OXIQUIM request the client or who receives the present Material Safety Data Sheet to read carefully so that he knows and understand the dangers associated with the product. It is convenient that the reader consults reference works or experts in the product in order to understand and to use the information contained in the present MSDS.

Assure the correct manipulation of the substance, you should:

1.- Communicate yours employees, agents and contractors or any other person that can use this material, the information contained in this as well as any other relative information to the risks and measures of security.
2.- Give a copy to each one of their clients for this product, and
3.- Provide this same information to each one of their clients for this product, besides requesting to their clients that notify to their employees, clients and other users of the product with this information.

MATERIAL SAFETY DATA SHEET
Fecha de revisión: March 2007

Section 1 : Product and manufacturer identification

<table>
<thead>
<tr>
<th>Product name</th>
<th>Sodium Sulfhydrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product code</td>
<td>-------</td>
</tr>
<tr>
<td>Provider</td>
<td>OXIQUIM S.A.</td>
</tr>
<tr>
<td></td>
<td>Limache 3117, Viña del Mar, Chile.</td>
</tr>
<tr>
<td></td>
<td>Phone: 32-2468300 Fax: 32-2468348</td>
</tr>
<tr>
<td>Emergency Phones</td>
<td>Quilicura: 02-4788111</td>
</tr>
<tr>
<td></td>
<td>Coronel: 041-2866523</td>
</tr>
<tr>
<td></td>
<td>Celular emergencia 1: 97995292</td>
</tr>
<tr>
<td></td>
<td>Celular emergencia 2: 97995285</td>
</tr>
<tr>
<td></td>
<td>CITUC (Emergencias químicas): 2-2473600</td>
</tr>
</tbody>
</table>

Section 2: Composition/Ingredients

<table>
<thead>
<tr>
<th>Chemical name (IUPAC)</th>
<th>Sodium Sulfhydrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formula</td>
<td>NaSH</td>
</tr>
<tr>
<td>Synonyms</td>
<td>Sodium Bisulfide; Sodium Hydrogen Sulfide; Sodium Hydrosulfide; Sodium Mercaptan; Sodium Mercaptide; Sodium Sulfhydrate.</td>
</tr>
<tr>
<td>Chemical family</td>
<td>Sulfur Compounds</td>
</tr>
<tr>
<td>CAS Nr.</td>
<td>16721 - 80 -5</td>
</tr>
<tr>
<td>UN Nr.</td>
<td>2949</td>
</tr>
</tbody>
</table>
Section 3: Risk Identification

Label: CORROSIVE/TOXIC

Hazard classification of the chemical product:

Health: 3  Flammability: 0  Reactivity: 0

a) Health hazards: TOXIC; inhalation, ingestion, or skin contact with material may cause severe injury or death. Contact with molten substance may cause severe burns to skin and eyes. Avoid any skin contact. Effects of contact or inhalation may be delayed. Fire may produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution. (DOT, 1996)

Effects of an acute overexposure (only once):
Inhalation: Product solution and vapours contain highly toxic hydrogen sulfide gas. Exposure to this gas causes headaches, nausea, dizziness and vomiting. Continued exposure can lead to loss of consciousness and death.
Skin contact: Contact with the skin cause skin irritation or burning sensation. Prolonged contact will result in corrosion of the skin. Absorption through the skin is unlikely to occur.
Eye contact: Contact with the eyes will cause marked eye irritation and possibly severe corneal damage.
Ingestion: Ingestion will result in severe burning and corrosion of mouth, throat and the gastrointestinal tract. If the ingested material contacts stomach acid, highly toxic hydrogen sulfide gas will be evolved.

Effects of a chronic overexposure (long range):
Medical conditions that are going to be aggravated on exposure to the product:
b) Risks for the environment: it is dangerous for the aquatic life if enter in them in high concentrations.
c) Special hazards of the product: The product should not enter in contact with acids because the liberation sulfidric acid
Section 4: First Aid Measures

In case of accidental contact with the product, take the following measures:

Inhalation: Remove victim from contaminated atmosphere. If breathing is laboured, administer oxygen. If breathing has ceased, clear airway and start mouth to mouth resuscitation. If heart has stopped beating, external heart massage should be applied. Obtain immediate medical attention.

