder doors, moving trams out of the cylinder, mixing chemicals, handling freshly treated wood, etc.). Wash thoroughly after skin contact and before eating, drinking, using tobacco products, or using restrooms. Applicator must leave all protective clothing, work shoes or boots, and equipment at the treatment plant. Remove contaminated clothing immediately and dispose of properly. Do not re-use contaminated clothing.

SECTION IX – EXOLOGICAL INFORMATION

ECOTOXICITY: This product contains fungicides and bactericides which when released into the environment, are expected to adversely effect or destroy contaminated plants. May be harmful or fatal to wildlife.

Monoethanolamine (CAS #141-43-5)	
LC50 (96 hr) goldfish: 170.0 mg/l	
EC50 (30 min) Photobacterium phosphoreum: 13.7 mg/l	Microtox test
Copper Complex (Proprietary)	
LC50 (96hr) fathead minnow: 23 ug/L (20 mg CaCO3/L)	LC50 (96hr) water flea: 10 ug/L (45 mg CaCO3/L)
LC50 (96hr) rainbow trout: 13.8 ug/L (juveniles)	LC50 (96hr) water flea: 200 ug/L (226 mg CaCO3/L
LC50 (96hr) bluegill: 236 – 892 ug/L (adults – related to copper)	– related to copper)
LC50 (72hr) freshwater algae: 120 ug/L (related to copper)	

Osmose MATERIAL SAFETY DATA SHEET

SECTION X- 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

SECTION 302:

N/A

SECTION 304:

N/A

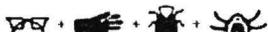
SECTION 311 & 312:

Storage of NW 100-C 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 if you exceed the Threshold Planning Quantity.

SECTION 313:

Form R reporting required for Copper Compounds, Chemical Category N100 (1.0% de minimis concentration)

HAZARDOUS MATERIALS INFORMATION SYSTEM (HMIS) PERSONAL PROTECTION INDEX

A 	H 
B 	I 
C 	J 
D 	K 
E 	X Ask your supervisor for guidance
F 	
G 	

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: **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:	April 24, 2006 (replaces January 25, 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! 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	CAS	OSHA PEL	ACGIH TLV	OTHER	%
INGREDIENT NAME					
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	7632-00-00	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 ₂ O = 1)	THEORETICAL VOC CONTENT (PERCENT OF WEIGHT)	
Not Determined	N/A	Not Determined	1.76	Not Determined	
WEIGHT PER GALLON	pH:	VAPOR PRESSURE	VAPOR DENSITY	DENSITY	EVAPORATION RATE BASIS (N-BUAC) = 1
14.66 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		HMIS CODES:	
HEALTH	2	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 LD₅₀ (rat): > 2,000 mg/kg
- Acute Dermal LD₅₀ (rat): > 2,000 mg/kg
- Acute Inhalation LC₅₀ (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



① **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:
Environmentally hazardous substance, liquid, n.o.s., 9, UN3082, PGIII, RQ
(contains sodium nitrite)

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, State and local laws 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.

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.

Osmose MATERIAL SAFETY DATA SHEET

SARA Information Continued:

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

A 	H 
B 	I 
C 	J 
D 	K 
E 	X Ask your supervisor for guidance
F 	
G 	

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: **MP200-A**

SECTION I

MSDS NUMBER:	258-osm
MSDS CODE:	OSM
SYNONYMS:	N/A
MANUFACTURED BY:	Osmose, Inc.
EPA REGISTRATION NUMBER:	3008-101
EMERGENCY PHONE:	CHEMTREC: 1(800) 424-9300
OTHER CALLS:	716-882-5905
ADDRESS:	950 Ellicott Street, Buffalo NY 14209
MSDS PREPARED BY:	Teri Muchow
DATE PREPARED:	May 20, 2009
DATE LAST REVISED:	N/A

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. May be harmful if absorbed through the skin.
- 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: ORD-X170	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%
Tebuconazole	107534-96-3	N/A	N/A	N/A	1.32%
Dispersant	N/A - Mixture	None Established	None Established	N/A	6% - 9%
Water	7732-18-5	None	None	N/A	25% - 35%

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

SECTION III - CHEMICAL CHARACTERISTICS

BOILING POINT	MELTING POINT	FREEZING POINT	SPECIFIC GRAVITY (H ₂ O = 1)	THEORETICAL VOC CONTENT (PERCENT OF WEIGHT)	
Not Determined	N/A	Not Determined	Approx. 1.8	Not Determined	
WEIGHT PER GALLON	pH:	VAPOR PRESSURE	VAPOR DENSITY	DENSITY	EVAPORATION RATE BASIS (N-BUAC) = 1
Approx. 15 lbs/gal.	8.99	Not Determined	Not Determined	See specific gravity	Not Determined
SOLUBILITY IN WATER: Soluble			REACTIVITY IN WATER: N/A		
APPEARANCE AND ODOR: Blue green liquid. Latex paint-like odor.					

Osmose MATERIAL SAFETY DATA SHEET

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	METHOD	FLAMMABLE LIMITS IN AIR (%)	AUTOIGNITION TEMPERATURE
Not Determined	N/A	N/A	N/A
NFPA CODES			
HEALTH	2	HMIS CODES:	HEALTH
FLAMMABILITY	0		FLAMMABILITY
REACTIVITY	0		REACTIVITY
OTHER	N/A		PROTECTION
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 CO, CO₂, oxides of nitrogen and other potentially toxic gases.

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 LD₅₀ (rat): > 2,000 mg/kg
- Acute Dermal LD₅₀ (rat): > 2,000 mg/kg
- Acute Inhalation LC₅₀ (rat): > 2.05 mg/L
- Skin Irritation (rabbit): Non-irritating to the skin.
- Eye Irritation (rabbit): Mildly irritating to the eye.
- Skin sensitization (Guinea pig): Not a sensitizer

Osmose MATERIAL SAFETY DATA SHEET



EMERGENCY AND FIRST AID PROCEDURES



① 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. 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:
NOT 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 or 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, State and local laws 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:

N/A

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

A		H	 +  +  + 
B	 + 	I	 +  + 
C	 +  + 	J	 +  +  + 
D	 +  + 	K	 +  +  + 
E	 +  + 	X	Ask your supervisor for guidance
F	 +  +  + 		
G	 +  + 		

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.

