

\*\*\* MATERIAL SAFETY DATA SHEET \*\*\*  
**LAMP CLEANING SOLUTION (A002-019)-8 oz, (A002-020)-1 Gal, (A002-017)-Maintenance Kit**  
**(PAGE 1)**  
**DATE OF PREP: 1/21/97**

DISTRIBUTOR : U. V. PROCESS SUPPLY, INC.  
ADDRESS : 1229 W. CORTLAND ST.  
CHICAGO, IL 60614-4805  
TELEPHONE #: (773) 248-0099  
EMERGENCY#: (800) 535-5053

TRADE NAME: TRICHLOROETHYLENE  
CHEMICAL NAMES: TRICHLOROETHENE, TRICHLOROETHYLENE, and TRICHLOR  
CHEMICAL FAMILY: HALOGENATED HYDROCARBONS  
FORMULA: CHCL=CCL2  
US DOT SHIPPING NAME TRICHLOROETHYLENE  
US DOT HAZARD CLASS: 6.1 (HARMFUL – STOW AWAY FROM FOODSTUFFS)

- DO NOT SHIP IN LIGHTLY STABILIZED GRADES IN ALUMINUM TRAILERS\*

**SECTION I PHYSICAL DATA**

BOILING POINT @ 760 MM HG: 86-88 C  
VAPOR DENSITY (AIR=1): 4.54  
SPECIFIC GRAVITY (H2O=1): 1.465 @ 20/20 C  
pH OF SOLUTIONS: 6.7 TO 7.5  
FREEZING/MELTING POINT: -86.4 C  
SOLUBILITY (WEIGHT % IN WATER): 0.11  
BULK DENSITY: 12.2 LBS/GAL @ 20 C  
VOLUME % VOLATILE: 100  
VAPOR PRESSURE: 57.8 MM HG @ 20 C  
EVAPORATION RATE: (ETHYL ETHER=1): 0.28  
HEAT OF SOLUTION: N/A  
APPEARANCE AND ODOR: CLEAR, COLORLESS LIQUID WITH ETHER-LIKE ODOR.

**SECTION 2 INGREDIENTS**

MATERIAL PERCENT  
TRICHLOROETHYLENE (STABILIZED) > 99  
NOTE: TESTED MIXTURE

**SECTION 3 FIRE/EXPLOSION HAZARD DATA**

FLASH POINT (METHOD USED): NONE (BY DOT TEST METHOD)  
FLAMMABLE LIMITS IN AIR LEL: 7.8%  
(% BY VOLUME) UEL: 52%  
EXTINGUISHING MEDIA: WATER, DRY CHEMICALS OR CARBON DIOXIDE

SPECIAL FIRE FIGHTING PROCEDURES:  
FIRE FIGHTERS SHOULD WEAR NIOSH/MSHA APPROVED PRESSURE DEMAND, SELF-CONTAINED BREATHING APPARATUS FOR POSSIBLE EXPOSURE TO HYDROGEN CHLORIDE AND POSSIBLE TRACES OF PHOSGENE.

UNUSUAL FIRE AND EXPLOSION HAZARDS:  
VAPORS CONCENTRATED IN A CONFINED OR POORLY VENTILATED AREA CAN BE IGNITED UPON CONTACT WITH A HIGH ENERGY SPARK, FLAME OR HIGH INTENSITY SOURCE OF HEAT. THIS CAN OCCUR AT CONCENTRATIONS RANGING BETWEEN 7.8-52Z BY VOL. DECOMPOSITION OR BURNING CAN PRODUCE HYDROGEN CHLORIDE OR POSSIBLE TRACES OF PHOSGENE.

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**SECTION 4 HEALTH HAZARD DATA**

**TOXICITY DATA:**

LC50 INHALATION: LCLO(RATS) 8000 PPM/4 HOUR  
LD50 DERMAL: NOT DETERMINED  
SKIN/EYE IRRITATION: SEE SECTION 5  
LD50 INGESTION: (RAT) 4900-7000 MG/KG  
FISH,LC50 (LETHAL CONCENTRATION): SEE SECTION 5

**CLASSIFICATION:**

INHALATION: SLIGHTLY TOXIC  
SKIN: NOT DETERMINED  
SKIN/EYE: SKIN-MILDLY IRRITATING/EYE-IRRITANT  
INGESTION: SLIGHTLY TO MODERATELY TOXIC  
AQUATIC: SEE SECTION 5

**SECTION 5 EFFECTS OF OVEREXPOSURE**

IS CHEMICAL LISTED AS A CARCINOGEN OR POTENTIAL CARCINOGEN?

NTP: NO  
IARC: NO  
OSHA: NO

**MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:**

NONE KNOWN

**PERMISSIBLE EXPOSURE LIMITS:**

OSHA: 50 PPM, 8-HOUR TWA (TIME WEIGHTED AVERAGE); 200 PPM, 15-MINUTE STEL (SHORT-TERM EXPOSURE LIMIT); 29 CFR 1910.1000, TABLE Z.2, REV. 3/1/89.

NOTE: THE 1971 LIMIT IS 100 PPM, 8-HOUR TWA.

ACGIH: 50 PPM, 8-HOUR TWA; 100 PPM, 15-MINUTE STEL.

PPG INTERNAL PERMISSIBLE EXPOSURE LIMIT: 50 PPM, 8-HOUR TWA.

