INVITATION TO BID

Bid Invitation Number: **110-2011** Date of Issue: **10/20/2011**

Sealed bids will be received in the office of the Division of Central Purchasing, 200 East Main Street, Lexington, Kentucky, until **2:00 PM**, prevailing local time on **11/03/2011**. Bids must be received by the above-mentioned date and time. Mailed bids should be sent to:

Division of Central Purchasing
200 East Main Street, Room 338
Lexington, KY 40507, (859) 258-3320

The Lexington-Fayette Urban County Government assumes no responsibility for bids that are not addressed and delivered as indicated above. Bids that are not delivered to the Division of Central Purchasing by the stated time and date will be rejected.

All bids must have the company name and address, bid invitation number, and the commodity/service on the outside of the envelope.

Bids are to include all shipping costs to the point of delivery located at: **various locations**

Bid Security Required: ___Yes _XX_No Performance Bond Required: ___Yes _XX_No
Cashier Check, Certified Check, Bid Bond (Personal checks and company checks will not be acceptable).

Commodity/Service	
PCT	**Odor Control Chemicals**

Check One:	**Proposed Delivery:**
✓ Bid Specifications Met _____Exceptions to Bid Specifications. *Exceptions shall be itemized and attached to bid proposal submitted.*	2 days after acceptance of bid.

Procurement Card Usage

_____Yes The Lexington-Fayette Urban County Government will be using Procurement Cards to
_____ No purchase goods and services and also to make payments. Will you accept Procurement Cards?

Submitted by:

BRENNTAG MID-SOUTH
Firm

324 E. YUSEN DRIVE
Address

GEORGETOWN, KY. 40324
City, State & Zip

Bid must be signed: (original signature)

David Devine - SALES REPRESENTATIVE
Signature of Authorized Company Representative – Title

DAVID DEVINE
Representative's Name (Typed or printed)

502-863-0084 502-863-2523
Area Code - Phone – Extension *Fax #*

ddevine@brenntag.com
E-Mail Address

The Affidavit in this bid must be completed before your firm can be considered for award of this contract.

AFFIDAVIT

Comes the Affiant, David Devine and after being first duly sworn under penalty of perjury as follows:

1. His/her name is David Devine and he/she is the individual submitting the bid or is the authorized representative of Brentag Mid-South, Inc., the entity submitting the bid (hereinafter referred to as "Bidder").

2. Bidder will pay all taxes and fees, which are owed to the Lexington-Fayette Urban County Government at the time the bid is submitted, prior to award of the contract and will maintain a "current" status in regard to those taxes and fees during the life of the contract.

3. Bidder will obtain a Lexington-Fayette Urban County Government business license, if applicable, prior to award of the contract.

4. Bidder has authorized the Division of Central Purchasing to verify the above-mentioned information with the Division of Revenue and to disclose to the Urban County Council that taxes and/or fees are delinquent or that a business license has not been obtained.

5. Bidder has not knowingly violated any provision of the campaign finance laws of the Commonwealth of Kentucky within the past five (5) years and the award of a contract to the Bidder will not violate any provision of the campaign finance laws of the Commonwealth.

6. Bidder has not knowingly violated any provision of Chapter 25 of the Lexington-Fayette Urban County Government Code of Ordinances, known as "Ethics Act."

7. Bidder acknowledges that "knowingly" for purposes of this Affidavit means, with respect to conduct or to circumstances described by a statute or ordinance defining an offense, that a person is aware or should have been aware that his conduct is of that nature or that the circumstance exists.

Further, Affiant sayeth naught.

David Devine

STATE OF Kentucky

COUNTY OF Scott

The foregoing instrument was subscribed, sworn to and acknowledged before me by David Devine on this the 2 day of November, 2011.

My Commission expires: March 7, 2014

JoAnn Offutt
NOTARY PUBLIC, STATE AT LARGE

Please refer to Section II. Bid Conditions, Item "U" prior to completing this form.

I. GREEN PROCUREMENT

A. ENERGY

The Lexington-Fayette Urban County Government is committed to protecting our environment and being fiscally responsible to our citizens.

The Lexington-Fayette Urban County Government mandates the use of Energy Star compliant products if they are available in the marketplace (go to **www.Energystar.gov**). If these products are available, but not submitted in your pricing, your bid will be rejected as non-compliant.

ENERGY STAR is a government program that offers businesses and consumers energy-efficient solutions, making it easy to save money while protecting the environment for future generations.

Key Benefits

These products use 25 to 50% less energy
Reduced energy costs without compromising quality or performance
Reduced air pollution because fewer fossil fuels are burned
Significant return on investment
Extended product life and decreased maintenance

B. GREEN SEAL CERTIFIED PRODUCTS

The Lexington-Fayette Urban County Government is also committed to using other environmentally friendly products that do not negatively impact our environment. Green Seal is a non-profit organization devoted to environmental standard setting, product certification, and public education.

Go to **www.Greenseal.org** to find available certified products. These products will have a reduced impact on the environment and on human health. The products to be used must be pre-approved by the LFUCG prior to commencement of any work in any LFUCG facility. If a Green Seal product is not available, the LFUCG must provide a signed waiver to use an alternate product. Please provide information on the Green Seal products being used with your bid response.

C. GREEN COMMUNITY

The Lexington-Fayette Urban County Government (LFUCG) serves as a principal, along with the University of Kentucky and Fayette County Public Schools, in the Bluegrass Partnership for a Green Community. The Purchasing Team component of the Partnership collaborates on economy of scale purchasing that promotes and enhances environmental initiatives. Specifically, when applicable, each principal is interested in obtaining best value products and/or services which promote environment initiatives via solicitations and awards from the other principals.

If your company is the successful bidder on this Invitation For Bid, do you agree to extend the same product/service pricing to the other principals of the Bluegrass Partnership for a Green Community (i.e. University of Kentucky and Fayette County Schools) if requested?

Yes ✓ **No**____

II. Bid Conditions

A. No bid may be withdrawn for a period of sixty (60) days after the date and time set for opening.

B. No bid may be altered after the date and time set for opening. In the case of obvious errors, the Division of Central Purchasing may permit the withdrawal of a bid. The decision as to whether a bid may be withdrawn shall be that of the Division of Central Purchasing.

C. Acceptance of this proposal shall be enactment of an Ordinance by the Urban County Council.

D. The bidder agrees that the Urban County Government reserves the right to reject any and all bids for either fiscal or technical reasons, and to award each part of the bid separately or all parts to one vendor.

E. Minor exceptions may not eliminate the bidder. The decision as to whether any exception is minor shall be entirely that of the head of the requisitioning Department or Division and the Director of the Division of Central Purchasing. The Urban County Government may waive technicalities and informalities where such waiver would best serve the interests of the Urban County Government.

F. Manufacturer's catalogue numbers, trade names, etc., where shown herein are for descriptive purposes and are to guide the bidder in interpreting the standard of quality, design, and performance desired, and shall not be construed to exclude proposals based on furnishing other types of materials and/or services. However, any substitution or departure proposed by the bidder must be clearly noted and described; otherwise, it will be assumed that the bidder intends to supply items specifically mentioned in this Invitation for Bids.

G. The Urban County Government may require demonstrations of the materials proposed herein prior to acceptance of this proposal.

H. Bids must be submitted on this form and must be signed by the bidder or his authorized representative. Unsigned bids will not be considered.

I. Bids must be submitted prior to the date and time indicated for opening. Bids submitted after this time will not be considered.

J. All bids mailed must be marked on the face of the envelope:

"Bid on #110-2011 – Odor Control Chemicals"

and addressed to: Division of Central Purchasing
200 East Main Street, Room 338
Lexington, Kentucky 40507

The Lexington-Fayette Urban County Government assumes no responsibility for bids that are not addressed and delivered as indicated above. Bids that are not delivered to the Division of Central Purchasing by the stated time and date will be rejected.

K. Bidder is requested to show both unit prices and lot prices. In the event of error, the unit price shall prevail.

L. A certified check or Bid Bond in the amount of **n/a** percent of the bid price must be attached hereto. This check must be made payable to the Lexington-Fayette Urban County Government, and will be returned when the material and/or services specified herein have been delivered in accordance with specifications. In the event of failure to perform within the time period set forth in this bid, it is agreed the certified check may be cashed and the funds retained by the Lexington-Fayette Urban County

Government as liquidated damages. Checks of unsuccessful bidders will be returned when the bid has been awarded.

M. The delivery dates specified by bidder may be a factor in the determination of the successful bidder.

N. Tabulations of bids received may be mailed to bidders. Bidders requesting tabulations must enclose a stamped, self-addressed envelope with the bid.

O. The Lexington-Fayette Urban County Government is exempt from Kentucky Sales Tax and Federal Excise Tax on materials purchased from this bid invitation. Materials purchased by the bidder for construction projects are not tax exempt and are the sole responsibility of the bidder.

P. All material furnished hereunder must be in full compliance with OSHA regulations.

Q. If more than one bid is offered by one party, or by any person or persons representing a party, all such bids shall be rejected.

R. Signature on the face of this bid by the Bidder or his authorized representative shall be construed as acceptance of and compliance with all terms and conditions contained herein.

S. The Entity (regardless of whether construction contractor, non-construction contractor or supplier) agrees to provide equal opportunity in employment for all qualified persons, to prohibit discrimination in employment because of race, color, creed, national origin, sex or age, and to promote equal employment through a positive, continuing program from itself and each of its sub-contracting agents. This program of equal employment opportunity shall apply to every aspect of its employment policies and practices.

T. The Kentucky Equal Employment Opportunity Act of 1978 (KRS 45.560-45.640) requires that any county, city, town, school district, water district, hospital district, or other political subdivision of the state shall include in directly or indirectly publicly funded contracts for supplies, materials, services, or equipment hereinafter entered into the following provisions:

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age or national origin;

(2) The contractor will state in all solicitations or advertisements for employees placed by or on behalf of the contractors that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age or national origin;

(3) The contractor will post notices in conspicuous places, available to employees and applicants for employment, setting forth the provisions of the non-discrimination clauses required by this section; and

(4) The contractor will send a notice to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding advising the labor union or workers' representative of the contractor's commitments under the nondiscrimination clauses.

The Act further provides:

KRS 45.610. Hiring minorities - Information required

(1) For the length of the contract, each contractor shall hire minorities from other sources within the drawing area, should the union with which he has collective bargaining agreements be unwilling to supply sufficient minorities to satisfy the agreed upon goals and timetable.

(2) Each contractor shall, for the length of the contract, furnish such information as required by KRS 45.560 to KRS 45.640 and by such rules, regulations and orders issued pursuant thereto and will permit access to all books and records pertaining to his employment practices and work sites by the contracting agency and the department for purposes of investigation to ascertain compliance with KRS 45.560 to 45.640 and such rules, regulations and orders issued pursuant thereto.

KRS 45.620. Action against contractor - Hiring of minority contractor or subcontractor

(1) If any contractor is found by the department to have engaged in an unlawful practice under this chapter during the course of performing under a contract or subcontract covered under KRS 45.560 to 45.640, the department shall so certify to the contracting agency and such certification shall be binding upon the contracting agency unless it is reversed in the course of judicial review.

(2) If the contractor is found to have committed an unlawful practice under KRS 45.560 to 45.640, the contracting agency may cancel or terminate the contract, conditioned upon a program for future compliance approved by the contracting agency and the department. The contracting agency may declare such a contractor ineligible to bid on further contracts with that agency until such time as the contractor complies in full with the requirements of KRS 45.560 to 45.640.

(3) The equal employment provisions of KRS 45.560 to 45.640 may be met in part by a contractor by subcontracting to a minority contractor or subcontractor. For the provisions of KRS 45.560 to 45.640, a minority contractor or subcontractor shall mean a business that is owned and controlled by one or more persons disadvantaged by racial or ethnic circumstances.