CCA Conversion Guidelines Update

On September 24, 2003, EPA published a memo entitled "Options for CCA Wood Treatment Plants Converting to Preservatives that do not Generate Hazardous Waste." The EPA memo describes three options: **(1) complete closure before converting; (2) continued operation under 40 CFR Part 265 Subpart W; and (3) phased closure.**

The EPA guidance specifically does not address tanks and ancillary piping and equipment, or particulars of process equipment cleaning and/or replacement. The attached document addresses these issues; provides additional details concerning closure of hazardous waste drip pads under Subpart W; and includes guidance on demonstrating that waste managed on a drip pad is not F035 by virtue of the mixture rule [40 CFR 261.3(a)(2)(iv)].

Facilities that choose EPA's "closure" or "phased closure" option at conversion from use of CCA to other wood treating chemicals must show that they have completed applicable activities outlined in the attached and/or cited guidance documents.

Compliance with these guidelines by a wood treating facility shall not affect remedial action requirements or obligations at any facility where environmental contamination is currently known or subsequently discovered, and shall not preclude the Department from commencing or continuing enforcement action based on environmental contamination or regulatory violations.

North Carolina Guidelines for Converting a Wood Treatment Facility from Use of CCA to a Non-CCA Process Which Does Not Produce Hazardous Waste

1. Remove all waste residues from the tanks, treatment cylinder, leak detection and collection system and ancillary equipment, including bottom sludge from the tanks.
2. Rinse the above items and flush the piping. The tanks may need to be scrubbed to remove any scaling prior to rinsing.
3. Collect samples from the final rinse of the equipment, pad, etc. and additional samples from the final flush of the piping and analyze for total chromium, copper and arsenic. For complete closure before converting, if the analytical results of the rinsate must meet the current 15A NCAC 2L (2L) standard * for those constituents. For phased closure before converting, the drip pad and other containment system components must be cleaned sufficiently such that any liquids that come in contact with the pad would not be viewed as having been "mixed" with F035 waste. The Department has determined that a CCA treatment system would not be viewed as having been "mixed" with F035 waste under the mixture rule [40 CFR 261.3(a)(2)(iv)] if untreated wood treatment waste (i.e. waste "as generated") meets the Universal Treatment Standards (UTS) for F035 constituents set forth in 40 CFR 268.40 and 268.48:

	Wastewaters (mg/L)	Non-wastewaters (mg/L TCLP)
Arsenic	1.4	5.0
Chromium Total	2.77	0.60

This determination also applies to wastes which are generated by use of non-CCA chemicals or makeup water that may contain arsenic or chromium as impurities. In other words, as-generated (i.e. untreated) wastes that do not exceed UTS for As and Cr do not meet the F035 listing description in North Carolina.

4. Decontamination of drip pad: The drip pad should be pressure washed. The facility must analyze the rinsate from the drip pad for chromium, copper and arsenic. Once the concentration of chromium, copper and arsenic in rinsate is below the 2L standards, the drip pad will be considered clean. Bead blasting of surfaces may be required if rinsate continues to be above the 2L standard if completing closure before converting is the option selected. If phased closure is the option, rinsate must not exceed UTS for As and Cr.

5. The facility must collect, characterize, manage and dispose of all rinsate and residues in accordance with hazardous waste regulations if determined to be hazardous waste. Non-hazardous rinsate must be managed and disposed of in accordance with state and local requirements. The demonstration that the wood treatment waste meets UTS must be based on a sampling program, with a minimum of one sample per 55 gallon drum of waste generated, for a sufficient period of time to generate data ensuring that concentrations of As and Cr in the waste are regularly and consistently at or below UTS. The sampling program should continue until the Department agrees that the demonstration has been made. During and after the demonstration sampling period, all nonwastewaters that meet these criteria if disposed in North Carolina, must be sent to a lined Subtitle D Municipal Solid Waste Landfill with a leak detection system. Wastewaters that meet these criteria must be managed in accordance with applicable Federal, State, and Local wastewater treatment facility permitting, pretreatment, reuse, and/or discharge requirements.

6. Evidence of hazardous waste releases (cracks, discolored soil, etc.) must be assessed in accordance with the Generator Closure Guidance**. An assessment plan, along with a schedule for completion, must be submitted.

7. Required remediation in accordance with the Generator Closure Guidance and 40 CFR 265.445, will be completed within a time period agreed upon by the facility and the Division of Waste Management or when the drip pad ceases to be used for wood treatment purposes.

8. If remediation is delayed, compliance with 40 CFR Subpart W must be maintained.

9. If the facility intends to use groundwater from the site as makeup water for the treatment process, the groundwater must not contain any hazardous constituents above 2L standards.

10. When the facility ceases to use a drip pad for wood treatment purposes, the drip pad must be closed in accordance with the requirements of 40 CFR 265.445.

11. Compliance with these guidelines by a wood treating facility shall not affect remedial action requirements or obligations at any facility where environmental contamination is currently known or subsequently discovered, and shall not preclude the Department from commencing or continuing enforcement action based on environmental contamination or regulatory violations.

12. Continued use of the facility after conversion to a non-CCA process, especially use of a drip pad, must be in accordance with applicable environmental requirements, including, but not limited to, the Department's industrial wastewater discharge and disposal regulations. Under the phased closure option, the drip pad would still be subject to certain subpart W regulations of 40 CFR part 265, such as those pertaining to inspections and the operation and maintenance of the drip pad, even though the drip pad would not be managing

hazardous waste. When all wood treating operations end, the drip pad would then be closed in accordance with subpart W requirements, and the applicable requirements of subpart G of 40 CFR part 265.

* Current 2L – Groundwater Standards can be found using the following web link:

<http://portal.ncdenr.org/web/wq/ps/csu/gwstandards>.

