003 03/29/04 CHLORINE LIQUEFIED GAS

****

PRODUCT IDENTIFICATION

****

PRODUCT NAME: CHLORINE LIQUEFIED GAS

MSDS#: OZ35410

DATE ISSUED: 02/24/04

SUPERSEDES: 05/06/03

ISSUED BY: 008730

MATERIAL SAFETY DATA SHEET

Distributed by:
Univar USA Inc.
6100 Carillon Point
Kirkland, WA 98033
425-889-3400

SUBSTANCE: CHLORINE, LIQUID (PESTICIDE)

SYNONYMS:
Chlorine

PRODUCT USE: water treatment chemical
REVISION DATE: Feb 24 2004

COMPONENT: CHLORINE
CAS NUMBER: 7782-50-5
PERCENTAGE: 99.5-100
NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=1
HMIS RATINGS (SCALE 0-4): HEALTH=3 FLAMMABILITY=0 REACTIVITY=1

EMERGENCY OVERVIEW:

COLOR: amber
PHYSICAL FORM: liquefied gas
ODOR: irritating odor, pungent odor

MAJOR HEALTH HAZARDS: MAY CAUSE BURNS TO THE RESPIRATORY TRACT, SKIN AND EYES. MAY CAUSE CHEMICAL PNEUMONIA. MAY CAUSE PERMANENT EYE DAMAGE. MAY BE LETHAL IN HIGH CONCENTRATIONS.

PHYSICAL HAZARDS:
Strong oxidizer. Hazardous gas under pressure. May react explosively with organic materials.

POTENTIAL HEALTH EFFECTS:

INHALATION:
SHORT TERM EXPOSURE: irritation (possibly severe), chemical burns, pulmonary edema
LONG TERM EXPOSURE: to our knowledge, no effects are known

SKIN CONTACT:
SHORT TERM EXPOSURE: chemical burns, thermal burns
LONG TERM EXPOSURE: dermatitis

EYE CONTACT:
SHORT TERM EXPOSURE: chemical burns
LONG TERM EXPOSURE: visual disturbances

INGESTION:
SHORT TERM EXPOSURE: ingestion of harmful amounts is unlikely
LONG TERM EXPOSURE: ingestion of harmful amounts is unlikely

CARCINOGEN STATUS:
OSHA: No
NTP: No
IARC: No

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 and shoes before reuse. GET MEDICAL ATTENTION IMMEDIATELY.

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:
Not a likely route of exposure.

NOTE TO PHYSICIAN:
Steroid therapy, if given early, has been reported effective in preventing pulmonary edema.

FIRE AND EXPLOSION HAZARDS:
Negligible fire hazard. Oxidizer. May ignite or explode on contact with combustible materials. May react explosively with organic materials.

EXTINGUISHING MEDIA:
Use extinguishing agents appropriate for surrounding fire.

FIRE FIGHTING:
Keep unnecessary people away, isolate hazard area and deny entry. Consider evacuation of personnel located downwind if material is leaking. Move container from fire area if it can be done without risk. Cool non-leaking containers with water. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Wear NIOSH approved positive-pressure self-contained breathing apparatus. Fire fighting gear may not be protective due to the formation of acids with water.

SENSITIVITY TO MECHANICAL IMPACT: Not sensitive
SENSITIVITY TO STATIC DISCHARGE: Not sensitive

FLASH POINT: not flammable

OCCUPATIONAL RELEASE:
Remove sources of ignition. Stop leak if possible without personal risk. Consider evacuation of personnel located downwind if material is leaking. Do not apply water directly to the leak. Reacts with water to form corrosive, acidic solution (hydrochloric acid). Keep out of water supplies and sewers. Releases should be reported, if required, to appropriate agencies. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the

National Response Center at (800) 424-8802 (USA) or (202)426-2675 (USA).

Store and handle in accordance with all current regulations and standards. Keep container tightly closed. Store in a well-ventilated area. Keep away from heat, sparks and flame. Keep separated from incompatible substances. Protect from physical damage.

HANDLING:
Avoid breathing gas. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling.

EXPOSURE LIMITS:
CHLORINE:
1 ppm (3 mg/m3) OSHA ceiling
0.5 ppm (1.5 mg/m3) OSHA TWA (vacated by 58 FR 35338, June 30, 1993)
1 ppm (3 mg/m3) OSHA STEL (vacated by 58 FR 35338, June 30, 1993)
0.5 ppm ACGIH TWA
1 ppm ACGIH STEL
1 ppm (3 mg/m3) MEXICO TWA
3 ppm (9 mg/m3) MEXICO STEL

VENTILATION:
Use closed systems when possible. Provide local exhaust ventilation where gas may be generated. Ensure compliance with applicable exposure limits.