KRS 45.630 Termination of existing employee not required, when

Any provision of KRS 45.560 to 45.640 notwithstanding, no contractor shall be required to terminate an existing employee upon proof that that employee was employed prior to the date of the contract.

KRS 45.640 Minimum skills

Nothing in KRS 45.560 to 45.640 shall require a contractor to hire anyone who fails to demonstrate the minimum skills required to perform a particular job.

It is recommended that all of the provisions above quoted to be included as special conditions in each contract. In the case of a contract exceeding $250,000, the contractor is required to furnish evidence that his work-force in Kentucky is representative of the available work-force in the area from which he draws employees, or to supply an Affirmative Action plan which will achieve such representation during the life of the contract.

U. Any party, firm or individual submitting a proposal pursuant to this invitation must be in compliance with the requirements of the Lexington-Fayette Urban County Government regarding taxes and fees before they can be considered for award of this invitation and must maintain a "current" status with regard to those taxes and fees throughout the term of the contract. The contractor must be in compliance with Chapter 13 from the Code of Ordinances of the Lexington-Fayette Urban County Government. The contractor must be in compliance with Ordinance 35-2000 pursuant to contractor registration with the Division of Building Inspection. If applicable, said business must have a Fayette County business license.

Pursuant to KRS 45A.343 and KRS 45A.345, the contractor shall

(1) Reveal any final determination of a violation by the contractor within the previous five year

period pursuant to KRS Chapters 136 (corporation and utility taxes), 139 (sales and use taxes), 141 (income taxes), 337 (wages and hours), 338 (occupational safety and health of employees), 341 (unemployment and compensation) and 342 (labor and human rights) that apply to the contractor; and

(2) Be in continuous compliance with the above-mentioned KRS provisions that apply to the contractor for the duration of the contract.

A contractor's failure to reveal the above or to comply with such provisions for the duration of the contract shall be grounds for cancellation of the contract and disqualification of the contractor from eligibility for future contracts for a period of two (2) years.

V. Vendors who respond to this invitation have the right to file a notice of contention associated with the bid process or to file a notice of appeal of the recommendation made by the Director of Central Purchasing resulting from this invitation.

Notice of contention with the bid process must be filed within 3 business days of the bid/proposal opening by (1) sending a written notice, including sufficient documentation to support contention, to the Director of the Division of Central Purchasing or (2) submitting a written request for a meeting with the Director of Central Purchasing to explain his/her contention with the bid process. After consulting with the Commissioner of Finance the Chief Administrative Officer and reviewing the documentation and/or hearing the vendor, the Director of Central Purchasing shall promptly respond in writing findings as to the compliance with bid processes. If, based on this review, a bid process irregularity is deemed to have occurred the Director of Central Purchasing will consult with the Commissioner of Finance, the Chief Administrative Officer and the Department of Law as to the appropriate remedy.

Notice of appeal of a bid recommendation must be filed within 3 business days of the bid recommendation by (1) sending a written notice, including sufficient documentation to support appeal, to the Director, Division of Central Purchasing or (2) submitting a written request for a meeting with the Director of Central Purchasing to explain his appeal. After reviewing the documentation and/or hearing the vendor and consulting with the Commissioner of Finance and the Chief Administrative Officer, the Director of Central Purchasing shall in writing, affirm or withdraw the recommendation.

III. Procurement Contract Bid Conditions

A. The terms of this agreement shall be for 2 years from the date of acceptance of this contract by the Lexington-Fayette Urban County Government. This agreement may be extended for an additional 3 (1) year renewals upon the written agreement of the bidder and the Lexington-Fayette Urban County Government. Said agreement must be in writing and must be executed prior to the expiration of the current agreement.

B. Price Changes **(Space Checked Applies)**

(XXX) 1. Prices quoted in response to the Invitation shall be firm prices for the first 90 days of the Procurement Contract. After 90 days, prices may be subject to revision and such changes shall be based on general industry changes. Revision may be either increases or decreases and may be requested by either party. There will be no more than one (1) price adjustment per quarter. Requests for price changes shall be received in writing at least twenty (20) days prior to the effective date and are subject to written acceptance before becoming effective. Proof of the validity of a request for revision shall be responsibility of the requesting party. The Lexington-Fayette Urban County Government shall receive the benefit of any decline that the seller shall offer his other accounts.

() 2. No provision for price change is made herein. Prices are to be firm for the term of this contract.

() 3. Procurement Level Contract

C. If any contract item is not available from the vendor, the Lexington-Fayette Urban County Government, at its option, may permit the item to be back-ordered or may procure the item on the open market.

D. All invoices must bear reference to the Lexington-Fayette Urban County Government Purchasing document numbers which are being billed.

E. This contract may be canceled by either party thirty (30) days after delivery by canceling party of written notice of intent to cancel to the other contracting party.

F. This contract may be canceled by the Lexington-Fayette Urban County Government if it is determined that the Bidder has failed to perform under the terms of this agreement, such cancellation to be effective upon receipt of written notice of cancellation by the Bidder.

G. No substitutions for articles specified herein may be made without prior approval of the Division of Central Purchasing.

LFUCG
Division of Water Quality

ODOR CONTROL CHEMICALS FOR SCRUBBER SYSTEMS

1.0 GENERAL REQUIREMENTS

Under this contract, the successful supplier shall furnish and deliver odor control chemicals for scrubber systems. The chemicals shall be solutions of caustic soda liquid and sodium hypochlorite as specified in Section 2.0.

2.0 SCOPE

The successful bidder is to furnish the following liquid products:

- Sodium Hypochlorite 12.5% by weight (NaOCL in water)
- Caustic Soda Liquid/Sodium Hydroxide 25% by weight (NaOH)
- Caustic Soda Liquid/Sodium Hydroxide 50% by weight (NaOH)

The cost submitted shall include all cost, including freight and transportation charge to various pumping stations and/or treatment plants operated by the Lexington Fayette Urban County Government for an initial period of two years, beginning two weeks after the date bid is accepted.

Material Safety Data Sheet shall be included with Bid for material to be furnished.

3.0 GENERAL CONDITIONS

The successful bidder is to furnish material under this specification for the period as specified in Section 2.0.

4.0 DETAILED SPECIFICATIONS

By submission of their Bid, the Bidder guarantees that the product offered will meet the quality standards as specified in this specification for the term of the contract. The Lexington Fayette Urban County Government reserves the right to conduct periodic checks on the quality of material furnished under this contract or to have the product's quality checked by outside sources to determine if the material furnished is in compliance with these specifications. Failure of the supplier's to meet the specified standards of quality will result in the termination of the contract.

The Bidder shall submit, with their Bid, written standard operating procedures describing the transfer of the material from the truck into the storage tank. The procedures should outline safety precautions followed in order to eliminate spillage of material during the delivery process.

5.0 BID EVALUATION

The bid will be evaluated and accepted based on the product's ability to meet the requirements of these specifications. The Bidders standard operating procedures for transfer of the material between the truck and the storage tank shall be reviewed and made a part of the evaluation.

The contract will be awarded to the lowest responsible bidder who is a recognized supplier of the product offered and whose bid complies with all of the provisions of the Bid Documents, provided that the bid price is reasonable and it is to the best interest of the Lexington Fayette Urban County Government to accept it. The Lexington Fayette Urban County Government reserves the right to reject any or all bids and to waive any informality in bids received whenever such rejections or waiver is in the best interest of the Lexington Fayette Urban County Government.

6.0 DELIVERY FOB LEXINGTON, KENTUCKY

Deliveries shall be made upon order at any time after the Lexington Fayette Urban County Government and the supplier have executed a formal contract. Orders for material will be placed for minimum quantities of 500 gallons to be shipped by truck, with pumping into the storage tank to be the responsibility of the vendor. No deliveries accepted after 2:30 p.m. Two-day response to a telephone order required. The successful bidder shall certify before award of the contract that the material will be delivered only by drivers who have had certified training in proper spill containment.

PRICING SECTION

We propose to furnish the products known as caustic soda liquid and sodium hypochlorite as an odor control chemical.

PRODUCT NAME	UNIT PRICE FOB LEXINGTON
Caustic Soda Liquid 25%	$ 1.86 /per gallon
Caustic Soda Liquid 50%	$ 2.03 /per gallon
Sodium Hypochlorite 12.5%	$ 1.50 /per gallon

SPECIAL NOTE TO BIDDER:

Bidder must invoice per gallon price for the above items.

For specification questions, contact Pat McFadden, Division of Water Quality at 895-425-2457. For bidding questions contact Betty Landrum, Division of Central Purchasing 859-258-3329.

RISK MANAGEMENT PROVISIONS
INSURANCE AND INDEMNIFICATION

Bid #110-2011 – Odor Control Chemicals

1.0 DEFINITIONS.

The CONTRACTOR understands and agrees that the Risk Management Provisions of this Contract define the responsibilities of the CONTRACTOR to the OWNER.

As used in these Risk Management Provisions, the terms "CONTRACTOR" and "OWNER" shall be defined as follows:

a. "CONTRACTOR" means the contractor and its employees, agents, servants, owners, principals, licensees, assigns and subcontractors of any tier.

b. "OWNER" means the Lexington-Fayette Urban County Government and its elected and appointed officials, employees, agents, boards, consultants, assigns, volunteers and successors in interest.

2.0. INDEMNIFICATION AND HOLD HARMLESS PROVISION

CONTRACTOR shall defend, indemnify, and hold harmless OWNER from and against all liability, claims, losses, actions, costs, expenses, obligations, fines, and assessments of whatever kind, including defense costs and attorney's fees, that are in any way incidental to or connected with, or that arise or are alleged to have arisen, directly or indirectly, in whole or in part, from or by: (a) CONTRACTOR's negligent acts or misconduct, or errors or omissions, in connection with the performance of this contract; (b) CONTRACTOR's performance or breach of the contract provided the claim or loss is attributable to death, illness, personal injury, or property loss or damage or loss of use, and not caused by a negligent act or omission, or the willful misconduct of the OWNER; or (c) the condition of any premises, equipment or other property being used or operated by the CONTRACTOR in connection with the performance of this contract. In the event OWNER is alleged to be liable based upon the actions or inactions of CONTRACTOR, CONTRACTOR shall defend such allegations and shall bear all costs, fees and expenses of such defense, including but not limited to, all attorneys' fees and expenses, court costs, and expert witness fees and expenses, using attorneys approved in writing by OWNER, which approval shall not be unreasonably withheld. This Indemnification and Hold Harmless Provision shall in no way be limited by any financial responsibility or insurance requirements, and shall survive the termination of this contract.

3.0 FINANCIAL RESPONSIBILITY

The CONTRACTOR understands and agrees that it shall, prior to final acceptance of its bid and the commencement of any work, demonstrate the ability to assure compliance with the Indemnity Agreement and other provisions of this Contract.

4.0 INSURANCE REQUIREMENTS

BIDDERS' ATTENTION IS DIRECTED TO THE INSURANCE REQUIREMENTS BELOW, AS BIDDERS MUST CONFER WITH THEIR RESPECTIVE INSURANCE AGENTS, BROKERS, OR CARRIERS TO DETERMINE IN ADVANCE OF BID SUBMISSION THE AVAILABILITY OF THE INSURANCE COVERAGES AND ENDORSEMENTS REQUIRED HEREIN. IF AN APPARENT LOW BIDDER FAILS TO COMPLY STRICTLY WITH THE INSURANCE REQUIREMENTS BELOW, THAT BIDDER MAY BE DISQUALIFIED FROM AWARD OF THE CONTRACT.