Skin contact: Immediately flush with large quantities of water. Remove contaminated clothing under a safety shower. Obtain immediate medical attention.

Eye contact: Immediately flush with large quantities of water for 15 minutes. Hold eyelids apart during irrigation to ensure thorough flushing of the entire area of the eye. Obtain immediate medical attention.

Ingestion: DO NOT INDUCE VOMITING. If victim is conscious, immediately give 2 to 4 glasses of water. If vomiting does occur, repeat fluid administration. Obtain immediate medical attention.

Notes for the medical doctor: Try the patient in accordance with the symptoms clinic.

Section 5: Fire fighting measures

Extinction agents: Water spray or foam or as appropriate for combustibles involved in fire.

Special procedures for fighting the fire: Solution is non-flammable. However if these solutions are exposed to heat or acids, hydrogen sulfide will be released and may form explosive mixtures with air. Keep containers/storage vessels in fire area cooled with water spray. Heating may cause the release of hydrogen sulfide vapours.

Personal protection equipment for fighting the fire: Because of the possible presence of toxic gases and the corrosive nature of the product, wear self contained breathing apparatus, pressure demand, MSHA/NIOSH (approved or equivalent) and full protective gear.
Section 6: Measures to control spill or leaks

**Small Releases:** Confine and absorb small releases on sand, earth or other inert absorbent. Oxidise residual reactive sulfides with a weak (3-5%) hydrogen peroxide solution.

**Large Releases:** Wear proper protective equipment. Confine area to qualified personnel. Shut off release if safe to do so. Dike spill area to prevent run-off into sewers, drains (potential explosive mixtures of hydrogen sulfide in confined spaces) or surface waterways (potential aquatic toxicity). Recover as much of the solution as possible. Treat remaining material as a small release.

**Emergency measures to take if there is a spill of the material:** Evacuate the area immediately and ventilate to the maximum. Make dike around the area in order to contain the spill. Recover, inside the possible, the spilled material. The remains should be mixed with absorbent material, and placed in covered.

**Personal protection equipment for controlling the emergency:** Enter area personnel equipped with autonomous breathing apparatus (SCBA), and appropriate protection for eyes and skin.

**Precautions to take to avoid damage to the environment:** Make dike around the spill in order to contain it. Avoid the entrance of the product in sources of water.

**Cleaning methods:** The last remains of the product could be washed with water. This product is soluble in water.

**Waste disposal method:** The drums with remains of product should lead to authorized spillway.

Section 7: Handling and storage

**Technical Recommendations:** Store in close containers

**Precautions to take:** Wear proper protective equipment. Avoid breathing product vapours. Avoid contact with skin and eyes. Use only in a well ventilated area. Dilute product only in enclosed containers. Wash thoroughly after handling.

**Specific Recommendations about safe handling:** Wear proper protective equipment. Avoid breathing product vapours. Avoid contact with skin and eyes. Use only in a well ventilated area. Dilute product only in enclosed containers. Wash thoroughly after handling.

**Storage conditions:** Store in well ventilated areas. Do not store combustibles in the area of storage vessels. Keep away from any sources of heat or flame. Store tote and smaller containers out of direct sunlight at moderate temperatures (<80 °F (27ºC))

**Recommended and inadequate packing:** Don't store in containers of zinc, aluminum or copper.
Section 8: Control of exposition/environmental protection

Measures to reduce the possibility of exposition: The places of work with NaSH should be provided of very good ventilation, either natural or forced.

Respiratory Protection: If working near open container or storage vessel opening or open tank truck dome cover, wear self-contained breathing apparatus, pressure demand, MSHA/NIOSH (approved or equivalent). Self contained breathing apparatus may be needed for prolonged periods of exposure.

