



Tennessee Valley Authority, Post Office Box 2000, Soddy-Daisy, Tennessee 37379-2000

February 20, 2007

Ms. Pamala Myers
Permit Section
Tennessee Department of Environment & Conservation
Division of Water Pollution Control
6th Floor, L & C Annex
401 Church Street
Nashville, Tennessee 37243-1534

Dear Ms. Myers,

SEQUOYAH NUCLEAR PLANT (SQN) - NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT NO. TN0026450 – ADDITION OF SODIUM HYPOCHLORITE (LIQUID BLEACH) TO THE BIOCIDES/CORROSION TREATMENT PLAN

Sequoyah Nuclear Plant (SQN) plans to add Sodium Hypochlorite (liquid bleach) to our Biocide/Corrosion Treatment Plan. This addition is considered a significant change by SQN due to the fact that Sodium Hypochlorite would be injected continuously into the ERCW and RCW systems. All relevant information (frequency of discharge, active ingredients, discharge concentration, maximum daily usage, MSDS, product bulletin, etc.) on Sodium Hypochlorite is attached. Since, SQN considers this a significant change to the B/CTP SQN is requesting approval prior to our initiation. SQN would like to begin the modifications to existing feed systems to apply this treatment March 30, 2007, so we are requesting approval by March 23, 2007.

If you need additional information or have comments or questions, please contact Ann Hurt (423-843-6714) or myself (423-843-6700).

I certify under penalty of law that this document and all of its attachments were prepared under my direction or my supervisor in accordance with a system designed to assure qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

Stephanie A. Howard
Principal Environmental Engineer
Signatory Authority for
J. Randy Douet
Site Vice President
Sequoyah Nuclear Plant

C001

Enclosures
cc (Enclosures):

Mr. Edward M. Polk, Jr., P.E.
Manager, Permit Section
Tennessee Department of
Environment & Conservation
Division of Water Pollution Control
6th Floor, L & C Annex
401 Church Street
Nashville, Tennessee 37243-1534

Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Chattanooga Environmental Assistance Center
Division of Water Pollution Control
State Office Building, Suite 550
540 McCallie Avenue
Chattanooga, Tennessee 37402-2013

Raw Water Chemical Additives at Sequoyah Nuclear Plant

PRODUCT	PURPOSE	FREQUENCY OF DISCHARGE	ACTIVE INGREDIENTS	REPRESENTATIVE AQUATIC TOXICITY /DESCRIPTOR ¹	DISCHARGE CONCENTRATION ^{2,3}
				(ppm active ingredients)	(ppm active ingredients)
Sodium Hypochlorite (Liquid Bleach)	Oxidizing Biocide (Chlorination)	Continuous	Sodium Hypochlorite	24-h LC ₅₀ =0.005 (C. dubia) 48-h LC ₅₀ =0.032 (D. magna) 96-h LC ₅₀ =0.080 (P. promelas)	0.10 Chlorine (Total Residual)

1. Toxicity data from EPA ECOTOX database.
2. The maximum discharge concentration is indicated EXCEPT where noted. Discharge concentrations are achieved through dilution.
3. Based on annual biological assessments and periodic toxicity testing, permit limitations of 0.10 total residual chlorine have been sufficient to ensure that chronic and acute toxicity concerns are being addressed for oxidizing biocides. It is widely accepted that WET methods are not reliable for assessing toxicity elicited by chlorine since residual chlorine degrades rapidly during sample holding periods and under ambient laboratory testing conditions. The toxicity values presented here were derived from tests that measured chlorine toxicity in freshly-prepared solutions in the laboratory and are therefore overly-conservative.



Raw Water Chemical Application Guide¹

Product	Injection Points	Max Feed (ppm)	In Plant Target (ppm)	Frequency of Application	Average Duration of Application.	EstimatedMax Days per Year	Maximum Daily Usage (lbs/day) ²
Sodium Hypochlorite (Liquid Bleach)	ERCW Train A & B and RCW	1.2	1.2	Daily	24 hours per day	365	1140

1. Concentrations and usage are expressed for the active ingredient(s) shown in the previous table of this plan.
2. Maximum Daily Usage provides an indication of loading in the receiving stream. It is the maximum amount of active ingredients for the worst case scenario of flow and feed concentration being proposed plus a 10% margin of error. SQN will request a change to this plan should an increase in maximum daily usage becomes necessary for the continued safe operation of the plant.