4.1 Required Insurance Coverage

CONTRACTOR shall procure and maintain for the duration of this contract the following or equivalent insurance policies at no less than the limits shown below and cause its subcontractors to maintain similar insurance with limits acceptable to OWNER in order to protect OWNER against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by CONTRACTOR. The cost of such insurance shall be included in any bid:

Coverage	**Limits**
General Liability (Insurance Services Office Form CG 00 01)	$1 million per occurrence, $2 million aggregate or $2 million combined single limit
Commercial Automobile Liability (Insurance Services Office Form CA 0001)	combined single, $1 million per occurrence
Worker's Compensation	Statutory
Employer's Liability	$500,000.00

The policies above shall contain the following conditions:

a. OWNER shall be named as an additional insured in the General Liability Policy.

b. The General Liability Policy shall be primary to any insurance or self-insurance retained by OWNER.

c. The General Liability Policy shall include a Pollution Liability endorsement.

d. OWNER shall be provided at least 30 days advance written notice via certified mail, return receipt requested, in the event any of the required policies are canceled or non-renewed.

e. Said coverage shall be written by insurers acceptable to OWNER and shall be in a form acceptable to OWNER. Insurance placed with insurers with a rating classification of no less than Excellent (A or A-) and a financial size category of no less than VIII, as defined by the most current Best's Key Rating Guide shall be deemed automatically acceptable.

4.2. Additional insurance coverage and amounts required, if any, are stated below:

The General Liability Policy shall include a Products Liability endorsement in an amount of at least $2,000,000.00 or the CONTRACTOR will otherwise provide products liability coverage satisfactory to the OWNER. The above requirements may be satisfied by submitting a current copy the manufacturers' Certificate(s) of Insurance in at least the above amounts of coverage if the CONTRACTOR is not the manufacturer of the product. The manufacturer must maintain the required coverage for the useful lifetime of the product(s).

4.3. Renewals

After insurance has been approved by OWNER, evidence of renewal of an expiring policy must be submitted to OWNER, and may be submitted on a manually signed renewal endorsement form. If the policy or carrier has changed, however, new evidence of coverage must be submitted in accordance with these Insurance Requirements.

4.4. Deductibles and Self-Insured Programs

IF CONTRACTOR INTENDS TO SUBMIT SELF-INSURANCE PLAN FOR BID, THIS MUST BE FORWARDED TO LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DIVISION OF RISK MANAGEMENT, 200 EAST MAIN STREET, LEXINGTON, KENTUCKY 40507 NO LATER THAN A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO BID OPENING DATE. Self-insurance programs, deductibles, and self-insured retentions in insurance policies are subject to separate approval by Lexington-Fayette Urban County Government's Division of Risk Management, upon review of evidence of CONTRACTOR'S financial capacity to respond to claims. Any such programs or retentions must provide OWNER with at least the same protection from liability and defense of suits as would be afforded by first-dollar insurance coverage. If CONTRACTOR satisfies any portion of the insurance requirements through deductibles, self-insurance programs, or self-insured retentions, CONTRACTOR agrees to provide Lexington-Fayette Urban County Government, Division of Risk Management, the following data prior to the final acceptance of bid and the commencement of any work:

a. CONTRACTOR'S latest audited financial statement, including auditor's notes.

b. Any records of any self-insured trust fund plan or policy and related accounting statements.

c. Actuarial funding reports or retained losses.

d. CONTRACTOR'S Risk Management Manual or a description of CONTRACTOR'S self-insurance and risk management program.

e. A claim loss run summary for the previous five (5) years.

f. Self-Insured Associations will be considered.

4.5. Verification of Coverage

Prior to award of bid, CONTRACTOR agrees to furnish OWNER with all applicable Certificates of Insurance signed by a person authorized by the insurer to bind coverage on its behalf. If requested, CONTRACTOR shall provide OWNER copies of all insurance policies, including all endorsements.

4.6. Right to Review, Audit and Inspect

CONTRACTOR understands and agrees that OWNER may review, audit and inspect any and all of CONTRACTOR'S records and operations to insure compliance with these Insurance Requirements.

5.0 DEFINITION OF DEFAULT

CONTRACTOR understands and agrees that the failure to comply with any of these insurance, safety, or loss control provisions shall constitute default under this Contract. CONTRACTOR also agrees that OWNER may elect at its option any single remedy or penalty or any combination of remedies and penalties, as available, including but not limited to purchasing insurance and charging CONTRACTOR for any such insurance premiums purchased, or suspending or terminating this Contract.

Brenntag Mid-South Equipment for Delivery of Odor Control Chemicals

Sodium Hydroxide 25% & 50%
Sodium Hypochlorite 12.5%

Deliveries will made with 2,000 Gallon Mini-bulk tanktrucks in quantities of 500 gallons to 2,000 gallons.
These mini-tanktrucks will allow for easy and safe entry and unloading at treatment facilities.
The trucks are equiped with a PTO pump and compatible hose for the materials required.
Hookups will be hard quick couple connects.
All delivery drivers will have current CDL with Hazmat and Tanker endorsements and will be trained and experienced in the delivery of the required material using this equipment.
Brenntag Mid-South drivers are familiar with the LFUCG locations and with deliveries of the required materials as Brenntag has maintained serviced these requirements for the past 7 years.

BRENNTAG MID-SOUTH, INC.
PROCESS DESCRIPTION Branch 40

PROCESS DESCRIPTION: Unloading Tank Trucks/Trailers Into Customer Storage Tanks.

DATE: September 10, 2008

****

SCOPE

Process Description to follow when unloading tank trucks/trailers containing Corrosive and non-hazardous liquids into Customer storage tanks.

DEFINITION

This has been prepared to insure that Tank Truck/Trailers are unloaded into Customer storage tanks according to company guidelines established to insure safety and quality standards are met.

DESCRIPTION

1. Check bill of lading and verify proper material is being delivered.

2. Obtain scale ticket from customer if necessary.

3. Weigh tank truck/trailer and position at unloading area and chock wheels.

   Caution: Insure proper protective equipment is worn to comply with Brenntag Mid- South, Inc. requirements and any additional Customer PPE requirements.

4. Contact appropriate person at customer location to verify proper unloading line and storage tank to connect to for unloading and that the tank will hold the amount of material being delivered.

5. Insure all **non-essential personnel** are a minimum of 25 feet away from unloading area.

6. Connect transfer hose to customer piping.

7. Fill out the required area of the Tanker Unloading Form **(use form from operations procedure 5.1)** and have the **Customer Sign** for authorization to unload.

Note: Unloading can be accomplished by air padding using tractor supplied air, pump or customer supplied air. The tractor supplied air or pump should be used when possible. When using the pump, insure the truck/trailer is vented to prevent a vacuum on the truck/trailer due to the product leaving the tank.

CAUTION: When using customer-supplied air DO NOT pressurize the truck/trailer until it is verified that the air is regulated at a MAXIMUM of 30 PSIG pressure.

8. With the air supply valve on the truck/trailer closed, connect the air line to the truck/trailer.

9. Open product valve slowly and check for leaks. (Repair if needed)

CAUTION: Do not attempt to repair leaks while under pressure. Close air supply valve and product valve. Clear line of product and pressure before disconnecting. Repair leak with new gasket, hose, fitting etc. (Never use shims, double gaskets or other unauthorized methods to repair or stop leaks.)

10. If no leaks were discovered, open customer valve and continue to monitor and unload.

11. Slowly open the air supply valve on the truck/trailer and monitor pressure.

12. Upon completion of unloading, turn off air supply or pump then close the product valve on the trailer and purge product hose, then close the customer valve and release the pressure and drain transfer hose.

13. Disconnect airline and release pressure on tank truck/trailer. (If required.)

14. Disconnect transfer hose from product piping and tank truck/trailer.

15. Weigh tank truck/trailer.

16. Complete Tanker Unloading Form and have customer sign the Bill of Lading and give customer their copy.

CONSEQUENCE OF DEVIATION

Corrosive Liquids if not handled properly and safely, could result in a serious incident that could affect our employees, the general public, and the environment. Failure to follow this procedure when unloading product could cause a release of liquid.

EMERGENCY SHUTDOWN

In the event of an emergency shutdown, follow the branch's *Emergency Contingency Plan.*

TEMPORARY OPERATIONS

Brenntag will not operate under temporary operations.

AREAS THAT DO NOT APPLY TO THIS PROCEDURE

1. **Initial Startup**
2. **Emergency Operations**

Written By: Preston Porter **Approved By:** Chris Dawson

BRENNTAG MID-SOUTH MINI BULK TANKER UNLOADING REPORT

Dispatcher or designee must attach blank form to delivery ticket for bulk shipments

Section I: Verify General Delivery Information Prior to Departure

DATE:_____ TANKER#:_____ UN #:_____

CUSTOMER/LOCATION:_____

PRODUCT:_____ SHIPPER #:_____

YES____ NO_____ UN# PLACARD ON TANKER AGREES WITH DOT SHIPPING NAME ON SHIPPER

If No, STOP and REPORT ANY DISCREPANCIES TO DISPATCHER and/or MANAGEMENT PERSONNEL

YES____ NO_____ ADDITIONAL REQUIREMENTS IN HEADER AND ITEM NOTES HAVE BEEN READ

NOTE: FOR MULTIPLE DELIVERIES USE SEPARATE FORM

Section II: Site Assessment

YES_____ NO_____ SAFETY SHOWER OR WATER AVAILABLE

YES_____ NO_____ UNLOADING LINE PROPERLY LABELED FOR PRODUCT BEING UNLOADED

YES_____ NO_____ STORAGE TANK(S) PROPERLY LABELED FOR PRODUCT BEING UNLOADED

YES_____ NO_____ HOSE RUNS DO NOT EXCEED 150', RUN THRU AREAS WHERE THERE IS PEDESTRIAN OR VEHICLE TRAFFIC OR THRU BUILDINGS WHERE PEDESTRIANS WORK

YES_____ NO_____ HOSE CONNECTED TO RIDGED UNLOADING LINE OR SECURED SAFELY

NOTE: IF ANY OF THE ABOVE IS ANSWERED NO. DRIVER MUST CONTACT BRENNTAG MID-SOUTH MANAGEMENT PRIOR TO UNLOADING.

YES_____ NO_____ STORAGE TANK LEVEL WITHIN VIEW FROM UNLOADING AREA (see note below)

NOTE: IF NO, CUSTOMER ASSISTANCE REQUIRED FOR UNLOADING

Section III: Customer Authorization To Unload

YES_____ NO_____ CAPACITY TO ACCEPT LOAD

YES_____ NO_____ TANKER CONNECTED TO PROPER PRODUCT UNLOADING LINE

CUSTOMER HOSES USED: YES_____ NO_____ **NOTE: IF YES SIGNATURE BELOW DENOTES THAT HOSES ARE IN GOOD CONDITION AND COMPATIBLE WITH PRODUCT BEING UNLOADED**

BY:_____ TITLE:_____ DATE:_____ TIME:_____

(Customer Signature)

NOTE: SIGNATURE MUST BE OBTAINED AFTER LINE CONNECTION HAS BEEN MADE

Section IV: Unloading Information (use back side if necessary)

GRAVITY:_____ TRUCK AIR:_____ TRUCK PUMP:_____ CUSTOMER AIR/PUMP:_____

YES_____ NO_____ TANKER COMPLETELY EMPTIED. YES_____ NO_____ TANKER PRESSURE RELIEVED

ANY SPILLS OR INCIDENTS: YES_____ NO_____; IF Yes, please record comments and report any problems

Comments:

Section V: Product Delivery Information

QUANTITY DELIVERED: _____ LBS. OR GALLONS

Comments:

Retain completed form with Delivery Ticket Revision Date: 3/25/08

CARRIER: _____ DRIVER SIGNATURE: _____

REVIEWED BY: (initials) _____

DRIVER'S TRAINING MANUAL

ISSUED: 05/01/00 APPROVED BY: David Garner
REVISED: 09/20/02 CONTACT: Fred Nichols

Unloading Chemicals Into Bulk at Customer Site

Section: 5.9 Delivery To Customer

Brenntag transports and delivers many types of chemical products every day into bulk storage at customer sites. Mishandling could easily result in environmental damage, serious personal injury or even death. It is imperative that all drivers involved in this process be familiar with the hazards and procedures of handling all types of chemical and follow all safety precautions. Only drivers who have received training in the properties, characteristics, safety and first aid requirements for each chemical product may unload these products. The customer's plant operations procedures may take precedence over this general training.