** The Generator Closure Guidelines can be accessed on the Division's Web site at:

<http://portal.ncdenr.org/web/wm/hw/technical/guidance>.

For more information you can contact:

Doug Roberts at (919) 707-8221 or douglas.roberts@ncdenr.gov

Harvi Cooper at (919) 467-1979 or harvi.cooper@ncdenr.gov

Robin Proctor at (828) 625-0171 or roberta.proctor@ncdenr.gov

Mike Williford at (919) 707-2880 or mike.williford@ncdenr.gov

MEMORANDUM

TO: RCRA Directors
Regions 1 - 10

FROM: Robert Springer
Director, Office of Solid Waste

SUBJECT: Options for CCA Wood Treatment Plants Converting to Preservatives that do not
Generate Hazardous Waste

As you may already know, as of January 1, 2004, many wood treatment plants that currently use chromated copper arsenate (CCA) will be required to convert to an alternative preservative. In fact, this conversion is already underway. The attached guidance explains options available to owners and operators who will be converting from using CCA to using preservatives that do not result in the generation of hazardous waste. The reason for issuing this guidance is that most wood treatment plants using CCA are hazardous waste generators, and are subject to certain closure requirements for their "drip pad" waste management units after switching to preservatives that do not result in the generation of hazardous waste. Because this conversion is occurring within a relatively short time frame, this document has been developed to provide guidance on three options for complying with RCRA closure requirements. Our goal is to minimize potential disruption to this industry, while ensuring protection of human health and the environment.

The guidance was developed for federal and state hazardous waste regulators overseeing owners and operators of those wood treatment plants during and after their conversion. This guidance supplements and does not supersede earlier federal guidance for wood treatment plants that change preservatives. We are also aware that some states have developed similar guidelines, and we believe the attached guidance is compatible with those guidelines.

Several of the Regions have assisted in the preparation of this guidance, as have several states, and we appreciate that assistance. We will be distributing this guidance to the states through the Association of State and Territorial Solid Waste Management Officials (ASTSWMO).

If you have any questions regarding this guidance, please contact Ross Elliott of my staff at 703-308-8748, or at elliott.ross@epa.gov.

Attachment

cc: ASTSWMO

RO 14681

**Options for Drip Pads at Wood Treating Plants
Converting from Chromated Copper Arsenate (CCA) Preservative to Preservatives that do
not Generate Hazardous Waste**

Introduction

A. Background

In February 2002, the four registrants of chromated copper arsenate (CCA) products submitted requests to EPA for the voluntary termination of most residential uses of CCA products by December 31, 2003, as well as the voluntary cancellation of other affected products. These actions, which became final on March 17, 2003, will prohibit the CCA treatment of wood that is intended for most residential uses after December 31, 2003.¹ The termination of CCA-treated wood products for residential uses will reduce exposure from arsenic, principally where children may come in contact with the treated wood.² "Residential" uses of wood treated with CCA include wood used in play-structures, decks, picnic tables, landscaping timbers, residential fencing, patios, and walkways/boardwalks. Products not included in the termination include wood used for marine and some farm applications, piles, and round poles and posts used in building construction.

The purpose of the transition (or "phase-out") period, from the February 2002 announcement to the December 31, 2003 effective date, is to provide consumers with increasingly more alternatives to CCA-treated wood, while allowing adequate time for the industry to convert wood treating plants with minimal economic disruption. EPA estimates that approximately 380 plants may be affected by the cancellation of the use of CCA for residential uses. Normally, any wood treatment plant that uses CCA may choose to convert to a different preservative at any time. This phase-out, however, means that many wood treaters may be converting (or possibly choosing to close) within a relatively short time period. Because wood preserving plants using CCA preservative generate hazardous waste, they are subject to the hazardous waste requirements of the Resource Conservation and Recovery Act (RCRA). Therefore, if a plant switches to a preservative that does not result in the generation and management of hazardous waste, that plant has a number of options as to whether, or how, it may subsequently be regulated under RCRA.

¹The EPA announced these requests in the February 22, 2002 *Federal Register* (67 FR 8244), and requested public comment at that time. The cancellation order, which became final on March 17, 2003, was announced in the April 9, 2003 *Federal Register* (68 FR 17366).

²While the Agency has not concluded at this time that exposure to CCA treated wood poses unacceptable risks, arsenic is a known human carcinogen and any reduction in exposure is desirable. EPA is currently evaluating the risks associated with the use of CCA, especially risks to children from exposure to decks and play structures.

B. Purpose of Guidance

The purpose of this guidance is to describe a number of options available to generators regarding "closure" under the federal hazardous waste regulations for wood treatment plants that convert from using CCA to using alternative preservatives that do not result in the generation of RCRA hazardous waste. The guidance explains generally how wood treatment plant owners and operators may operate in continued compliance with the requirements of subparts W (Drip Pads) and G (Closure and Post-Closure) of 40 CFR part 265, as they convert from using CCA to other wood preservatives that do not result in the generation of RCRA hazardous waste. The guidance is directed to federal and state hazardous waste regulators to assist the owners and operators of wood treatment plants currently using CCA as a wood preservative. EPA is aware that some states have developed guidelines for the conversion process, and believes that this guidance is compatible with those guidelines.

C. Scope

This guidance addresses options related to the proper management of drip pads, regulated under subpart W of 40 CFR part 265, when converting from CCA to an alternative preservative that does not result in the generation of hazardous waste. While the intent is to give guidance to wood treaters that currently use CCA and will be converting before January 1, 2004, the guidance is also applicable for conversion after that date. This guidance does not address the specifics of process equipment cleaning and/or replacement, nor does it address the disposal of CCA treated wood. The cleaning and/or replacement of wood preserving process equipment (e.g., retort vessel, product storage tanks, valves, etc.) will likely be required as a result of switching preservatives, regardless of the option chosen for drip pad management, and any waste generated from the cleaning must be managed as RCRA hazardous waste. The guidance also does not address tanks and ancillary piping and equipment used in managing hazardous waste at wood treatment plants. These topics are important, and should be addressed by the appropriate federal or state regulatory authority.