Engineering Controls: Use adequate exhaust ventilation to prevent inhalation of product vapours. Where feasible scrub process or storage vessel vapours with caustic solution. Maintain eyewash/safety shower in areas where chemical is handled.

Control Parameters: OSHA ACGIH

<table>
<thead>
<tr>
<th>Hydrogen Sulfide</th>
<th>TWA STEL</th>
<th>TLV STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20ppm (ceiling)</td>
<td>10ppm (ceiling)</td>
</tr>
</tbody>
</table>

Breathing Protection: use mask of protection with green filters (for ammonia) or yellow (for organic vapors and sour gases).

Protective Gloves: Neoprene rubber gloves

Eye Protection: Chemical goggles and a full face shield. DO NOT WEAR CONTACT LENSES.

Other protective equipment: chemical suit and boots should be worn to prevent contact with the liquid. Wash contaminated clothing prior to re-use. Contaminated leather shoes cannot be cleaned and should be discarded.

Ventilation: should exist in the places of work with NaSH, either natural or forced.

Section 9: Physical and chemical properties

Physical state: Liquid

Appearance and odour: Strong hydrogen sulfide (rotten egg) odour.

Concentration: From 20 up to 42%.

pH: 10.4 - 11.5

Decomposition temperature: Date not available

Flash Point: Not Flammable

Autoignition temperature: don't correspond.

Explosive properties: don't correspond.

Fire and explosion risks: Solution is non-flammable. However if these solutions are exposed to heat or acids, hydrogen sulfide will be released and may form explosive mixtures with air.

Vapor Pressure at 20°C: 17 mm Hg@ 68 °F (20°C)

Vapor Density: (Air = 1.0) 1.17

Density at 20°C: 1,286

Solubility in water and other solvents: Complete
Section 10: Stability and reactivity

Stability: This is a stable material

Conditions to avoid: Avoid the excessive heat.

Incompatibility (materials to avoid): Acids will cause the release of highly toxic hydrogen sulfide. Sodium hydrosulfide is not compatible with copper, zinc, aluminium or their alloys (le bronze, brass, galvanised metals etc.) Corrosive to steel above 150 °F (65.5 °C). These materials of construction should not be used in handling systems or storage containers for this product.

Hazardous decomposition products: Heating this product will evolve hydrogen sulfide. Fire conditions will also cause the production of sulfurdioxide. Hydrogen sulfide (4 - 44%) may form flammable mixtures with air.

Hazardous combustion products: Contact with metals may evolve flammable hydrogen gas.

Hazardous polymerisation: Will not occur

Section 11: Toxicological information

Oral: Data not available
Dermal: Data not available
Teratology: Data not available
Reproduction: Data not available
Mutagenicity: Data not available

Acute Toxicity: Not listed as a carcinogen by NTP, IARC or OSHA.

Chronic or long range toxicity: No evidence available

Local effects: will cause skin irritation or burning sensation

Sensibilisation: Data not available

Section 12: Ecological information

Instability: Data don't exist in this respect.
Persistence/Degradability: Data don't exist in this respect.
Bio-accumulation: Data don't exist in this respect.
Effects on the environment: Dangerous for the aquatic life.
Section 13 : Final disposition of the product

If released to the environment for other than its intended purpose, this product contains some reactive sulfides but not a sufficient quantity to meet the definition of a D003, hazardous waste.

**Elimination of the waste in the product:** you should appeal to take the residuals to an authorized spillway.

**Elimination of contaminated packing/containers:** The packing/containers polluted could burn in authorized facilities.

Section 14 : Transportation information

N Ch 2190, marks : CORROSIVE - TOXIC
NU Nr : 2949

Section 15 : Applicable norms

**Applicable internacional norms :** Class 8 and 6 / 2949
**Applicable chilean norms:** NCh382; NCh 2190; D.S. 298
**Mark on label** : CORROSIVE - TOXIC

Section 16 : Other informations

There aren't.

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JYG/