Drivers must first be trained on Operations Procedure No. 5.1, Tank Trailer Unloading, which covers unloading tank trailers. Also see Section 7.2 of this manual when unloading flammable or combustible materials. Drivers are to use the following guidelines when unloading at a customer's site.

1. Complete Section II and III, of the BRENNTAG MID-SOUTH TANKER UNLOADING REPORT.
2. Drivers must be in attendance throughout the unloading process unless relieved by the customer's employees.
3. Tank trailer is to be chocked on both sides of at least one tire during the unloading process.
4. Driver must wear the correct personal protective equipment.
5. Place drip pan or bucket under transfer hose connections, if appropriate.
6. After transfer of product into customer storage is complete. Driver will close all appropriate valves and turn off appropriate pump.
7. Disconnect transfer product hose from tank trailer and drain remaining product into drip pan bucket or where customer wants you to. Return product transfer hoses to hose racks.
8. Secure dome lids and all valves.
9. Complete Section IV of the BRENNTAG MID-SOUTH TANKER UNLOADING REPORT and any other required paperwork.
10. Complete Section V of the BRENNTAG MID-SOUTH TANKER UNLOADING REPORT after arriving back at your plant site. Attach completed form to delivery ticket.
11. Completed form should be reviewed by and signed or initialed by Dispatcher, Customer Service Manager or designee.

Brenntag has a number of trucks equipped with air blowers and/or product pump. These

units are used to unload different chemicals at the customer location. In order to properly maintain and operate this equipment, Procedure No. 5.14, Tank Trailer Unloading With J 100 Compressor & Product Pumps, found in the Operations Procedure Manual shall be used to train drivers.

DRIVER'S TRAINING MANUAL

ISSUED: 05/01/00 APPROVED BY: David Garner

REVISED: CONTACT: Fred Nichols

Loading & Unloading Tank Trailers Section: 5.8 Delivery To Customer

Brenntag Mid-South, Inc. unloads various products from tank trailers into bulk storage tanks. Mishandling could easily result in environmental damage, serious personal injury or even death. It is imperative that our drivers involved in this process be familiar with the hazards and procedures of handling all types of products that we unload from tank trailers and that they follow all safety precautions. Only drivers who have received training in chemical properties, characteristics, health and safety for each product may proceed with unloading of tank trailers.

Before any driver may unload or pull a tank trailer they must receive training on the following:

1. 49 CFR 177.834 (1)(2,3,4,5), *"Guidelines - Loading & Unloading"*
2. 49 CFR 173.30, *"Loading & Unloading of Transport Vehicle"*
3. 49 CFR 177.816, *"Driver Training"*
4. 49 CFR 172.704, *"Training for HAZMAT"*
5. 49 CFR 177.834, *"General Requirements"*
6. Operations Procedures Manual:

    a. Procedure No. 5.1, *"Tank Trailer Unloading"*

    b. Procedures No. 5.2, *"Shipment of Pressurized Portable Tank/Tank Trailers"*

    c. Procedure No. 5.14, *"Tank Trailer Unloading with J100 Compressor & Product Pump"*

    d. Procedure No. 9.2, *"Unloading Bulk Shipment"*

units are used to unload different chemicals at the customer location. In order to properly maintain and operate this equipment, Procedure No. 5.14, Tank Trailer Unloading With J 100 Compressor & Product Pumps, found in the Operations Procedure Manual shall be used to train drivers.

DRIVER'S TRAINING MANUAL

ISSUED: 05/01/00 APPROVED BY: David Garner

REVISED: CONTACT: Fred Nichols

Cargo Tank Attendance Section: 5.10 Delivery To Customer

Each person loading or unloading a tank trailer (cargo tank) must know and obey the rules of 49 CFR, Part 177.834.

1. **Loading** - A cargo tank must be attended by a qualified person at all items when it is being loaded. The person who is responsible for loading the cargo tank is also responsible for ensuring that it is so attended.
2. **Unloading** - A motor carrier who transports hazardous materials by a cargo tank must ensure that the cargo tank is attended by a qualified person at all times during unloading. However, the carrier's obligation to ensure attendance during unloading ceases when:

    a. The carrier's obligation for transporting the material is fulfilled.
    b. The cargo tank has been placed upon the consignees' premises.
    c. The motor power has been removed from the cargo tank and removed from the premises.

    A person "attends" the loading or unloading of a cargo tank if, throughout the process, he/she is awake and has unobstructed view of the cargo tank, and is within 7.62 meters (25 feet) of the cargo tank.

    A person is "qualified" if he/she has been made aware of the nature of the hazardous material which is to be loaded or unloaded, he/she has been instructed on the procedures to be followed in emergencies, he/she is authorized to move the cargo tank, and he/she has the means to do so.

    A delivery hose, when attached to the cargo tank, is considered a part of the vehicle.

Driver who is going to pull a cargo tank trailer must receive training on the cargo tank attendance requirement from 49 CFR, part 177.834. Their training must take place before he is allowed to pull a cargo tank trailer.

Westlake CA&O

25% CAUSTIC SODA
MEMBRANE GRADE

SALES SPECIFICATION

PRODUCT:.....25% SODIUM HYDROXIDE
[MEMBRANE GRADE CAUSTIC SODA]

SPECIFICATION NO:.....B738-5105B22.02-00

BASIS.....50% SOLUTION

Property	Limit(s)	Test Method	Frequency
Sodium hydroxide (NaOH)	24.00-26.00% by wt.	Titrimetry	Each Lot
Sodium oxide (Na_2O)	15.00-20.20% by wt.	Calculated	Each Lot
Sodium carbonate (Na_2CO_3)	500.0 ppm	Titrimetry	Monthly
Sodium chloride (NACl)	100.0 ppm	Titrimetry	Monthly
Sodium Sulfate (Na_2SO_4)	50.0 ppm	Ion Chromatography	Monthly
Iron (Fe)	3.0 ppm	Colorimetry	Monthly
Sodium Chlorate ($NaClO_3$)	10 ppm	Ion Chromatography	Monthly
Appearance	A water white, clear to slightly turbid liquid		
Odor	Odorless		

Note: ppm = parts per million (1 ppm = 0.0001%)

Westlake CA&O

50% CAUSTIC SODA
MEMBRANE GRADE

SALES SPECIFICATION

PROPERTY	SPECIFICATION	BASIS	TEST METHOD
SODIUM HYDROXIDE (NAOH)	49.5 - 51.5	WT. %	TITRIMETRY
SODIUM OXIDE (NA_2O)	38.3 – 40.0	WT. %	CALCULATED
SODIUM CARBONATE (NA_2CO_3)	.050 MAX.	WT. %.	TITRIMETRY
SODIUM CHLORIDE (NACI)	.0075 MAX.	WT. %	TURBIDIMETRY
SODIUM CHLORATE ($NACIO_3$)	10.0 MAX.	PPM	ION CHROMOTAGRAPHY
SODIUM SULFATE (NA_2SO_4)	30 MAX.	PPM	ION CHROMOTAGRAPHY
IRON (FE)	2.0 MAX.	PPM	COLORIMETRY

ALL RESULTS ARE ON A SOLUTION BASIS.

BRENNTAG MID-SOUTH, INC.
319 First Street North
St. Albans, WV 25177
Tel. (304) 727-4379 • Fax (304) 727-6232

CERTIFICATE OF ANALYSIS

Sodium Hypochlorite Solution 12.5%
(SNO GLO Bleach)

CUSTOMER:	**LOT NUMBER**
	DATE ANALYZED:
TANKER NUMBER: (If Applicable)	**DATE SHIPPED :**

PARAMETERS	ANALYSIS	SHIPPING SPECIFICATIONS
Sodium Hypochlorite, % by wt.		12.5% Minimum
Available Chlorine, Trade %		14.5% Minimum
Available Chlorine, % by wt.		12.0% Minimum
Available Chlorine, grams/liter		145 g/l Minimum
Excess Caustic, grams/liter		2.5 to 12 g/l
Excess Caustic, % by wt.		0.20 to 1%
Specific Gravity @ 77 °F		1.198 to 1.238
Color (pass/fail)	PASS	Greenish-yellow
Appearance (pass/fail)	PASS	Clear to slightly turbid liquid

Analyst:	**Approved: BOB MCCUTCHAN**

cc: With Shipment

Lab Procedure: 64LP322

Form Approval: __Bob McCutchan__
Form Approval Date: July 25, 2001

C:\MYDOCUMENTS\WORD\COA\SODHYP12.5%

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CHLOR ALKALI PRODUCTS

MATERIAL SAFETY DATA

Sodium Hydroxide Solution, 50%

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Δ

Manufacturer's name and address:	Supplier's name and address:
Olin Corporation – Chlor Alkali Products Division	**Olin Canada, ULC d/b/a Olin Chlor Alkali Products**
CLEVELAND, TN OFFICE	**MONTREAL, QC OFFICE**
490 Stuart Road NE Cleveland, TN 37312-4918 U.S. • (423) 336-4850	2020 University, Suite 2190 Montreal, Quebec H3A 2A5 Canada • (514) 397-6100

Product Name: Sodium Hydroxide Solution, 50%

CAS#: 1310-73-2 **Preparation date (M/D/Y):** 10/02/08
MSDS Code: NaOH(50)-E **Revision date (M/D/Y):** 02/08/11

Synonyms: Caustic soda liquid 50%, Soda lye, Lye, Liquid Caustic, Sodium Hydrate

Product Use: Neutralizing agent, industrial cleaner, pulping and bleaching, soap manufacturing

Emergency Contacts (24 hr.)

FOR INFORMATION REGARDING ON SITE CHEMICAL EMERGENCIES INVOLVING A SPILL OR LEAK, CALL

Δ **Canada: 1-800-567-7455**
U.S.: 1-800-424-9300 – CHEMTREC

SECTION 2 – COMPOSITION / INFORMATION ON INGREDIENTS

	Hazardous Ingredient(s)	% (w/w)	ACGIH	CAS NO.
Δ	Sodium Hydroxide	49 – 52	2 mg/m^3 (TLV-C)	1310-73-2

SECTION 3 – HAZARD IDENTIFICATION

Emergency Overview: Odorless, clear, non-volatile liquid. EXTREMELY CORROSIVE! Causes severe burns on contact. Can cause blindness, permanent scarring and death. Aerosols can cause lung injury – effects may be delayed. Highly reactive. Can react violently with water and numerous commonly encountered materials, generating enough heat to ignite nearby combustible materials. Contact with many organic and inorganic chemicals may cause fire or explosion. Reacts with some m [illegible]rogen gas, which can form explosive mixtures with air. Will not burn. Harmful to aquatic life. Read the entire MSDS for a more thorough evaluation of the hazards.

Potential Health Effects:

Δ **Routes of exposure:** Inhalation, skin contact, eye contact

Inhalation: Sodium hydroxide does not readily form a vapor and inhalation exposure is likely to occur as an aerosol. Due to its corrosive nature, sodium hydroxide aerosols could cause pulmonary edema (severe, life-threatening lung injury). The development of pulmonary edema may be delayed up to 48 hours after exposure. The early symptoms of pulmonary edema include shortness of breath and tightness in the chest.