Conversion Options

Owners and operators of wood treating plants that generate a hazardous waste, and that use drip pads to convey treated wood drippage, precipitation, and/or surface water runoff to a collection system, are subject to the requirements of subpart W of 40 CFR part 265.³ Those regulations specify the requirements for the design, operation, inspection and closing of the drip pads. Most of the wood treatment plants operate as generators of hazardous waste, and not treatment, storage, and disposal facilities (TSDFs). Wood treatment plants operating as generators under 40 CFR 262.34(a)(1)(iii) are exempt from RCRA permitting, and are subject to

³ Absence of a drip pad does not necessarily mean that a wood treatment plant is not subject to subpart W. See 40 CFR 265.440(c)(1).

the generator standards as well as subpart W of Part 265. For generators who own or operate drip pads, the applicable closure standards are the general requirements in 40 CFR 265.111 and 265.114, and the unit-specific requirements in 40 CFR 265.445.

When an owner or operator of a wood treatment plant regulated under subpart W chooses to convert from using CCA to using a preservative that does not result in the generation of a RCRA hazardous waste, we have identified the following three options for timing the drip pad closure activities to minimize the impact of such activities on wood treatment operations. State regulatory agencies may also identify suitable options and should be consulted. A wood treater operating only as a hazardous waste generator, who is subject to subpart W, must eventually follow the closure requirements in subpart W and the applicable requirements of subpart G. These closure requirements would apply for all the following options; the only difference is the timing of the closure activities relative to the conversion to a different wood preserving chemical.

In the past, EPA has provided guidance on this subject, that is, the requirements for wood treaters who either close their wood-treating operations "as RCRA generators,"⁴ or switch to a chemical that does not generate any RCRA hazardous waste,⁵ while continuing to operate their wood-treatment operation. Today's guidance includes the information from previous guidance, and should be considered a supplement to, not a replacement for, that guidance.

OPTION 1 - Complete Closure Before Converting

An owner or operator of a wood treatment plant may choose to no longer have the drip pad regulated under RCRA when the plant converts from using CCA to using a wood preserving chemical that does not result in the generation of hazardous waste. If so, the owner or operator must close the drip pad as a hazardous waste management unit before converting the wood treatment plant to the alternative preservative. The owner or operator must follow all procedures specified in 40 CFR 265.111, 265.114, and 265.445.

The subpart W regulations require that the drip pad be either "clean closed" or closed as a hazardous waste landfill. If clean closed, all waste residues, structures, equipment, containment system components (including sumps, drip pad and any liners), and contaminated soils must be removed or decontaminated and managed as hazardous waste. EPA has not established specific federal cleanup levels to verify "clean closure." Many states have established cleanup levels, and we recommend that plants work with their appropriate state or federal regulatory authority to determine specific levels of decontamination that are protective of human health and the

⁴ EPA Hotline Monthly Report Questions, Faxback #14321 and #14130.

⁵ See Section 4-22, Wood Preserving Resource Conservation and Recovery Act Compliance Guide, Office of Compliance, U.S. EPA, June 1996.

environment.⁶ If the appropriate regulatory agency determines that the “clean closure” requirements have been satisfied, the wood preserving operation could then “reopen.” The decontaminated drip pad, or, if necessary, new drip pad would not be regulated under subpart W.

In the event that “clean closure” is not possible, e.g., not all CCA-contaminated subsoils are removed to levels acceptable to the regulatory authority, the unit will be subject to the post-closure care regulations in 40 CFR 265.310 as a closed hazardous waste landfill. The original drip pad could be decontaminated and used as part of the overall cover for the contaminated area.⁷ Depending on the post-closure care requirements, a new drip pad may have to be constructed by the wood treating plant and located separately from the contaminated area. The wood preserving operation could “reopen” using a wood preservative that does not result in the generation of hazardous waste, using either the decontaminated drip pad or a new drip pad. Neither the new drip pad nor the decontaminated original drip pad would be regulated under subpart W. If the original drip pad is used as part of the post-closure landfill cover, however, the post-closure care requirements under 40 CFR 265.310 would apply, whether or not it continues in use as part of the wood treating process.

The contaminated area could be addressed under a post closure permit, or as part of an ongoing corrective action process for other contaminated areas at the plant. The Post-Closure Rule (63 FR 56709, October 22, 1998) allows EPA and authorized states the flexibility of using a variety of authorities, including corrective action, to impose requirements on non-permitted land disposal facilities requiring post-closure care, provided the regulated unit is situated among solid waste management units, a release has occurred, and both the regulated unit and one or more solid waste management units (or areas of contamination) are likely to have contributed to the release (40 CFR 265.110(d)).

OPTION 2 - Continued Operation

Under this option, the owner or operator would continue to operate under subpart W, and to continue to have all wastewaters, process residuals, preservative drippage, spent formulations, etc., that accumulate on the drip pad regulated as hazardous waste. In this situation, no changes would be required under RCRA. Process equipment generally will require cleaning, and perhaps replacing, for compatibility with the alternative preservative, but no cleaning or replacement of the drip pad would be performed under this option. Any liquids removed from the drip pad

⁶ EPA issued clean closure guidance on March 16, 1998. The guidance explained that non-residential exposure assumptions may be used at industrial properties at the discretion of the regulatory agency (RCRA Online number 14174)

⁷ Hilary I. Inyang, Ph.D and Vernon Myers, Ph.D, Geotechnical Systems for Structures on Contaminated Sites, A Technical Guidance Document. USEPA, EPA530-R-93-002, August 1993

would be considered to be hazardous under the "mixture rule,"⁸ because the drip pad would not have been decontaminated and the liquids would have been "mixed" with F035⁹ waste. Of course, when the plant ceases all operations, the closure requirements in 40 CFR 265.445, and the applicable requirements in subpart G of 40 CFR part 265 must still be followed.