EYE PROTECTION:
Wear chemical safety goggles with a faceshield to protect against skin contact when appropriate. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING:
Wear appropriate chemical resistant clothing.

GLOVES:
Wear chemical resistant, insulated gloves such as Perfect Fit NL-56(TM) or Best 6781R(TM).

PROTECTIVE MATERIAL TYPES:
Perfect Fit NL-56(TM), Best 6781R(TM), Best Nitri Solve 727(TM), Tychem 10000 (TM)

RESPIRATOR:
A NIOSH approved respirator with acid gas cartridge(s) 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. A full facepiece air-purifying respirator may be used in concentrations up to the Immediately Dangerous to Life and Health (IDLH) Concentration of 10 ppm. Supplied air should be used when the level is expected to be above the IDLH concentration, or when there is a potential for uncontrolled release.
A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever workplace conditions warrant use of a respirator.

PHYSICAL STATE:	liquid
COLOR:	amber
PHYSICAL FORM:	liquefied gas
ODOR:	irritating odor, pungent odor
MOLECULAR WEIGHT:	70.91
MOLECULAR FORMULA:	Cl2
BOILING POINT:	-29.27 F (-34.04 C)
FREEZING POINT:	-150 F (-101 C)
VAPOR PRESSURE:	5830 mmHg @ 25 C
VAPOR DENSITY (air=1):	2.4
SPECIFIC GRAVITY (water--1):	1.4 @ 15.6 C
DENSITY:	11.7 lbs/gal @ 15.6 C

WATER SOLUBILITY:	0.7% @ 20 C
PH:	Not applicable
VOLATILITY:	100%
ODOR THRESHOLD:	0.31 ppm approximate
EVAPORATION RATE:	Not available
COEFFICIENT OF WATER/OIL DISTRIBUTION:	Not available

REACTIVITY:
Stable at normal temperatures and pressure.

CONDITIONS TO AVOID:
Avoid contact with water. Reacts with water to form corrosive, acidic solution (hydrochloric acid). May react explosively with organic materials.

INCOMPATIBILITIES:
ammonia, combustible materials, metals, reducing agents, reacts in contact with aluminum to form hydrogen gas

HAZARDOUS DECOMPOSITION:
Thermal decomposition products: None known.

POLYMERIZATION: Will not polymerize.

CHLORINE, LIQUID (PESTICIDE):
TOXICITY DATA: Chlorine is a primary irritant on contact and may be corrosive to the eyes, skin, throat and mucous membranes. Exposure may result in severe or permanent eye injury. Overexposure may be fatal. Long term overexposure may produce upper airway changes leading to an increased prevalence of colds, shortness of breath and reactive airways dysfunction syndrome. The hazard at different concentrations is reported to be as follows: 0.2 - 0.5 ppm (No immediate toxic effects); 1-3 ppm (Definite odor with irritation of eye and nose); 5-8 ppm (Throat, eye and mucous membrane irritation); 30 ppm (Intense coughing fits); 34-51 ppm (Lethal in 1 to 1.5 hours exposure); 40-60 ppm (Exposure for 30-60 minutes may cause upper respiratory irritation, pulmonary edema, or bronchopneumonia); 100 ppm (May be lethal after 50 minutes exposure (estimated)); 430 ppm (Lowest concentration known to cause lethality after 30 minutes of exposure); 1000 ppm (May be fatal within a few deep breaths)

ECOTOXICITY DATA:

FISH TOXICITY:

This material has
exhibited moderate toxicity to aquatic organisms.

FATE AND TRANSPORT
:
BIODEGRADATION: Th
is material is an element and not subject to biodegradation.

PERSISTENCE: This
material will exist in the disassociated state.

BIOCONCENTRATION:
This material is believed not to bioaccumulate.

OTHER ECOLOGICAL I
NFORMATION:
This material has
exhibited toxicity to terrestrial organisms. Use or process
if possible. Chlor
ine may be absorbed into an alkaline solution such as
caustic soda, soda
ash or hydrated lime. Dispose in accordance with all
applicable regulat
ions.