Skin Contact: EXTREMELY CORROSIVE! Sodium hydroxide is capable of causing severe burns with deep ulceration and permanent scarring. It can penetrate to deeper layers of skin and corrosion will continue until removed. The severity of injury depends on the concentration (solutions) and the duration of exposure. Burns may not be immediately painful; onset of pain may be delayed minutes to hours. Several human studies and case reports describe the corrosive effects of sodium hydroxide. A 4% solution of sodium hydroxide, applied to a volunteer's arm for 15 to 180 minutes, caused damage which progressed from destruction of cells of the hard outer layer of the skin within 15 minutes to total destruction of all layers of the skin in 60 minutes. Solutions as weak as 0.12% have damaged healthy skin within 1 hour.

Eye Contact: EXTREMELY CORROSIVE! The severity of injury increases with the concentration, the duration of exposure, and the speed of penetration into the eye. Damage can range from severe irritation and mild scarring to blistering, disintegration, ulceration, severe scarring and clouding. Conditions, which affect vision such as glaucoma and cataracts, are possible late developments. In severe cases, there is progressive ulceration and clouding of eye tissue which may lead to permanent blindness.

Ingestion: EXTREMELY CORROSIVE! Severe pain; burning of the mouth, throat and esophagus; vomiting; diarrhea; collapse and possible death may result.

Chronic Effects: SKIN: Repeated or prolonged skin contact would be expected to cause drying, cracking, and inflammation of the skin (dermatitis).

Existing Medical Conditions Possibly Aggravated by Exposure: Asthma, bronchitis, emphysema and other lung diseases and chronic nose, sinus or throat conditions. Skin irritation may be aggravated in individuals with existing skin disorders.

Carcinogenicity: Sodium hydroxide is not classified as a carcinogen by ACGIH (American Conference of Governmental Industrial Hygienists) or IARC (International Agency for Research on Cancer), not regulated as a carcinogen by OSHA (Occupational Safety and Health Administration), and not listed as a carcinogen by NTP (National Toxicology Program).

Δ **Other important hazards:** Refer to TOXICOLOGICAL INFORMATION (Section 11) for additional information.

SECTION 4 – FIRST AID MEASURES

General: If you feel unwell, IMMEDIATELY seek medical advice (show this document).

Inhalation: Move victim to fresh air. If breathing is difficult, oxygen may be beneficial if administered by trained personnel, preferably on a doctor's advice. Give artificial respiration ONLY if breathing has stopped. Do not use mouth-to-mouth method if victim ingested or inhaled the substance: induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Give Cardiopulmonary Resuscitation (CPR) only if there is no pulse AND no breathing. Obtain medical attention IMMEDIATELY. Symptoms of pulmonary edema can be delayed up to 48 hours after exposure.

Skin Contact: Immediately flush skin with lukewarm water for at least 20 minutes, and up to 60 minutes if necessary. Under lukewarm water remove contaminated clothing, jewelry, and shoes. If irritation persists, repeat flushing. Obtain medical attention immediately. Discard contaminated clothing and shoes in a manner which lim

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MATERIAL SAFETY DATA

Eye Contact: Immediately flush eyes with lukewarm water for at least 20 minutes, and up to 60 minutes if necessary. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY. Do not transport victim until the recommended flushing period is completed unless flushing can be continued during transport.

Ingestion: DO NOT INDUCE VOMITING. If victim is alert and not convulsing, rinse mouth and give as much water as possible to dilute material (8 to 10 oz. or 240 to 300 mL). If spontaneous vomiting occurs, have victim lean forward with head down, rinse mouth and administer more water. IMMEDIATELY transport victim to an emergency facility.

SECTION 5 – FIRE FIGHTING MEASURES

Flammability	Not applicable. Not combustible (does not burn).
Flash Point (method)	Not applicable.
Flammable Limits (Lower)	Not applicable
Flammable Limits (Upper)	Not applicable
Auto Ignition Temperature	Not applicable
Combustion and Thermal Decomposition Products	Sodium oxide fumes
Rate of Burning	Not applicable
Explosive Power	Not applicable
Sensitivity to Mechanical Impact	Not sensitive ; stable material
Sensitivity to Static Charge	Not applicable

Fire and Explosion Hazards: Sodium hydroxide will not burn or support combustion. The reaction of sodium hydroxide with water and a number of commonly encountered materials (see Section 10) can generate sufficient heat to ignite nearby combustible materials. Sodium hydroxide can react with metals, such as aluminum, tin and zinc, to form flammable hydrogen gas.

Extinguishing Media: Use extinguishing media suitable for the surrounding fire. If water is used, care should be taken, since it can generate heat and cause spattering if applied directly to sodium hydroxide.

Special Information: Evacuate area and fight fire from a safe distance or a protected location. Approach fire from upwind. If possible, isolate materials not involved in the fire and protect personnel. Move containers from fire area if it can be done without risk.

Water can be used with extreme caution to extinguish a fire in an area where sodium hydroxide is stored. The water must not come into contact with the sodium hydroxide. Water can be used in flooding quantities as a spray or fog to keep fire-exposed containers cool and absorb heat. At high temperatures, fuming may occur, giving off a strong, corrosive gas. Do not enter without wearing specialized protective equipment suitable for the situation.

Evacuation: If tank or tank truck involved in a fire, ISOLATE and consider evacuation of one-half (1/2) mile (800 meters) in all directions.

Fire Fighting Protective Equipment: Firefighter's normal protective clothing (Bunker Gear) will not provide adequate protection. Chemical resistant clothing (e.g. chemical splash suit) and positive pressure self-contained breathing apparatus (MSHA/NIOSH approved or equivalent) may be necessary.

NOTE: Also see "Section 10 - Stability and Reactivity

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MATERIAL SAFETY DATA

SODIUM HYDROXIDE SOLUTION, 50%
Update/Review: February 8, 2011

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Spills, Leaks, or Releases:

- Restrict access to area until completion of clean up. Ensure trained personnel conduct clean up. Ventilate area.
- Wear adequate personal protective equipment (See Section 8). Do not touch spilled material.
- Prevent entry into sewers or waterways.
- Land spill of sodium hydroxide: Solutions should be contained by diking with inert material, such as sand or earth. Solutions can be recovered or carefully diluted with water and cautiously neutralized with acids such as acetic acid or hydrochloric acid.
- Water spill: Neutralize with dilute acid.
- Comply with Federal, Provincial/State and local regulations on reporting releases.

Deactivating Chemicals: Weak acid solutions (acetic, hydrochloric or sulfuric acid).

Waste Disposal Methods: Dispose of waste material at an approved waste treatment/disposal facility, in accordance with applicable regulations. Do not dispose of waste with normal garbage or to sewer systems.

Note - Clean-up material may be a RCRA Hazardous Waste on disposal.
- Spills are subject to CERCLA reporting requirements: RQ = 1000 lbs. (454 kg).

SECTION 7 – HANDLING AND STORAGE

Precautions: EXTREMELY CORROSIVE! Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labeled. Wear appropriate Personal Protection Equipment *(Refer to Section 8)*. People working with this chemical should be properly trained regarding its hazards and its safe use.

Handling Procedures and Equipment: Use smallest possible amounts in designated areas with adequate ventilation. Keep containers closed when not in use. Empty containers may contain hazardous residues. Avoid generating mists. Transfer solutions using equipment, which is corrosion-resistant. Cautiously, transfer into sturdy containers made of compatible materials. Never return contaminated material to its original container. Considerable heat is generated when diluted with water. Proper handling procedures must be followed to prevent vigorous boiling, splattering or violent eruption of the diluted solution. Never add water to a sodium hydroxide solution. **ALWAYS ADD SODIUM HYDROXIDE TO WATER** and provide agitation. When mixing with water, stir small amounts in slowly. Use cold water to prevent excessive heat generation.

Storage Requirements: Store in a cool, dry, well-ventilated area. Keep containers tightly closed when not in use and when empty. Protect from damage. Store away from incompatible materials such as strong acids, nitroaromatic, nitroparaffinic or organohalogen compounds. See Section 10 for Incompatibles. Use corrosion-resistant structural materials and lighting and ventilation systems in the storage area. Containers made of nickel alloys are preferred. Steel containers are acceptable if temperatures are not elevated. Nickel is the preferred metal for handling this product. Plastics or plastic-lined steel, or FRP tanks of Derakane vinyl ester resin may be suitable. Container contents may develop pressure after prolonged storage. Drums may need to be vented. Trained personnel should only perform venting.

Storage Temperature: Avoid freezing. Do not expose sealed containers to temperatures above 40°C

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MATERIAL SAFETY DATA

SODIUM HYDROXIDE SOLUTION, 50%
Update/Review: February 8, 2011

SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

PREVENTIVE MEASURES

Recommendations listed in this section indicate the type of equipment which will provide protection against over exposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

Engineering Controls: Local exhaust ventilation should be applied wherever there is an incidence of point source emissions or dispersion of regulated contaminants in the work area. Ventilation control of the contaminant as close to its point of generation is both the most economical and safest method to minimize personnel exposure to airborne contaminants. The most effective measures are the total enclosure of processes and the mechanization of handling procedures to prevent all personal contact.

PERSONAL PROTECTIVE EQUIPMENT

Maintain eye wash fountain and quick-drench facilities in work area. Detailed requirements for personal protective equipment should be established on a site-specific basis.

Eye Protection: Wear full face-shield and chemical safety goggles when there is potential for contact.

Skin Protection: Wear appropriate personal protective clothing to prevent skin contact.

Guidelines for sodium hydroxide solutions, 30-70%:

RECOMMENDED (resistance to breakthrough longer than 8 hours): Butyl rubber; natural rubber, neoprene rubber, nitrile rubber, polyethylene, vinyl chloride, Teflon™, Viton™, Saranex™, 4H™, Barricade™, CPF 3™, Responder™, Trellchem HPS™, Tychem 10000™.

NOT RECOMMENDED for use (resistance to breakthrough less than 1 hour): Polyvinyl alcohol.

Respiratory Protection:
Up to 10 mg/m^3: Supplied Air Respirator (SAR) operated in a continuous-flow mode, eye protection needed; or full face-piece respirator with high-efficiency particulate filter(s); or powered air-purifying respirator with dust and mist filter(s), eye protection needed; or full face-piece Self-Contained Breathing Apparatus (SCBA); or full face-piece SAR.

Emergency or Planned Entry into Unknown Concentrations or IDLH Conditions: Positive pressure, full face-piece SAR; or positive pressure, full face-piece SAR with an auxiliary positive pressure SAR.

ESCAPE: Full face-piece respirator with high-efficiency particulate filter(s); or escape-type SCBA.

EXPOSURE GUIDELINES

PRODUCT: Sodium hydroxide:

	ACGIH Ceiling Exposure Limit (TLV-C)	2 mg/m^3
Δ	OSHA PEL-TWA	2 mg/m^3
	NIOSH IDLH	10 mg/m^3
	NIOSH REL:	C 2 mg/m^3

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CHLOR ALKALI PRODUCTS

MATERIAL SAFETY DATA

SODIUM HYDROXIDE SOLUTION, 50%
Update/Review: February 8, 2011

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Alternate Name(s)	Caustic soda liquid 50%, Soda lye, Lye, Liquid Caustic, Sodium Hydrate
Chemical Name	Sodium hydroxide
Chemical Family	Alkali hydroxide
Molecular Formula	NaOH
Molecular Weight	40.01
Δ **Physical State and Appearance**	Clear-to-slightly turbid liquid
Odor	Odorless
pH	14.0 (Aqueous solution: 5%)
Vapor Pressure	0.2 kPa (1.5 mm Hg) at 20 °C (68°F) (50% solution)
Vapor Density (Air = 1)	Not applicable
Boiling Point	140 °C (284 °F) (50% solution)
Freezing Point	12 °C (53.6 °F) (50% solution)
Solubility (Water)	Soluble in all proportions
Specific Gravity	1.53 (50% solution) 15.5 °C (60°F)
Evaporation Rate	Not applicable
Viscosity (cp):	78.3 at 20 °C (68°F)
Bulk Density (lbs/cu ft):	95.5
Coefficient of Oil/Water Distribution	Essentially zero

SECTION 10 – STABILITY AND REACTIVITY

Chemical Stability: Stable at room temperature.