OPTION 3 - Phased Closure

Closing drip pad units at wood treatment plants within a relatively short time period, where owners and operators otherwise wish to continue operations using a preservative that does not result in the generation of hazardous waste, could result in an economic disruption in this industry. This is particularly the case if the drip pad must be removed and/or contaminated soils have to be removed from underneath the drip pad to meet final closure standards. Under this option, an owner or operator of a wood treatment operation would convert to an alternative preservative that does not result in the generation of hazardous waste, perform certain closure activities, and postpone complete closure until some future date.

As in Option 2, the owner or operator would be required to clean, and perhaps replace, the treatment equipment. Under this option, however, the drip pad and the other containment system components would be cleaned sufficiently such that any liquids that come in contact with the pad would not be viewed as having been "mixed" with F035 waste. The level of cleaning would have to be determined by the appropriate federal or state regulatory authority. (Also, it should be noted that where drip pad liquids are conveyed to and collected in sumps, residual F035 waste in these sumps would need to be removed so that subsequent wastes managed in these units, after successful conversion to an alternative preservative, would not be "mixed with" F035 waste.) This option presumes that process equipment is also cleaned so that liquids reaching the drip pad do not contain F035 waste. Whereas in Option 2 liquids removed from the drip pad after the conversion was complete would be treated as RCRA hazardous waste, in this option the liquids would not be a RCRA hazardous waste under the "mixture rule."

Under this option, the drip pad would still be subject to certain subpart W regulations of 40 CFR part 265, such as those pertaining to inspections and the operation and maintenance of the drip pad, even though the drip pad would not be managing hazardous waste. The subpart W regulations would continue to apply to the drip pad because closure would not have been completed, and any contamination around and under the drip pad would presumably not have been removed. The goal of the continued applicability of the subpart W regulations is to prevent

⁸ The regulatory provision governing mixtures of solid waste and listed hazardous waste is known as the "mixture rule" and is found at 40 CFR 261.3(a)(2)(iv). It requires that a waste be managed as hazardous if it is a mixture of a solid waste and one or more listed hazardous wastes and has not been delisted.

⁹ F035 waste is described in part in 40 CFR 261.31 as:
Wastewater (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use inorganic preservatives containing arsenic or chromium.

exacerbation of any existing soil or groundwater contamination. The owners or operators should check with the appropriate state or federal regulatory authority to determine which of the subpart W regulations apply on a site-specific basis. When all wood treating operations end, the drip pad would then be closed in accordance with subpart W requirements, and the applicable requirements of subpart G of 40 CFR part 265.

Drip Pad Cleaning

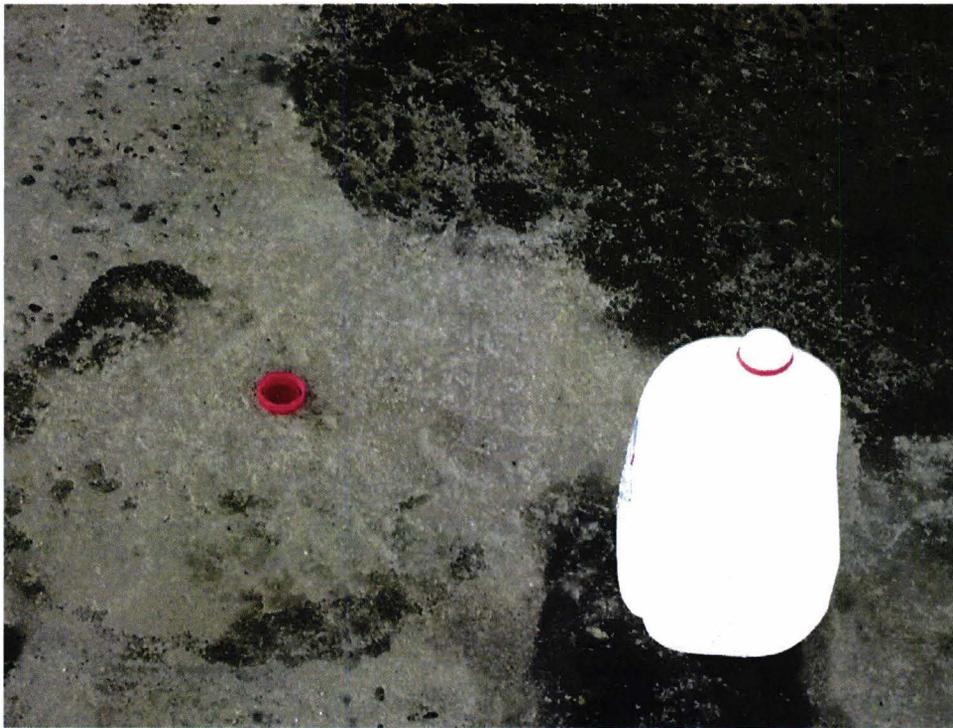
The method of cleaning the pad will depend on whether it is either covered or sealed with a low permeability surface material or instead has an underlying liner. Possible cleaning methods include gritblasting, hydroblasting/water washing, solvent washing, and steam cleaning. Gritblasting uses an abrasive material to remove contaminated layers up to about 0.5 to 1.5 cm., and is applicable for concrete pads, but would remove any surface coatings. Hydroblasting/water washing can also be used on concrete, and can remove the top 0.5 to 1.0 cm of the surface. With solvent washing, an organic solvent is circulated across the surface of the pad to solubilize contaminants. This method could be used on both coated and un-coated pads. Steam cleaning is also applicable to both coated and un-coated pads. Note that any waste generated by the cleaning of drip pads that collect CCA treatment chemicals, i.e., rinse waters, drip pad residues, etc., must be handled as a hazardous waste.

Appendix D
Post-Decontamination Photographs





Photograph No. 1
Decontaminated drip pad. Water jug is at rinseate sampling location.



Photograph No. 2
Close-up of drip pad rinseate sampling location.



Photograph No. 3
Decontaminated elevated tram rail. Water jug is at rinseate sampling location.



Photograph No. 4
Close-up of elevated tram rail rinseate sampling location.