U.S. DOT 49 CFR 17
2.101:
PROPER SHIPPING NA
ME: Chlorine
ID NUMBER:
UN 1017
HAZARD CLASS OR DI
VISION: 2.3
LABELING REQUIREME
NTS: 2.3; 8
ADDITIONAL SHIPPIN
G DESCRIPTION: Toxic-Inhalation Hazard Zone B
MARINE POLLUTANT:
CHLORINE
DOT HAZARDOUS SUBS
TANCE(S):
Chlorine 10 lb(s)
(4.54 kg(s))
CANADIAN TRANSPORT
ATION OF DANGEROUS GOODS: Not a registered pesticide. This
material will not
be shipped in Canada.

U.S. REGULATIONS:

CERCLA SECTIONS 10
2a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
CHLORINE: 10 LBS R
Q

SARA TITLE III SEC
TION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30):
CHLORINE: 100 LBS
TPQ

SARA TITLE III SAR
A SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):
ACUTE: Ye
s
CHRONIC: No

FIRE: Ye
s
REACTIVE: No

SUDDEN RELEASE: Ye
s

SARA TITLE III SEC
TION 313 (40 CFR 372.65):
This product conta
ins a toxic chemical or chemicals subject to the reporting
requirements of Se
ction 313 of Title III of the Superfund Amendments and
Reauthorization Ac
t of 1986 and 40 CFR 372. Refer to Section 2.

CHLORINE

OSHA PROCESS SAFET
Y (29CFR1910.119):
CHLORINE: 1500 LBS
TQ

STATE REGULATIONS:

California Proposi
tion 65: Not regulated.

NEW JERSEY WORKER
AND COMMUNITY RIGHT TO KNOW:
REPORTING REQUIREM
ENT:
CHLORINE 7782-50-5
99.5-100%

RIGHT TO KNOW HAZA
RDOUS SUBSTANCE LIST:
CHLORINE 7782-50-5
99.5-100%

SPECIAL HEALTH HAZ
ARD SUBSTANCE LIST:
Not regulated.

PENNSYLVANIA RIGHT
TO KNOW:
REPORTING REQUIREM
ENT:
CHLORINE 7782-50-5
99.5-100%

HAZARDOUS SUBSTANC
E LIST:
CHLORINE 7782-50-5
99.5-100%

ENVIRONMENTAL HAZA
RDOUS SUBSTANCE LIST:
CHLORINE 7782-50-5
99.5-100%

SPECIAL HAZARDOUS
SUBSTANCE LIST:
Not regulated.

CANADIAN REGULATIO
NS:
WHMIS CLASSIFICATI
ON: Not a registered pesticide.

NATIONAL INVENTORY
STATUS:
U.S. INVENTORY (TS
CA): All the components of this substance are listed on
or are exempt from
the inventory.

TSCA 12(b) EXPORT
NOTIFICATION: Not listed.

CANADA INVENTORY (
DSL/NDSL): Not a registered pesticide. This material will
not be sold in Can
ada.

-------- FOR ADDITIONAL INFORMATION ----------
CONTACT: MSDS CO
ORDINATOR UNIVAR USA INC.
DURIN
G BUSINESS HOURS, PACIFIC TIME (425)889-3400

---------- NOTICE ----------

********** UNIV
AR USA INC ("UNIVAR") EXPRESSLY DISCLAIMS

ALL EXPRESS OR IMP
LIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A

PARTICULAR PURPOSE
, WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED HEREIN,
---

AND SHALL UNDER NO
CIRCUMSTANCES BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL
DAMAGES.**

DO NOT USE INGR
EDIENT INFORMATION AND/OR INGREDIENT PERCENTAGES IN THIS MSDS
AS A PRODUCT SPECI
FICATION. FOR PRODUCT SPECIFICATION INFORMATION REFER TO A
PRODUCT SPECIFICAT
ION SHEET AND/OR A CERTIFICATE OF ANALYSIS. THESE CAN BE
OBTAINED FROM YOUR
LOCAL UNIVAR SALES OFFICE.

ALL INFORMATIO
N APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE
MANUFACTURER AND/O
R RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMATION IS
BELIEVED TO BE ACC
URATE, UNIVAR MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR
SUFFICIENCY. CONDI
TIONS OF USE ARE BEYOND UNIVARS CONTROL AND THEREFORE USERS
ARE RESPONSIBLE TO
VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO
DETERMINE WHETHER
THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY
ASSUME ALL RISKS O
F THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM
THE PUBLICATION O
R USE OF, OR RELIANCE UPON , INFORMATION CONTAINED HEREIN.
THIS INFORMATION R
ELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT
RELATE TO ITS USE
IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER
PROCESS.

* * * E N D O F M S D S * * *