Hazardous Decomposition Products: Thermal decomposition: sodium oxide fumes

Conditions to Avoid: Water. Keep away from incompatibles.

Incompatibility with other Substances: Sodium hydroxide reacts vigorously, violently or explosively with many organic and inorganic chemicals, such as strong acids, nitroaromatic, nitroparaffin and organohalogen compounds, glycols and organic peroxides. Reacts violently with water generating significant heat and dangerously spattering corrosive sodium hydroxide. Violently polymerizes acetaldehyde, acrolein or acrylonitrile. Produces flammable and explosive hydrogen gas if it reacts with sodium tetrahydroborate or certain metals such as aluminum, tin, or zinc. Can form spontaneously flammable chemicals upon contact with 1,2- dichloroethylene, trichloroethylene or tetrachloroethane. Can produce carbon monoxide upon contact with solutions of sugars, such as fructose, lactose and maltose.

Corrosivity to Metals: Corrosive to aluminum, tin, zinc, copper, and most alloys in which they are present including brass and bronze. Corrosive to steel at elevated temperatures above 40°C(104°F).

Stability and Reactivity Comments: Slowly attacks glass at room temperature.

Hazardous Polymerization: Will not occur. However, it can induce hazardous polymerization of acetaldehyde, acrolein, and acry

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MATERIAL SAFETY DATA

SODIUM HYDROXIDE SOLUTION, 50%
Update/Review: February 8, 2011

SECTION 11 – TOXICOLOGICAL INFORMATION

For more toxicological information, refer to Section 3.

TOXICOLOGICAL DATA:

Toxicological Data: Sodium hydroxide

Toxicity data: LDLo - Lowest published lethal dose oral rabbit 500 mg /kg ;
LD_{50} intraperitoneal mouse 40 mg/kg

Irritation data: Standard Draize Tests: 500 mg/24 hour(s) skin-rabbit severe;
400 µg eyes-rabbit mild; 1 percent eyes-rabbit severe;

Mutagenicity: There is no evidence of mutagenic potential.

Reproductive Effects: No information is available.

Teratogenicity and Fetotoxicity: No information is available.

Synergistic Materials: No information is available.

Skin and Respiratory Sensitization: No information is available.

Irritancy: Strong eye and skin irritant.

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicological Information:
LC_{100} Cyprinus Carpio 180 ppm/24 hr @ 25°C (77°F)
TLm mosquito fish 125 ppm/96 hr (fresh water);
TLm Bluegill 99 mg/L/48 hr (tap water)

Persistence and Degradation: Degrades readily by reacting with natural carbon dioxide in the air. Does not bioaccumulate.

SECTION 13 – DISPOSAL CONSIDERATIONS

Review federal, state and local government requirements prior to disposal.

Do not dispose of waste with normal garbage, or to sewer systems.

Whatever cannot be saved for recovery or recycling, including containers, should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options.

RCRA: Test waste material for corrosivity

Olin
CHLOR ALKALI PRODUCTS

MATERIAL SAFETY DATA

SODIUM HYDROXIDE SOLUTION, 50%
Update/Review: February 8, 2011

SECTION 14 – TRANSPORT INFORMATION

	TDG	DOT
Shipping Name	SODIUM HYDROXIDE, SOLUTION	Sodium hydroxide, solution
Hazard Class/Division		
Identification No.		
Packing Group:		
Reportable Quantity	Not Applicable	RQ: 1000 lbs. (454 kg)
ERAP	NONE	Not Applicable

Δ **IATA/ICAO Shipping Description:** UN1824, Sodium hydroxide solution, Class 8, PG II is accepted for air transport.

Δ **For Chemical Emergencies in Transportation Requiring Activation of Olin 24 Hour Emergency Response Plan Call:**
U.S. 1-800-424-9300 – Chemtrec
Canada 1-800-567-7455

SECTION 15 – REGULATORY INFORMATION

Δ **CANADIAN INFORMATION:**

This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and this MSDS (Material Safety Data Sheet) contains all the information required by the CPR.

Controlled Products Regulations (WHMIS) Classification:
E: Corrosive Material

CEPA / Canadian Domestic Substances List (DSL): Y

WHMIS Ingredient Disclosure List: Meets criteria for disclosure at 1% or greater.

Δ **USA INFORMATION:**

OSHA Classification: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200)

SARA Regulations sections 313 and 40 CFR 372: N

SARA Hazard Categories, SARA SECTIONS 311/312 (40 CFR 370.2):
ACUTE: Y
CHRONIC: N
FIRE: N
REACTIVE: Y
SUDDEN RELEASE: N
OSHA PROCESS SAFETY (29 CFR 1910.119): N

CERCLA SECTION 103 (40 CFR 302.4): Y

Reportable Quantity (RQ) under CERCLA: 1000 lbs.

Olin
CHLOR ALKALI PRODUCTS

MATERIAL SAFETY DATA

TSCA Inventory Status: Y

This product does not contain nor is it manufactured with ozone depleting substances.

Δ **EUROPEAN ECONOMIC COMMUNITY (EEC) INFORMATION:**

EINECS Number: 215-185-5

CALIFORNIA PROP 65 COMPONENTS:
This product is not listed, but it may contain elements known to the State of California to cause cancer or reproductive toxicity as listed under Proposition 65 State Drinking Water and Toxic Enforcement Act. For additional information, contact Olin Technical Services (800-299-6546)

SECTION 16 – OTHER INFORMATION

Δ **The information contained herein is offered only as a guide to the handling of this specific material and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other and additional considerations. No warranty of any kind is given or implied and Olin will not be liable for any damages, losses, injuries or consequential damages that may result from the use of or reliance on any information contained herein. This Material Safety Data Sheet is valid for three years.**

Revision Indicators:
Δ In the left margin indicates a revision or addition of information since the previous issue.

National Fire Protection Association (NFPA) Rating
Hazardous Materials Identification System (HMIS) Rating

Δ

	NFPA	HMIS
HEALTH	3	3
FIRE	0	0
REACTIVITY / INSTABILITY	1	1
SPECIAL HAZARDS		N p

4 = Extreme/Severe
3 = High/Serious
2 = Moderate
1 = Slight
0 = Minimum
W = Water Reactive
OX = Oxidizer
* = Chronic health hazard

Δ **REFERENCES:**

1. Chemlist, STN Database, Chemical Abstract Service, 1999
2. "CHEMINFO", CCOHS, Canadian Centre for Occupational Health and Safety, Hamilton, Ontario, Canada, (2008).
3. DOSE, Royal Society of Chemistry, Aug 27, 1999.
4. HSDB- Hazardous Substances Data Bank, CCOHS, 2008.
5. RTECS-Registry of Toxic Effects of Chemical Substances, On-line search, Canadian Centre for Occupational Health and Safety RTECS database, Doris V. Sweet, Ed., National Institute for Occupational Safety and Health, U.S. Dept. of Health and Human Services, Cincinnati, Entry Update/ August 2007.
6. "2008 Threshold Limit Values and Biological Exposure Indices", American Conference of Government Industrial Hygienists, 2008.
7.

Olin
CHLOR ALKALI
PRODUCTS

MATERIAL SAFETY DATA

SODIUM HYDROXIDE SOLUTION, 50%
Update/Review: February 8, 2011

Δ **LEGEND:**

ACGIH	- American Conference of Governmental Industrial Hygienists
AFFF	- Aqueous Film Forming Foam
AIHA	- American Industrial Hygiene Association
CAS #	- Chemical Abstracts Service Registry Number
CERCLA	- Comprehensive Environmental Response, Compensation, and Liability Act
CFR	- Code of Federal Regulations
DOT	- Department of Transportation
EINECS	- European Inventory of Existing Chemical Substances
EPA	- Environmental Protection Agency
ERAP	- Emergency Response Assistance Plan
IATA	- International Air Transportation Association
ICAO	- International Civil Aviation Organization
FRP	- Fiberglass Reinforced Plastic
HMIS	- Hazardous Materials Identification System
IARC	- International Agency for Research on Cancer
IDLH	- Immediately Dangerous to Life and Health
LC50	- The concentration of material in air expected to kill 50% of a group of test animals
LD_{50}	- Lethal Dose expected to kill 50% of a group of test animals
MSHA	- Mine Safety and Health Administration
N/Ap	- Not Applicable
N/Av	- Not Available
NFPA	- National Fire Protection Association
NIOSH	- National Institute for Occupational Safety and Health
NTP	- National Toxicology Program
OSHA	- Occupational Safety & Health Administration
PEL	- Permissible Exposure Limit
PVC	- Polyvinyl chloride
RCRA	- Resource Conservation and Recovery Act
SARA	- Superfund Amendments and Reauthorization Act of the U.S. EPA
STEL	- Short Term Exposure Limit
TDG	- Transportation of Dangerous Goods Act/Regulations
TLV	- Threshold Limit Value
TSCA	- Toxic Substances Control Act
TWA	- Time Weighted Average
WEEL	- Workplace Environmental Exposure Level
WHMIS	- Workplace Hazardous Materials Identification System

Prepared by: Olin
(514) 397-

Material Safety Data Sheet

MSDS Revision Date: 8/20/09

PRODUCT: Sodium Hypochlorite Solution

BRENNTAG

1. Product and Company Identification

Product Identity: **Sodium Hypochlorite Solution**

Chemical Formula: NaOCl
Molecular Weight: 74.45

Synonyms: Sodium Hypochlorite Solution (10-15.6%); Hypochlorite Solution; Bleach Solution, Hypochlorous acid, sodium salt, &/or AB Bleach; sodium hypochlorite/de-ionized water, Sodium Hypochlorite Solution 10%; Sno-glo Bleach; Hypochlorous acid, sodium salt

Brenntag Mid-South Inc.
1405 Hwy 136 W
Henderson, KY 42420

Technical Information: 270-830-1200
Emergency Number: 800-424-9300 (CHEMTREC)
Emergency Number: 703-5273887 (International)

2. Hazards Identification

PRECAUTIONARY STATEMENTS (Hazards to humans and domestic animals): Danger! Corrosive! May cause severe skin and eye irritation or chemical burns to broken skin. Causes eye damage. Exposure to skin may cause sensitization or other allergic responses.

INHALATION: Corrosive! Product may cause severe irritation of the nose, throat and respiratory tract. Repeated and/or prolonged exposures may cause productive cough, runny nose, bronchopneumonia, pulmonary edema (fluid build-up in lungs), and reduction of pulmonary function. Repeated inhalation exposure may cause impairment of lung function and permanent lung damage.

EYE CONTACT: Extremely corrosive! This product causes corneal scarring and clouding. Glaucoma, cataracts and permanent blindness may occur.

SKIN CONTACT: Corrosive! Concentrated solutions may cause pain and deep and severe burns to the skin. Prolonged and repeated exposure to diluted solutions often causes irritation, redness, pain and drying and cracking of the skin. Human evidence has indicated that an ingredient in this product can cause skin sensitization.