Appendix E
Cleaning Residuals Disposal Documentation





THE ENVIRONMENTAL QUALITY COMPANY

EQ ALABAMA • P.O. Box 1259 • VERNON, ALABAMA 35592 • tel 800-695-8915 • fax 205-698-8923

September 30, 2013

Fortress Wood Products
1 Metals Drive
Greensboro, NC 27407

Attention: Pete Haskins

This copy is to acknowledge that EQ Alabama, Inc., of Sulligent, Alabama has received your shipment. As a requirement of 40 CFR 265.71 and A.D.E.M. Regulation 335-14-6-.05, this letter serves to inform you that this facility has the proper permits and will accept your shipment upon completion of waste analysis procedures specified in the facility's Waste Analysis Plan and as determined in the approved waste profile submitted for this waste.

All correspondence concerning this shipment should always reference the Alabama State Document Number TFS (130422) Manifest # 010278208 JJK. Thank you for the opportunity to serve Fortress Wood Products.

Sincerely,

A handwritten signature in cursive script that reads "Misty Koester".

Ms. Misty Koester
EQ Alabama, Inc.
Phone: (205) 698-7507
Fax: (205) 698-8923

(1368)

LD# 1150315 STOP2

Please print or type (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number NCD 981 920 648	2. Page 1 of 1	3. Emergency Response Phone (800) 356-7457	4. Manifest Tracking Number 010278208 JJK
----------------------------------	-------------------------------------------	-------------------	-----------------------------------------------	----------------------------------------------

5. Generator's Name and Mailing Address 1 METALS DR. GREENSBORO, NC 27407 Generator's Phone:	FORTRESS WOOD PRESERVING 1 METALS DR. GREENSBORO, NC 27407	Generator's Site Address (if different than mailing address)
-------------------------------------------------------------------------------------------------------	------------------------------------------------------------------	--------------------------------------------------------------

6. Transporter 1 Company Name Robbie D Wood	U.S. EPA ID Number ALD 067 138 891
------------------------------------------------	---------------------------------------

7. Transporter 2 Company Name	U.S. EPA ID Number
-------------------------------	--------------------

8. Designated Facility Name and Site Address 51328 HIGHWAY 17 SULLIGENT, AL 35586 Facility's Phone: (205) 698-8915	EQ ALABAMA, INC.	U.S. EPA ID Number ALD 983 177 015
-----------------------------------------------------------------------------------------------------------------------------	------------------	---------------------------------------

GENERATOR

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit WL/Vol.	13. Waste Codes
		No.	Type			
X	1RQ, NA3077, Hazardous Waste Solid, N.O.S. (Chromium, Arsenic), 9, PGIII, ERG #171 <i>solid</i>	005 16	DM SM	4000	P	F035
X	2NA3077, Hazardous Waste Solid, N.O.S. (Chromium, Arsenic), 9, PGIII, ERG #171 <i>contains free liquids</i>	0 011	DM SM	605	P	F035
X	3NA3082, Hazardous Waste Liquid, N.O.S. (Chromium, Arsenic), 9, PGIII, DOT-SP 171 <i>11351 CCA w/liquid</i>	1	DM	1	G	F035

14. Special Handling Instructions and Additional Information
 01. 11351 / CCA Solid / ERG #171 02. 11352 / Copper Solid / ERG #171 03. 11353 / Copper Liquid
 EQAL State Document #TFS-130422

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offoror's Printed/Typed Name JUNIOR HENNIS	Signature <i>Junior Hennis</i>	Month Day Year 9 17 13
------------------------------------------------------------------	-----------------------------------	-------------------------------

INTL

16. International Shipments Import to U.S. Export from U.S.
 Port of entry/exit: _____ Date leaving U.S.: _____

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name BEN BARNES	Signature <i>Ben Barnes</i>	Month Day Year 09 17 13
Transporter 2 Printed/Typed Name	Signature	Month Day Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space Quantity Type Residue Partial Rejection Full Rejection
 Eleven drums contain free liquids. SM

Manifest Reference Number: _____ U.S. EPA ID Number _____

18b. Alternate Facility (or Generator) _____ U.S. EPA ID Number _____

Facility's Phone: _____

18c. Signature of Alternate Facility (or Generator) _____ Month Day Year _____

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1. H141	2. H141	3. H141	4.
---------	---------	--------------------	----

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in item 18a

Printed/Typed Name Shanda Murff	Signature <i>Shanda Murff</i>	Month Day Year 09 30 13
-------------------------------------------	----------------------------------	--------------------------------



P.O. DRAWER 4991
 MARTINSVILLE, VA 24115
 PHONE (540) 656-3238
 OR (336) 854-8820
 TOLL FREE 1-800-289-3678

INVOICE

DATE: 9.3.2013

CUSTOMER NO.
DRIVER

To: Fortress Elizabeth City
 Foreman, Bundy Road
 Elizabeth City, NC

DELIVER TO

From: Fortress ~~Elizabeth City~~ Greensboro
 1 Market Drive
 Greensboro, NC 27407

PL OF LADING NUMBER	CUSTOMER ORDER NUMBER	TERMS	INVOICE NO.	INVOICE DATE
0001				
PIECES	BOARD FEET	DESCRIPTION	UNIT PRICE	TOTAL
5		Motor 1 Pumps Es. West	11000/lbs	
12		TORCS - Diluted Solution	2000/lbs / 12 gal	
8		TORCS Emulsi	1500/lbs / 8 gal	
DATE 9.3.2013				

% SERVICE CHARGE PER MONTH WILL BE ADDED TO ALL ACCOUNTS NOT PAID WITHIN 30 DAYS WHICH IS AN 18% ANNUAL PERCENTAGE RATE

KEN G... 11

TOTAL	
TAX	
FREIGHT	
PLEASE REMIT	

Please check this invoice carefully and advise at once of errors. This order is subject to delay in shipment or cancellation by us in the event we cannot deliver due to an act of God, damage to or destruction of manufacturing facilities, strikes, riots, war, shortage or any causes beyond our power to control. We warrant title to the goods sold hereunder and that they conform to description and are of merchantable quality, but we make no other warranty of any kind, express or implied, unless stated herein. Our liability for any damages to you as buyer and to others, arising out of or by reason of our sale to you, shall not exceed the purchase price of that portion of the goods upon which liability is founded. Your failure to give notice of claim or of defects in the goods within fifteen (15) days from the date of receipt thereof by you, shall constitute a waiver by you of all claims in respect to such goods. The property in the goods and risk of loss shall pass to you as buyer upon delivery to the carrier.