Calculations Showing Worst Case Scenario (final values rounded to the nearest 5 lbs)

Sodium Hypochlorite (Liquid Bleach)	1.2mg	1 lb	71,800 gal	3.785 L	60 min	24 hr	1.10	= 1140 lbs/day Sodium Hypochlorite
ppm active	L	454,000 mg	min	gal	1 hr	day		

Sodium Hypochlorite (Liquid Bleach)	
<p>The bleach solution is 12.5% active NaOCl producing 10.2% available chlorine. SQN proposes to utilize Sodium Hypochlorite for the routine continuous treatment of the plant's ERCW and RCW piping. Effluents will be dechlorinated should in-plant targets threaten discharge limitations for chlorine. When dechlorinating, confirmatory samples will be collected during each day of treatment and analyzed according to NPDES permit requirements to ensure discharge limitations are met. Total Residual Chlorine is monitored 5 days per week at Outfall 101 in accordance with NPDES permit requirements to ensure discharge limitations are met.</p>	
Document	Summary
 SODIUM HYPOCHLORITE MSD	Material Safety Data Sheet.
 NaOCl Product Bulletin.pdf	Product Bulletin

**MATERIAL SAFETY DATA SHEET**

PRODUCT

SODIUM HYPOCHLORITE

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : SODIUM HYPOCHLORITE

APPLICATION : INDUSTRIAL WATER TREATMENT

COMPANY IDENTIFICATION :
Nalco Company
1601 W. Diehl Road
Naperville, Illinois
60563-1198

EMERGENCY TELEPHONE NUMBER(S) : (800) 424-9300 (24 Hours) CHEMTREC

NFPA 704M/HMIS RATING

HEALTH : 3/3 FLAMMABILITY : 0/0 INSTABILITY : 0/0 OTHER : OXY

0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme

2. COMPOSITION/INFORMATION ON INGREDIENTS

Our hazard evaluation has identified the following chemical substance(s) as hazardous. Consult Section 15 for the nature of the hazard(s).

Hazardous Substance(s)	CAS NO	% (w/w)
Sodium Hypochlorite	7681-52-9	10.0 - 30.0

3. HAZARDS IDENTIFICATION****EMERGENCY OVERVIEW******DANGER**

Corrosive. May cause tissue damage. May cause sensitization by skin contact.

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Keep container tightly closed and in a well-ventilated place. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water.

Wear a face shield. Wear chemical resistant apron, chemical splash goggles, impervious gloves and boots.

May evolve chlorine under fire conditions. Hypochlorous acid HCl

PRIMARY ROUTES OF EXPOSURE :

Eye, Skin, Inhalation

HUMAN HEALTH HAZARDS - ACUTE :

EYE CONTACT :

Corrosive. Will cause eye burns and permanent tissue damage.

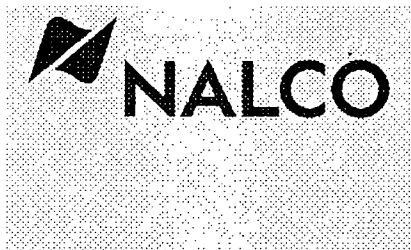
SKIN CONTACT :

May cause severe irritation or tissue damage depending on the length of exposure and the type of first aid administered. Repeated or prolonged contact may cause skin sensitization.

Nalco Company 1601 W. Diehl Road • Naperville, Illinois 60563-1198

(630)305-1000

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INGESTION :

Corrosive; causes chemical burns to the mouth, throat and stomach. May cause nausea and vomiting. May cause diarrhea.

INHALATION :

Corrosive to respiratory system.

SYMPTOMS OF EXPOSURE :

Acute :

A review of available data does not identify any symptoms from exposure not previously mentioned.