INGESTION: Corrosive! Will immediately cause severe corrosion of and damage to the gastrointestinal tract. Exposure characterized by nausea, vomiting, diarrhea, abdominal pain, bleeding, and/or tissue ulceration.

PRIMARY ROUTES OF ENTRY: Inhalation and contact.

3. Composition/Information on Ingredients

CAS NUMBER	CHEMICAL NAME(S)	*WT %
7681-52-9	Sodium hypochlorite**	10 – 15.6
1310-73-2	Sodium hydroxide	0.3 – 1.8
7647-14-5	Sodium Chloride	9 – 14.9
497-19-8	Sodium carbonate	≤ 0.5
7732-18-5	Water	Balance

Material Safety Data Sheet
MSDS Revision Date: 8/20/09

PRODUCT: Sodium Hypochlorite Solution

BRENNTAG

4. First Aid Measures

INHALATION: Remove victim to fresh air. Give artificial respiration if not breathing. Get medical attention.

EYE CONTACT: Wash eyes with plenty of water for at least 15 minutes while holding eyelids open. Consult an eye specialist immediately.

SKIN CONTACT: Flush skin with plenty of water while removing contaminated clothing. Get medical attention for persistent irritation. Clean clothing before reuse.

INGESTION: If swallowed drink large quantities of water. Do NOT induce vomiting. Call a poison control center or doctor immediately for treatment advice. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water.

5. Fire Fighting Measures

FLASH POINT (METHOD USED): Non - flammable **FLAMMABLE LIMITS (% BY VOLUME):** n.a.

EXTINGUISHING MEDIA: Use water spray, fog, foam, dry chemicals, or carbon dioxide.

SPECIAL FIRE FIGHTING PROCEDURES: Firefighters should wear protective equipment including self contained breathing apparatus. Avoid fumes. Dilute spill with copius amounts of water, ventilate. Be prepared to use respirator.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Possible vigorous reaction upon contamination with organics or oxidizing agents. Bleach decomposes when heated, decomposition products may cause containers to rupture or explode. Many reactions can cause fire and explosion. This material will react with some metals which may cause liberation of oxygen. Toxic fumes can be liberated by contact with acid or heat. Vigorous reactions can occur with oxidizable materials and organics. Keep material cool using a water spray from a safe distance. Keep all unnecessary people away. Stay up wind and stay out of low-lying areas.

6. Accidental Release Measures

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Personnel with proper protective equipment should contain spill. Flush area with large amounts of water. Use reducing agents such as bisulfites or ferrous salt solutions to neutralize.

Material Safety Data Sheet
MSDS Revision Date: 8/20/09
Page 4 of 6
PRODUCT: Sodium Hypochlorite Solution

BRENNTAG

9. Physical and Chemical Properties

BOILING POINT °F (°C): 110 °C for 15% NaOCl

SPECIFIC GRAVITY (H_2O=1): 1.08 - 1.27

VAPOR DENSITY (AIR =1): n.a.

EVAPORATION RATE: n.a.

VAPOR PRESSURE (mmHg): Vapor pressure of water plus decomposition products.

PERCENT VOLATILE BY VOLUME (%): Water vapor plus decomposition products.

SOLUBILITY IN WATER: Complete

APPEARANCE AND ODOR: Light, yellow-green liquid

10. Stability and Reactivity

STABILITY: Unstable (Contingent upon temperature, contamination (metals), and pH.)

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Heat, light exposure, decrease in pH, and contamination with heavy metals, such as nickel, cobalt, copper and iron.

INCOMPATIBILITY (MATERIALS TO AVOID): Heavy metals, reducing agents, organics, ether, ammonia, ammonium acetate, ammonium carbonate, ammonium nitrate, ammonium oxalate, ammonium phosphate, urea and acids.

HAZARDOUS DECOMPOSITION PRODUCTS: Hypochlorous acid, chlorine, hydrochloric acid, sodium chloride, sodium chlorate, and oxygen. Decomposition of sodium hypochlorite takes place within a few seconds with following salts: ammonium acetate, ammonium carbonate, ammonium nitrate, ammonium oxalate, and ammonium phosphate. Hypochlorites react with urea to form nitrogen trichloride, which explodes spontaneously in air.

11. Toxicological Information

TOXICITY DATA:
Oral LD50: 8,910 mg/kg. (Rats)
Dermal LD 50: > 10,000mg/kg. (Rabbits)
Inhalation 0.25-hour LC 50: >10.5 mg/l (Rats)
Acute oral toxicity: IV; LD50, 192 mg/kg
Acute dermal toxicity: III; LD50, > 3,000 mg/kg
Primary eye irritation: I; Corrosive
Primary skin irritation: I; Corrosive

SUMMARY: The concentrated solution is corrosive to skin, and a 5% solution is a severe eye irritant. Solutions containing more than 5% available chlorine are classified by DOT corrosive. Toxicity described in animals from single exposures by ingestion includes muscular weakness, and hyperactivity. Repeated ingestion exposure in animals caused an increase in the relative weight of adrenal glands in one study, but no pathological change were observed in two other studies. Long-term administration of compound in drinking water of rats caused depression of the immune system. No adverse changes were observed in an eight-week dermal study of a 1% solution in guinea pigs. Tests in animals demonstrate no carcinogenic activity by either the oral or dermal routes. Tests in bacterial and mammalian cell cultures demonstrate mutagenic activity.

Material Safety Data Sheet
MSDS Revision Date: 8/20/09

PRODUCT: Sodium Hypochlorite Solution

BRENNTAG

12. Ecological Information

ENVIRONMENTAL HAZARDS: This pesticide is toxic to fish and aquatic organisms. Do not discharge effluents containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the sewage treatment plant authority. For guidance, contact you State Water Board or Regional Office of the EPA.

Acute oral-bobwhite quail: LD50, > 2510 mg/kg
Acute dietary-mallard duck: LC50, > 5220 ppm
Acute dietary-bobwhite quail: LC50, > 5620 ppm
Acute fish-rainbow trout: LC50, 0.18-0.22 mg/l
Acute fish-bluegill sunfish: LC50, 0.44-0.79 mg/l
Acute invertebrate-daphnia: LC50, 0.033-0.048 mg/l
Fathead minnows: 96-hour LC50, 5.9 mg/LO
Rainbow Trout: 96-hour LC50, 0.2mg/liter
Bluegill sunfish: 96-hour LC50, 0.58mg/liter

13. Disposal Considerations

WASTE DISPOSAL METHOD: Disposal is to be in accordance with all Federal, State, and Local regulations.

14. Transport Information

PROPER SHIPPING NAME: Hypochlorite Solutions

HAZARD CLASS: 8 (Corrosive) **UN/NA**: UN 1791 **PACKING GROUP**: III

D.O.T. LABEL REQUIRED: Corrosive **REPORTABLE QUANTITY OF PRODUCT**: 800 to 2,000 lbs.

15. Regulatory Information

TSCA (Toxic Substance Control Act): All components of this product are listed on the TSCA inventory.

CERCLA AND SARA REGULATIONS, 40 CFR §300-373:

Super fund Reportable Discharge = 100 pounds (100% NaOCl) CERCLA Hazardous Material: yes

SARA Extremely Hazardous substance: No SARA Toxic Chemical: No

Title III Hazard Classifications: Acute: yes Chronic: yes Fire: no Reactivity: yes Pressure: No

EPA "CLEAN AIR ACT": This product does not contain nor is it manufactured with ozone depleting substances.

OTHER REGULATIONS/LEGISLATION THAT APPLY TO THIS PRODUCT: Massachusetts, Pennsylvania, and New Jersey Right-to Know Laws.

Material Safety Data Sheet
MSDS Revision Date: 8/20/09

PRODUCT: Sodium Hypochlorite Solution

BRENNTAG

16. Other Information

HMIS HAZARD RATING: Health 3 Flammability 0 Reactivity 2

VOC CONTENT (lbs/gal): n.a.

This MSDS is provided as an information resource only. It should not be taken as a warranty or representation for which Brenntag assumes legal liability. While Brenntag believes the information contained herein is accurate and compiled from sources believed to be reliable, it is the responsibility of the user to investigate and verify its identity. The buyer assumes all responsibility for using and handling the product in accordance with applicable international, federal, state, and local regulations.

Brenntag Mid-South Inc.
1405 Hwy 136 W
Henderson, KY 42420

PREPARED BY: _____ APPROVED BY: _____

C:\RD1\WORD\MSDS\SOD HYPOCHLORITE

SAFETY DATA SHEET

OxyChem®

Responsible Care® Good Chemistry at Work

CAUSTIC SODA LIQUID (ALL GRADES)

MSDS No.: M32415 **Rev. Date:** 05/29/2009 **Rev. Num.:**08

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Company Identification:	Occidental Chemical Corporation 5005 LBJ Freeway P.O. Box 809050 Dallas, Tx 75380-9050
24 Hour Emergency Telephone Number:	1-800-733-3665 or 1-972-404-3228 (U.S.); 32.3.575.55.55 (Europe); 1800-033-111 (Australia)
To Request an MSDS:	MSDS@oxy.com or 1-972-404-3245
Customer Service:	1-800-752-5151 or 1-972-404-3700
Trade Name:	Caustic Soda Diaphragm Grade 10%, 15%, 18%, 20%, 25%, 30%, 35%, 40%, 50%, Caustic Soda Rayon Grade 18%, 20%, 25%, 30%, 50%, 50% Caustic Soda Rayon Grade OS, Caustic Soda Membrane 6%, 18%, 20%, 25%, 30%, 48%, 50%, 50% Caustic Soda Membrane OS, 50% Caustic Soda Diaphragm OS, Caustic Soda Low Salt 50%, 25% Caustic Soda Purified, 50% Caustic Soda Purified, 50% Caustic Soda Purified OS, Caustic Soda Liquid 70/30, Membrane Blended, 50% Caustic Soda Membrane (Northeast), 50% Caustic Soda Diaphragm (West Coast), 50% Blended Rayon Grade Blended, Membrane Cell Liquor
Synonyms:	Sodium hydroxide solution, Liquid Caustic, Lye Solution, Caustic, Lye, Soda Lye
Product Use:	Metal finishing, Cleaner, Process chemical, Petroleum industry

2. HAZARDS IDENTIFICATION

****

EMERGENCY OVERVIEW:

Color:	Colorless to slightly colored
Physical State:	Liquid
Odor:	Odorless
Signal Word:	Danger

MAJOR HEALTH HAZARDS: CORROSIVE. CAUSES BURNS TO THE RESPIRATORY TRACT, SKIN, EYES AND GASTROINTESTINAL TRACT. CAUSES PERMANENT EYE DAMAGE.
PHYSICAL HAZARDS: CORROSIVE. Mixing with water, acid or incompatible materials may cause splattering and release of heat.
ECOLOGICAL HAZARDS: Keep out of water supplies and sewers. This material is alkaline and may raise the pH of surface waters. This material has exhibited moderate toxicity to aquatic organisms.
PRECAUTIONARY STATEMENTS: Avoid breathing vapors or mist. Avoid contact with skin, eyes and clothing. Keep container tightly closed. Wash thoroughly after handling. Use only with adequate ventilation.
****

POTENTIAL HEALTH EFFECTS:

Inhalation: May cause irritation (possibly severe), chemical burns, and pulmonary edema.

Skin contact: May cause irritation (possibly severe) and chemical burns.

Eye contact: May cause irritation (possibly severe), chemical burns, eye damage, and blindness.

Ingestion: May cause irritation (possibly severe), chemical burns, nausea, and vomiting.