BILL OF LADING



PRESSURE TREATED
LUMBER
899 Foreman Bundy Road
Elizabeth City, NC 27906
Phone: 252-264-2466
Fax: 252-264-9982

FROM
FORTRESS WOOD PRODUCTS
2760 Raleigh Road
Henderson, NC

SHIP TO
FORTRESS WOOD PRODUCTS
899 Foreman Bundy Rd
Elizabeth City, NC

CUSTOMER # ORDER # TRANS # DATE STORE # ORDER # TERMS
8/21/2013

DELIVERY # TRUCKING COMPANY PO # SALES
FWP Billy Bray

ITEM CODE QTY ORD QTY SHIP ITEM DESCRIPTION UNITS

ITEM CODE	QTY ORD	QTY SHIP	ITEM DESCRIPTION	UNITS
		12	Totes of MicroPro 200 C Dilute Solution	

DRIVER *Billy Bray*

CUSTOMER _____
Received the above in good condition

Appendix F
Laboratory Analytical Report



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

TestAmerica Job ID: 180-24279-1
Client Project/Site: Fortress Greensboro Drip Pad Closure

For:
KU Resources Inc
22 South Linden Street
Duquesne, Pennsylvania 15110

Attn: Dave Kerschner



Authorized for release by:
8/22/2013 4:44:39 PM
Ryan Hall, Customer Service Manager
(412)963-2430
ryan.hall@testamericainc.com

Designee for
Carrie Gamber, Senior Project Manager
carrie.gamber@testamericainc.com

LINKS

Review your project results through
Total Access

Have a Question?

Ask The Expert

Visit us at:
www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

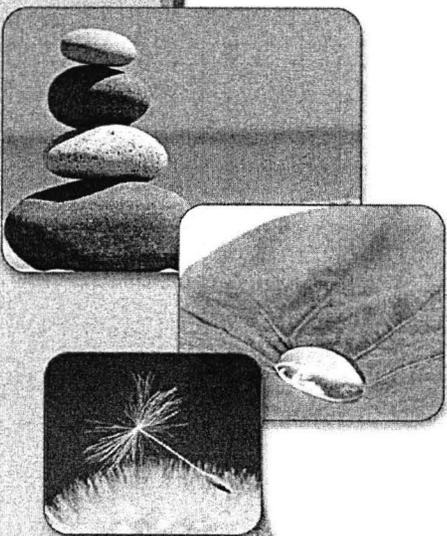


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Case Narrative

Client: KU Resources Inc
Project/Site: Fortress Greensboro Drip Pad Closure

TestAmerica Job ID: 180-24279-1

Job ID: 180-24279-1

Laboratory: TestAmerica Pittsburgh

Narrative

Job Narrative
180-24279-1

Comments

No additional comments.

Receipt

The samples were received on 8/16/2013 4:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.9° C.

Metals

No analytical or quality issues were noted.

Definitions/Glossary

Client: KU Resources Inc
Project/Site: Fortress Greensboro Drip Pad Closure

TestAmerica Job ID: 180-24279-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: KU Resources Inc
Project/Site: Fortress Greensboro Drip Pad Closure

TestAmerica Job ID: 180-24279-1

Laboratory: TestAmerica Pittsburgh

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Arkansas DEQ	State Program	6	88-0690	06-27-14
California	NELAP	9	4224CA	03-31-14
Connecticut	State Program	1	PH-0688	09-30-14
Florida	NELAP	4	E871008	06-30-14
Illinois	NELAP	5	002602	06-30-14
Kansas	NELAP	7	E-10350	01-31-14
L-A-B	DoD ELAP		L2314	07-16-16
Louisiana	NELAP	6	04041	06-30-13 *
New Hampshire	NELAP	1	203011	04-05-14
New Jersey	NELAP	2	PA005	06-30-14
New York	NELAP	2	11182	04-01-14
North Carolina DENR	State Program	4	434	12-31-13
Pennsylvania	NELAP	3	02-00416	04-30-14
South Carolina	State Program	4	89014	04-30-13 *
US Fish & Wildlife	Federal		LE94312A-1	11-30-14
USDA	Federal		P-Soil-01	04-16-15
USDA	Federal		P330-10-00139	05-23-16
Utah	NELAP	8	STLP	04-30-14
Virginia	NELAP	3	460189	09-14-13
West Virginia DEP	State Program	3	142	01-31-14
Wisconsin	State Program	5	998027800	08-31-13

* Expired certification is currently pending renewal and is considered valid.

TestAmerica Pittsburgh

Sample Summary

Client: KU Resources Inc
Project/Site: Fortress Greensboro Drip Pad Closure

TestAmerica Job ID: 180-24279-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-24279-1	PAD	Water	08/15/13 16:00	08/16/13 16:45
180-24279-2	TRAM	Water	08/15/13 16:15	08/16/13 16:45
180-24279-3	BLANK	Water	08/15/13 16:20	08/16/13 16:45

6

TestAmerica Pittsburgh

Method Summary

Client: KU Resources Inc
Project/Site: Fortress Greensboro Drip Pad Closure

TestAmerica Job ID: 180-24279-1

<u>Method</u>	<u>Method Description</u>	<u>Protocol</u>	<u>Laboratory</u>
6010C	Metals (ICP)	SW846	TAL PIT

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Lab Chronicle

Client: KU Resources Inc
 Project/Site: Fortress Greensboro Drip Pad Closure

TestAmerica Job ID: 180-24279-1

Client Sample ID: PAD

Lab Sample ID: 180-24279-1

Date Collected: 08/15/13 16:00

Matrix: Water

Date Received: 08/16/13 16:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	80945	08/19/13 10:32	CEH	TAL PIT
Total Recoverable	Analysis	6010C		1			81224	08/21/13 06:03	RJG	TAL PIT
Instrument ID: T										