Chronic :

A review of available data does not identify any symptoms from exposure not previously mentioned.

AGGRAVATION OF EXISTING CONDITIONS :

A review of available data does not identify any worsening of existing conditions.

4. FIRST AID MEASURES

EYE CONTACT :

PROMPT ACTION IS ESSENTIAL IN CASE OF CONTACT. Immediately flush eye with water for at least 15 minutes while holding eyelids open. Get immediate medical attention.

SKIN CONTACT :

Immediately flush with plenty of water for at least 15 minutes. For a large splash, flood body under a shower. Remove contaminated clothing. Wash off affected area immediately with plenty of water. Get immediate medical attention. Contaminated clothing, shoes, and leather goods must be discarded or cleaned before re-use.

INGESTION :

DO NOT INDUCE VOMITING. If conscious, washout mouth and give water to drink. Get immediate medical attention.

INHALATION :

Remove to fresh air, treat symptomatically. Get medical attention.

NOTE TO PHYSICIAN :

Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression and convulsions may be needed.

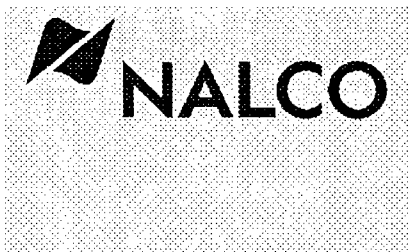
5. FIRE FIGHTING MEASURES

FLASH POINT : Not flammable

FLASH POINT : None

EXTINGUISHING MEDIA :

Not expected to burn. Use extinguishing media appropriate for surrounding fire.



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FIRE AND EXPLOSION HAZARD :

May evolve chlorine under fire conditions. Hypochlorous acid HCl

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS :

Restrict access to area as appropriate until clean-up operations are complete. Ensure clean-up is conducted by trained personnel only. Ventilate spill area if possible. Do not touch spilled material. Stop or reduce any leaks if it is safe to do so. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection).

METHODS FOR CLEANING UP :

SMALL SPILLS: Flush to drain or sewer with excess water. **LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Wash site of spillage thoroughly with water. Contact an approved waste hauler for disposal of contaminated recovered material.

ENVIRONMENTAL PRECAUTIONS :

Do not contaminate surface water.

7. HANDLING AND STORAGE

HANDLING :

Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Avoid generating aerosols and mists. Do not mix with acids. Keep the containers closed when not in use. Have emergency equipment (for fires, spills, leaks, etc.) readily available.

STORAGE CONDITIONS :

Store in a cool well ventilated area away from direct sunlight. Store the containers tightly closed. Store separately from acids. Store in suitable labelled containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS :

ACGIH/TLV :

Substance(s)

Chlorine

TWA: 0.5 ppm , 1.5 mg/m3

STEL: 1 ppm , 2.9 mg/m3

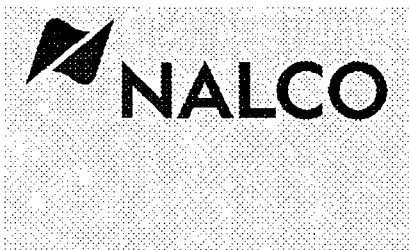
OSHA/PEL :

Substance(s)

Chlorine

TWA: 0.5 ppm , 1.5 mg/m3

STEL: 1 ppm , 3 mg/m3



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ENGINEERING MEASURES :

General ventilation is recommended. Use local exhaust ventilation if necessary to control airborne mist and vapor.

RESPIRATORY PROTECTION :

If significant mists, vapors or aerosols are generated an approved respirator is recommended. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

HAND PROTECTION :

Neoprene gloves, Nitrile gloves, Butyl gloves

SKIN PROTECTION :

Wear chemical resistant apron, chemical splash goggles, impervious gloves and boots. A full slicker suit is recommended if gross exposure is possible.

EYE PROTECTION :

Wear a face shield with chemical splash goggles.