Target Organs Effected: Respiratory System, Skin, Eye

Medical Conditions Aggravated by Exposure: Asthma, Respiratory disorders

See Section 11: TOXICOLOGICAL INFORMATION

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Hazardous Component	Concentration (by weight %)	CAS - No.
Water	48.5 - 94.5	7732-18-5
Sodium hydroxide	5.5 - 51.5	1310-73-2
Sodium chloride (NaCl)	1 - 5	7647-14-5

4. FIRST AID MEASURES

Inhalation: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. If respiration or pulse has stopped, have a trained person administer basic life support (Cardio-Pulmonary Resuscitation/Automatic External Defibrillator) and CALL FOR EMERGENCY SERVICES IMMEDIATELY.

Skin Contact: Immediately flush contaminated areas with water. Remove contaminated clothing, jewelry, and shoes immediately. Wash contaminated areas with soap and water. Thoroughly clean and dry contaminated clothing before reuse. Discard contaminated leather goods. GET MEDICAL ATTENTION IMMEDIATELY.

4. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with a directed stream of water for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissues. Washing eyes within several seconds is essential to achieve maximum effectiveness. GET MEDICAL ATTENTION IMMEDIATELY.

Ingestion: Never give anything by mouth to an unconscious or convulsive person. If swallowed, do not induce vomiting. Give large amounts of water. If vomiting occurs spontaneously, keep airway clear. Give more water when vomiting stops. GET MEDICAL ATTENTION IMMEDIATELY.

Notes to Physician: The absence of visible signs or symptoms of burns does NOT reliably exclude the presence of actual tissue damage. Probable mucosal damage may contraindicate the use of gastric lavage.

5. FIRE-FIGHTING MEASURES

Fire Hazard: Negligible fire hazard.

Extinguishing Media: Use media appropriate for surrounding fire

Fire Fighting: Move container from fire area if it can be done without risk. Cool containers with water. Avoid contact with skin.

Sensitivity to Mechanical Impact: Not sensitive.

Sensitivity to Static Discharge: Not sensitive.

Flash point: Not flammable

6. ACCIDENTAL RELEASE MEASURES

Occupational Release:
Wear appropriate personal protective equipment recommended in Section 8 of the MSDS. Completely contain spilled material with dikes, sandbags, etc. Shovel dry material into suitable container. Liquid material may be removed with a vacuum truck. Remaining material may be diluted with water and neutralized with dilute acid, then absorbed and collected. Flush spill area with water, if appropriate. Keep product and flush water out of water supplies and sewers. This material is alkaline and may raise the pH of surface waters with low buffering capacity. Releases should be reported, if required, to appropriate agencies.

7. HANDLING AND STORAGE

Storage Conditions: Store and handle in accordance with all current regulations and standards. Keep container tightly closed and properly labeled. Do not store in aluminum container or use aluminum fittings or transfer lines, as flammable hydrogen gas may be generated. Keep separated from incompatible substances.

7. HANDLING AND STORAGE

Handling Procedures: Avoid breathing vapor or mist. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. When mixing, slowly add to water to minimize heat generation and spattering.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

OSHA Regulatory Exposure limit(s):

Hazardous Component	CAS - No.	OSHA Final PEL TWA	OSHA Final PEL STEL	OSHA Final PEL Ceiling
Sodium hydroxide	1310-73-2	2 mg/m^3	-----	-----

Non-Regulatory Exposure Limit(s):
The Non-Regulatory OSHA limits shown in the table are the Vacated 1989 PEL's (vacated by 58 FR 35338, June 30, 1993).

Hazardous Component	CAS - No.	ACGIH TWA	ACGIH STEL	ACGIH Ceiling	OSHA TWA (Vacated)	OSHA STEL (Vacated)	OSHA Ceiling (Vacated)
Sodium hydroxide	1310-73-2	-----	-----	2 mg/m^3	-----	-----	2 mg/m^3

ENGINEERING CONTROLS: Provide local exhaust ventilation where dust or mist may be generated. Ensure compliance with applicable exposure limits.

PERSONAL PROTECTIVE EQUIPMENT:

Eye Protection: Wear chemical safety goggles with a faceshield to protect against eye and skin contact when appropriate. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin and Body Protection: Wear chemical resistant clothing and rubber boots when potential for contact with the material exists. Contaminated clothing should be removed, then discarded or laundered.

Hand Protection: Wear appropriate chemical resistant gloves

Protective Material Types: Natural rubber, Neoprene, Nitrile

Hazardous Component	Immediately Dangerous to Life/ Health (IDLH)
Sodium hydroxide	10 mg/m^3 IDLH

Respiratory Protection: A NIOSH approved respirator with N95 (dust, fume, mist) cartridges may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits, or when symptoms have been observed that are indicative of overexposure. If eye irritation occurs, a full face style mask should be used. A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever workplace conditions warrant use of a respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Appearance:	Clear to opaque
Color:	Colorless to slightly colored
Odor:	Odorless
Boiling Point/Range:	230 – 291 F (110 – 144 C)

9. PHYSICAL AND CHEMICAL PROPERTIES

Freezing Point/Range:	-26 to 59 F (-32 to 15 C)
Vapor Pressure:	13 - 135 mmHg @ 60 C
Vapor Density (air=1):	No data available
Specific Gravity (water=1):	1.11 – 1.53 @ 15.6 C
Water Solubility:	100%
pH:	14.0 (7.5% solution)
Volatility:	No data available
Evaporation Rate (ether=1):	No data available
Partition Coefficient (n-octanol/water):	No data available

10. STABILITY AND REACTIVITY

Reactivity/ Stability: Stable at normal temperatures and pressures.

Conditions to Avoid: Mixing with water, acid or incompatible materials may cause splattering and release of large amounts of heat. Will react with some metals forming flammable hydrogen gas. Carbon monoxide gas may form upon contact with reducing sugars, food and beverage products in enclosed spaces.

Incompatibilities/ Materials to Avoid: Acids, Halogenated compounds, Prolonged contact with aluminum, brass, bronze, copper, lead, tin, zinc or other alkali sensitive metals or alloys

Hazardous Decomposition Products: Toxic fumes of sodium oxide

Hazardous Polymerization: Will not occur

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA:

Hazardous Component	LD50 Oral	LC50 Inhalation	LD50 Dermal
Sodium hydroxide	Not listed	Not listed	1350 mg/kg (Rabbit)
Sodium chloride (NaCl)	3 g/kg (Rat)	42 g/m^3 (1 hr-Rat)	10 g/kg (Rabbit)

TOXICITY:
The severity of the tissue damage is a function of its concentration, the length of tissue contact time, and local tissue conditions. After exposure there may be a time delay before irritation and other effects occur. This material is a strong irritant and is corrosive to the skin, eyes, and mucous membranes. This material may cause severe burns and permanent damage to any tissue with which it comes into contact. Inhalation will cause severe irritation, possible burns with pulmonary edema, which may lead to pneumonitis. Skin contact with this material may cause severe irritation and corrosion of tissue. Repeated exposure may cause dermatitis. Eye contact can cause severe irritation, corrosion with possible corneal damage and blindness. Ingestion may cause irritation, corrosion/ulceration, nausea, and vomiting.

CARCINOGENICITY: This product is not classified as a carcinogen by NTP, IARC or OSHA.

12. ECOLOGICAL INFORMATION

AQUATIC TOXICITY: This material has exhibited moderate toxicity to aquatic organisms. Data provided are for sodium hydroxide.

Freshwater Fish Data:
LC50 brook trout: 25 ppm/24 hr
LC50 king salmon: 48 ppm
Invertebrate Toxicity Data:
EC50 daphnia magna: 100 ppm
EC50 shrimp: 33 – 100 ppm/48 hr
EC50 cockle: 330 – 1000 ppm/48 hr

BIODEGRADATION: This material is inorganic and not subject to biodegradation.

PERSISTENCE: This material is alkaline and may raise the pH of surface waters with low buffering capacity. This material is believed to exist in the disassociated state in the environment.

BIOCONCENTRATION: This material is not expected to bioconcentrate in organisms.

ADDITIONAL ECOLOGICAL INFORMATION: This material has exhibited slight toxicity to terrestrial organisms.

13. DISPOSAL CONSIDERATIONS

Reuse or reprocess, if possible. Dispose in accordance with all applicable regulations. May be subject to disposal regulations: U.S. EPA 40 CFR 261. Hazardous Waste Number(s): D002

14. TRANSPORT INFORMATION

U.S.DOT 49 CFR 172.101:

PROPER SHIPPING NAME:	Sodium Hydroxide Solution
DOT UN NUMBER:	UN1824
HAZARD CLASS/ DIVISION:	8
PACKING GROUP:	II
LABELING REQUIREMENTS:	8
DOT RQ (lbs):	RQ 1000 lbs. (Sodium Hydroxide)

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:

SHIPPING NAME:	Sodium hydroxide solution
UN NUMBER:	UN1824
CLASS:	8
PACKING/RISK GROUP:	II

CAUSTIC SODA LIQUID (ALL GRADES)

MSDS No.: M32415 Rev. Date: 05/29/2009 Rev. Num.:08

15. REGULATORY INFORMATION

U.S. REGULATIONS

- **OSHA REGULATORY STATUS:**
  This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200) (US).

- **CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):**
  If a release is reportable under CERCLA section 103, notify the state emergency response commission and local emergency planning committee. In addition, notify the National Response Center at (800) 424-8802 or (202) 426-2675.

Hazardous Component	CERCLA Reportable Quantities:
Sodium hydroxide	1000 lb (final RQ)

- **EPCRA EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30):** No components are listed.

- **EPCRA SECTIONS 311/312 HAZARD CATEGORIES (40 CFR 370.21):**
  Acute Health Hazard

- **EPCRA SECTION 313 (40 CFR 372.65):** No components are listed.

- **OSHA PROCESS SAFETY (29 CFR 1910.119):** Not regulated

NATIONAL INVENTORY STATUS

- **U.S. INVENTORY STATUS (TSCA):** All components are listed or exempt

- **TSCA 12(b):** This product is not subject to export notification

CANADIAN DOMESTIC SUBSTANCE LIST (DSL/NDSL): All components are listed.

STATE REGULATIONS

California Proposition 65: This product is not listed, but it may contain contaminants known to the State of California to cause cancer or reproductive toxicity as listed under Proposition 65 State Drinking Water and Toxic Enforcement Act. For additional information, contact OxyChem Customer Service.

	Hazardous Component	Sodium hydroxide
	California Proposition 65 Cancer WARNING:	Not Listed
	California Proposition 65 CRT List - Male reproductive toxin:	Not Listed
	California Proposition 65 CRT List - Female reproductive toxin:	Not Listed
	Massachusetts Right to Know Hazardous Substance List	Listed
	New Jersey Right to Know Hazardous Substance List	Listed
	New Jersey Special Health Hazards Substance List	Listed
	Pennsylvania Right to Know Hazardous Substance List	Listed
	Pennsylvania Right to Know Environmental Hazard List	Listed
	Rhode Island Right to Know Hazardous Substance List	Listed

CANADIAN REGULATIONS:
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

WHMIS Classification:	E

16. OTHER INFORMATION

Prepared by: OxyChem Corporate HESS - Health Risk Management

HMIS: (SCALE 0-4) (Rated using National Paint & Coatings Association HMIS: Rating Instructions, 2nd Edition)
Health: 3 **Flammability:** 0 **Reactivity:** 1
NFPA 704 - Hazard Identification Ratings (SCALE 0-4)
Health: 3 **Flammability:** 0 **Reactivity:** 1

Reason for Revision:
1. Removed Chronic Toxicity: SEE SECTION 11

IMPORTANT:
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Standard 29 CFR 1910.1200 requires that information be provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, material safety data sheets, training and access to written records. We request that you, and it is your legal duty to, make all information in this Material Safety Data Sheet available to your employees.