Client Sample ID: TRAM

Lab Sample ID: 180-24279-2

Date Collected: 08/15/13 16:15

Matrix: Water

Date Received: 08/16/13 16:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	80945	08/19/13 10:32	CEH	TAL PIT
Total Recoverable	Analysis	6010C		1			81224	08/21/13 06:30	RJG	TAL PIT
Instrument ID: T										

Client Sample ID: BLANK

Lab Sample ID: 180-24279-3

Date Collected: 08/15/13 16:20

Matrix: Water

Date Received: 08/16/13 16:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	80945	08/19/13 10:32	CEH	TAL PIT
Total Recoverable	Analysis	6010C		1			81224	08/21/13 06:35	RJG	TAL PIT
Instrument ID: T										

Laboratory References:

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Analyst References:

Lab: TAL PIT

Batch Type: Prep

CEH = Caitlyn Haluck

Batch Type: Analysis

RJG = Rob Good

TestAmerica Pittsburgh

Client Sample Results

Client: KU Resources Inc
 Project/Site: Fortress Greensboro Drip Pad Closure

TestAmerica Job ID: 180-24279-1

Client Sample ID: PAD

Lab Sample ID: 180-24279-1

Date Collected: 08/15/13 16:00

Matrix: Water

Date Received: 08/16/13 16:45

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	2.7	ug/L		08/19/13 10:32	08/21/13 06:03	1
Chromium	ND		5.0	0.57	ug/L		08/19/13 10:32	08/21/13 06:03	1
Copper	2.7	J	25	2.7	ug/L		08/19/13 10:32	08/21/13 06:03	1

Client Sample ID: TRAM

Lab Sample ID: 180-24279-2

Date Collected: 08/15/13 16:15

Matrix: Water

Date Received: 08/16/13 16:45

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	2.7	ug/L		08/19/13 10:32	08/21/13 06:30	1
Chromium	3.5	J	5.0	0.57	ug/L		08/19/13 10:32	08/21/13 06:30	1
Copper	21	J	25	2.7	ug/L		08/19/13 10:32	08/21/13 06:30	1

Client Sample ID: BLANK

Lab Sample ID: 180-24279-3

Date Collected: 08/15/13 16:20

Matrix: Water

Date Received: 08/16/13 16:45

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		10	2.7	ug/L		08/19/13 10:32	08/21/13 06:35	1
Chromium	ND		5.0	0.57	ug/L		08/19/13 10:32	08/21/13 06:35	1
Copper	ND		25	2.7	ug/L		08/19/13 10:32	08/21/13 06:35	1

QC Sample Results

Client: KU Resources Inc
 Project/Site: Fortress Greensboro Drip Pad Closure

TestAmerica Job ID: 180-24279-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 180-80945/1-A
 Matrix: Water
 Analysis Batch: 81224

Client Sample ID: Method Blank
 Prep Type: Total Recoverable
 Prep Batch: 80945

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		10	2.7	ug/L		08/19/13 10:32	08/21/13 05:53	1
Chromium	ND		5.0	0.57	ug/L		08/19/13 10:32	08/21/13 05:53	1
Copper	ND		25	2.7	ug/L		08/19/13 10:32	08/21/13 05:53	1

Lab Sample ID: LCS 180-80945/2-A
 Matrix: Water
 Analysis Batch: 81224

Client Sample ID: Lab Control Sample
 Prep Type: Total Recoverable
 Prep Batch: 80945

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	200	202		ug/L		101	80 - 120
Copper	250	255		ug/L		102	80 - 120

Lab Sample ID: 180-24279-1 MS
 Matrix: Water
 Analysis Batch: 81224

Client Sample ID: PAD
 Prep Type: Total Recoverable
 Prep Batch: 80945

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	ND		200	207		ug/L		103	75 - 125
Copper	2.7	J	250	259		ug/L		103	75 - 125

Lab Sample ID: 180-24279-1 MSD
 Matrix: Water
 Analysis Batch: 81224

Client Sample ID: PAD
 Prep Type: Total Recoverable
 Prep Batch: 80945

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	
										RPD	Limit
Arsenic	ND		500	511		ug/L		102	75 - 125	1	20
Chromium	ND		200	205		ug/L		103	75 - 125	1	20
Copper	2.7	J	250	261		ug/L		103	75 - 125	1	20

TestAmerica Pittsburgh

QC Association Summary

Client: KU Resources Inc
Project/Site: Fortress Greensboro Drip Pad Closure

TestAmerica Job ID: 180-24279-1

Metals

Prep Batch: 80945

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-24279-1	PAD	Total Recoverable	Water	3005A	
180-24279-1 MS	PAD	Total Recoverable	Water	3005A	
180-24279-1 MSD	PAD	Total Recoverable	Water	3005A	
180-24279-2	TRAM	Total Recoverable	Water	3005A	
180-24279-3	BLANK	Total Recoverable	Water	3005A	
LCS 180-80945/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 180-80945/1-A	Method Blank	Total Recoverable	Water	3005A	

Analysis Batch: 81224

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-24279-1	PAD	Total Recoverable	Water	6010C	80945
180-24279-1 MS	PAD	Total Recoverable	Water	6010C	80945
180-24279-1 MSD	PAD	Total Recoverable	Water	6010C	80945
180-24279-2	TRAM	Total Recoverable	Water	6010C	80945
180-24279-3	BLANK	Total Recoverable	Water	6010C	80945
LCS 180-80945/2-A	Lab Control Sample	Total Recoverable	Water	6010C	80945
MB 180-80945/1-A	Method Blank	Total Recoverable	Water	6010C	80945

Login Sample Receipt Checklist

Client: KU Resources Inc

Job Number: 180-24279-1

Login Number: 24279

List Source: TestAmerica Pittsburgh

List Number: 1

Creator: Kovitch, Christina M

Question	Answer	Comment
Radioactivity wasn't checked or is \neq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	