HYGIENE RECOMMENDATIONS :

Eye wash station and safety shower are necessary. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

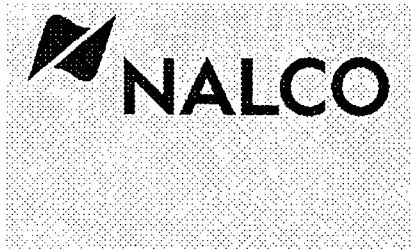
PHYSICAL STATE	Liquid
APPEARANCE	Clear Yellow
ODOR	Chlorine
SPECIFIC GRAVITY	1.168 - 1.268 @ 77 °F / 25 °C
SOLUBILITY IN WATER	Complete
pH (100 %)	11.3 - 13.3
FREEZING POINT	10 °C
BOILING POINT	Decomposes
VAPOR PRESSURE	Same as water
VAPOR DENSITY	1.3 (Air = 1)

Note: These physical properties are typical values for this product and are subject to change.

10. STABILITY AND REACTIVITY

STABILITY :

Decomposes slowly.



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HAZARDOUS POLYMERIZATION :
Hazardous polymerization will not occur.

CONDITIONS TO AVOID :
Direct sunlight Sodium hypochlorite releases chlorine when heated above 95 degrees F. If this should occur, the drum should be properly vented. Protective equipment should be utilized to prevent eye and skin contact or exposures above the regulated level for chlorine gas.
Keep at temperature not exceeding 40 °C

MATERIALS TO AVOID :
Contact with strong acids (e.g. sulfuric, phosphoric, nitric, hydrochloric, chromic, sulfonic) may generate heat, splattering or boiling and toxic vapors. Amines Organic materials and reducing agents Metals

HAZARDOUS DECOMPOSITION PRODUCTS :
Under acidic conditions: Chlorine gas, Hypochlorous acid, HCl

11. TOXICOLOGICAL INFORMATION

No toxicity studies have been conducted on this product.

ACUTE ORAL TOXICITY :
Species LD50 Test Descriptor
Rat 5,000 mg/kg Similar Product
Rating : Non-Hazardous

CARCINOGENICITY :
None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL EFFECTS :

The following results are for the product.

ACUTE FISH RESULTS :

Species	Exposure	LC50	Test Descriptor
Rainbow Trout	96 hrs	1.94 mg/l	Product
Bluegill Sunfish	96 hrs	5.3 mg/l	Product

Rating : Toxic

ACUTE INVERTEBRATE RESULTS :

Species	Exposure	LC50	EC50	Test Descriptor
Daphnia magna	48 hrs	1.57 mg/l		Product

Rating : Toxic

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If released into the environment, see CERCLA/SUPERFUND in Section 15.

13. DISPOSAL CONSIDERATIONS

If this product becomes a waste, it could meet the criteria of a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Before disposal, it should be determined if the waste meets the criteria of a hazardous waste.

Hazardous Waste: D002

Hazardous wastes must be transported by a licensed hazardous waste transporter and disposed of or treated in a properly licensed hazardous waste treatment, storage, disposal or recycling facility. Consult local, state, and federal regulations for specific requirements.

14. TRANSPORT INFORMATION

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are as follows.

LAND TRANSPORT :

Proper Shipping Name :	HYPOCHLORITE SOLUTION
Technical Name(s) :	
UN/ID No :	UN 1791
Hazard Class - Primary :	8
Packing Group :	II
Flash Point :	Not flammable None
DOT Reportable Quantity (per package) :	800 lbs
DOT RQ Component :	SODIUM HYPOCHLORITE

AIR TRANSPORT (ICAO/IATA) :

Proper Shipping Name :	HYPOCHLORITE SOLUTION
Technical Name(s) :	
UN/ID No :	UN 1791
Hazard Class - Primary :	8
Packing Group :	II
IATA Cargo Packing Instructions :	821
IATA Cargo Aircraft Limit :	60 L (Max net quantity per package)

MARINE TRANSPORT (IMDG/IMO) :

Proper Shipping Name :	HYPOCHLORITE SOLUTION
Technical Name(s) :	
UN/ID No :	UN 1791



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Hazard Class - Primary : 8
Packing Group : II

15. REGULATORY INFORMATION

NATIONAL REGULATIONS, USA :

OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 :

Based on our hazard evaluation, the following substance(s) in this product is/are hazardous and the reason(s) is/are shown below.

Sodium Hypochlorite : Corrosive, Oxidizer

CERCLA/SUPERFUND, 40 CFR 117, 302 :

This product contains the following Reportable Quantity (RQ) Substance. Also listed is the RQ for the product. If a reportable quantity of product is released, it requires notification to the NATIONAL RESPONSE CENTER, WASHINGTON, D.C. (1-800-424-8802).

<u>RQ Substance</u>	<u>RQ</u>
Sodium Hypochlorite	800 lbs

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312, AND 313 :

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355) :

This product does not contain substances listed in Appendix A and B as an Extremely Hazardous Substance.

SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370) :

Our hazard evaluation has found this product to be hazardous. The product should be reported under the following indicated EPA hazard categories:

- X Immediate (Acute) Health Hazard
- Delayed (Chronic) Health Hazard
- Fire Hazard
- Sudden Release of Pressure Hazard
- Reactive Hazard

Under SARA 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are: 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372) :

This product does not contain substances on the List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA) :

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)



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FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR 116.4 / formerly Sec. 311 :

This product contains the following substances listed in the regulation:

Substance(s)	Citations
• Sodium Hypochlorite	Sec. 311

CLEAN AIR ACT, Sec. 111 (40 CFR 60, Volatile Organic Compounds), Sec. 112 (40 CFR 61, Hazardous Air Pollutants), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :

None of the substances are specifically listed in the regulation.

CALIFORNIA PROPOSITION 65 :

This product does not contain substances which require warning under California Proposition 65.

MICHIGAN CRITICAL MATERIALS :

This product contains the following substances listed in the regulation:

Sodium Hypochlorite

STATE RIGHT TO KNOW LAWS :

This product is a registered biocide and is exempt from State Right to Know Labelling Laws.

NATIONAL REGULATIONS, CANADA :

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) :

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

WHMIS CLASSIFICATION :

E - Corrosive Material

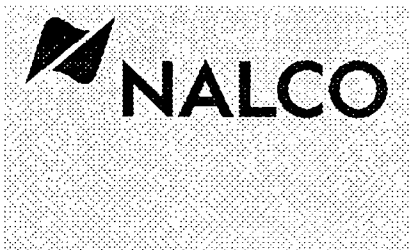
CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) :

The substances in this preparation are listed on the Domestic Substances List (DSL), are exempt, or have been reported in accordance with the New Substances Notification Regulations.

16. OTHER INFORMATION

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

REFERENCES



MATERIAL SAFETY DATA SHEET

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(800) 424-9300 (24 Hours) CHEMTREC

Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, OH., (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Title 29 Code of Federal Regulations, Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA), (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Ariel Insight# (An integrated guide to industrial chemicals covered under major regulatory and advisory programs), North American Module, Western European Module, Chemical Inventories Module and the Generics Module (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Prepared By : Product Safety Department

Date issued : 02/28/2004

Version Number : 1.2

Sodium Hypochlorite

Cooling Water Biocide

PRODUCT DESCRIPTION AND APPLICATION

SODIUM HYPOCHLORITE is an aqueous 12.5% solution of sodium hypochlorite. It is one alternative to gaseous chlorine, intended for use in recirculating and once-through cooling water systems. It can be used alone or in conjunction with NALCO's ACTI-BROM or chlorine stabilizer technology. **SODIUM HYPOCHLORITE** represents a cost-effective way to eliminate gaseous chlorine. **SODIUM HYPOCHLORITE** is not potably approved.

PHYSICAL & CHEMICAL PROPERTIES

These properties are typical. Refer to the Material Safety Data Sheet (MSDS) for most current data.

Form	Liquid
Appearance	Yellow Green
Odor	Chlorine
Density	10.1 lb/gal (1.2 kg/l)
Specific Gravity	1.21
pH (100%)	12.5-13.5
Freeze Point	-24 °C (-11° F)
Viscosity @ 23°C (73°F)	2.5 cp
Flash Point:	None

ACTIVE CONSTITUENTS

Active	Function
Sodium hypochlorite	Biocide

REGULATORY APPROVALS

SODIUM HYPOCHLORITE must be applied according to appropriate national and local regulations. As with all biocides applied in the United States, **SODIUM HYPOCHLORITE** is regulated by the U.S. EPA under The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). It is a violation of federal law to use this product or any biocide in a manner inconsistent with its product label.

MATERIALS OF COMPATIBILITY

Compatible

EPDM
Buna-N
Hypalon
Neoprene
Polyethylene
Titanium
Vinyl
PVC
Teflon
Viton

Not Compatible

Aluminum
Brass
Carbon Steel
Nickel
Polypropylene
Polyurethane
Stainless Steel 304
Stainless Steel 316

DOSAGE AND FEEDING

DIRECTIONS FOR USE IN ALL REGISTERED APPLICATIONS

For the control of bacteria, algae, and fungi, add this sodium hypochlorite solution to the tower basin, distribution box or some other point to ensure uniform mixing. Doses provided below should be considered starting points. It may be necessary to increase the dosage if measured halogen residuals are lower than those allowed by the product label.

A. SLUG FEED METHOD

Initial Dose: When the system is noticeably fouled, add appropriate amount of **SODIUM HYPOCHLORITE** per 10,000 gallons of water in the system to obtain from 5 to 10 ppm available chlorine. Repeat until control is achieved. Badly fouled systems must be cleaned before treatment is begun.

Subsequent Dose: When microbial control is evident, add appropriate amount of **SODIUM HYPOCHLORITE** per 10,000 gallons of water in the system daily, or as needed to maintain control and keep the chlorine residual at 1 ppm.

B. INTERMITTENT FEED METHOD

Initial Dose: When the system is noticeably fouled, add appropriate amount of **SODIUM HYPOCHLORITE** per 10,000 gallons of water in the system to obtain from 5 to 10 ppm available chlorine. Apply half (or 1/3, 1/4, or 1/5) of this initial dose when half (or 1/3, 1/4, or 1/5) of the water in the system has been lost by blowdown. Badly fouled systems must be cleaned before treatment is begun.

Subsequent Dose: When microbial control is evident, add appropriate amount of **SODIUM HYPOCHLORITE** per 10,000 gallons of water in the system to obtain a 1.0 ppm residual. Apply half (or 1/3, 1/4, or 1/5) of this initial dose when half (or 1/3, 1/4, or 1/5) of the water in the system has been lost by blowdown.

C. CONTINUOUS FEED METHOD

Initial Dose: When the system is noticeably fouled, add appropriate amount of **SODIUM HYPOCHLORITE** per 10,000 gallons of water in the system to obtain from 5 to 10 ppm available chlorine. Badly fouled systems must be cleaned before treatment is begun.

Subsequent Dose: Maintain this treatment level by starting a continuous feed of 1 ounce of **SODIUM HYPOCHLORITE** per 1,000 gallons of water lost by blowdown to maintain a 1.0 ppm residual.

ENVIRONMENTAL AND TOXICITY DATA

Biological Oxygen Demand (5-day BOD ₅)	0
Chemical Oxygen Demand (COD)	0
Total Organic Carbon (TOC)	0

Refer to the product's Material Safety Data Sheet SECTIONS 11 and 12, for all aquatic and mammalian toxicity information.

SAFETY AND HANDLING

Please read the Material Safety Data Sheet before using this product.

Handle **SODIUM HYPOCHLORITE** like any strong oxidizer. Avoid contact with acids, organics, amines and reducing agents. Also, do not mix with other oxidizers, including bleach.

STORAGE

Store the containers tightly closed. Store separately from acids. Store in suitable labelled containers. Store in a cool, well-ventilated area away from direct sunlight.

REMARKS

If you need assistance or more information on this product, please call your nearest Nalco Representative. For more news about Nalco Company, visit our website at www.nalco.com.

For **Medical and Transportation Emergencies** involving Nalco products, please see the Material Safety Data Sheet for the phone number.

ADDITIONAL INFORMATION

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