**ACUTE:**

**INHALATION:** TRICHLOROETHYLENE IS A CENTRAL NERVOUS SYSTEM DEPRESSANT WHICH CAN CAUSE IRRITATION OF THE RESPIRATORY TRACT, DIZZINESS, NAUSEA, HEADACHE, LOSS OF COORDINATION AND EQUILIBRIUM, POSSIBLE CENTRAL NERVOUS SYSTEM DAMAGE, UNCONSCIOUSNESS AND DEATH IN CONFINED OR POORLY VENTILATED AREAS. FATALITIES FOLLOWING SEVERE ACUTE EXPOSURE HAVE BEEN ATTRIBUTED TO VENTRICULAR FIBRILLATION RESULTING IN CARDIAC FAILURES.

**EYE/SKIN:** LIQUID SPLASHED IN THE EYE CAN RESULT IN DISCOMFORT, PAIN AND IRRITATION. PROLONGED OR REPEATED CONTACT WITH LIQUID ON THE SKIN CAN CAUSE IRRITATION AND DERMATITIS. THE PROBLEM MAY BE ACCENTUATED BY LIQUID BECOMING TRAPPED AGAINST THE SKIN BY CONTAMINATED CLOTHING AND SHOES, AND SKIN ABSORPTION CAN OCCUR.

**INGESTION:** SWALLOWING OF THIS MATERIAL MAY RESULT IN IRRITATION OF THE MOUTH AND GI TRACT ALONG WITH OTHER EFFECTS AS LISTED ABOVE FOR INHALATION. VOMITING AND SUBSEQUENT ASPIRATION INTO THE LUNGS MAY LEAD TO CHEMICAL PNEUMONIA AND PULMONARY EDEMA, WHICH IS A POTENTIALLY FATAL CONDITION.

**CHRONIC:** PROLONGED EXPOSURE ABOVE THE OSHA PERMISSIBLE LIMITS MAY RESULT IN LIVER AND KIDNEY DAMAGE. TRICHLOROETHYLENE HAS BEEN EXTENSIVELY STUDIED FOR CHRONIC EFFECTS IN ANIMALS. WHILE THERE ARE STUDIES IN WHICH TUMORS WERE INDUCED IN MICE, THERE IS NO EVIDENCE THAT TRICHLOROETHYLENE POSES

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CARCINOGENIC RISK TO HUMANS. TRICHLOROETHYLENE IS LISTED IN GROUP 3 BY IARC AND IS NOT LISTED BY NTP OR OSHA.

**TOXICITY DATA - AQUATIC DATA:**

SHEEPSHEAD INNOWS	96-HOUR LC50	52 MG/L	SLIGHTLY TOXIC
MYSID SHRIMP	96-HOUR LC50	14 MG/L	SLIGHTLY TOXIC
MARINE ALGA	96-HOUR EC50	95 MG/L	SLIGHTLY TOXIC

**EMERGENCY AND FIRST AID PROCEDURES**

**INHALATION:** REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION, PREFERABLY MOUTH-TO-MOUTH. IF BREATHING IS DIFFICULT, GIVE OXYGEN. CALL A PHYSICIAN.

**EYE OR SKIN CONTACT:** FLUSH EYES AND SKIN WITH PLENTY OF WATER (SOAP AND WATER FOR SKIN) FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. IF IRRITATION OCCURS, CONSULT A PHYSICIAN. THOROUGHLY CLEAN CONTAMINATED CLOTHING AND SHOES BEFORE REUSE OR DISCARD.

**INGESTION:** IF CONSCIOUS: DRINK LARGE QUANTITIES OF WATER. DO NOT INDUCE VOMITING. TAKE IMMEDIATELY TO A HOSPITAL OR PHYSICIAN. IF UNCONSCIOUS: OR IN CONVULSIONS TAKE IMMEDIATELY TO A HOSPITAL. DO NOT ATTEMPT TO GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

**NOTES TO PHYSICIAN (INCLUDING ANTIDOTES):** ONLY ADMINISTER ADRENALINE AFTER CAREFUL CONSIDERATION FOLLOWING TRICHLOROETHYLENE OVEREXPOSURE. INCREASED SENSITIVITY OF THE HEART TO ADRENALINE MAY BE CAUSED BY OVEREXPOSURE TO TRICHLOROETHYLENE.

**SECTION 6 REACTIVITY DATA**

**STABILITY: STABLE**

CONDITIONS TO AVOID: AVOID OPEN FLAMES, HOT GLOWING SURFACES OR ELECTRIC ARCS.

**HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.**

CONDITIONS TO AVOID: NONE.

**INCOMPATIBILITY (MATERIALS TO AVOID):**

AVOID CONTAMINATION WITH CAUSTIC SODA, CAUSTIC POTASH OR OXIDIZING MATERIALS. SHOCK SENSITIVE COMPOUNDS MAY BE FORMED.

**HAZARDOUS DECOMPOSITION PRODUCTS:**

HYDROGEN CHLORIDE AND POSSIBLE TRACES OF PHOSGENE.

**SECTION 7 SPILL OR LEAK PROCEDURES**

**STEPS TO BE TAKEN IF MATERIAL IS SPILLED OR RELEASED:**

IMMEDIATELY EVACUATE THE AREA AND PROVIDE MAXIMUM VENTILATION. UNPROTECTED PERSONNEL SHOULD MOVE UPWIND OF SPILL ONLY PERSONNEL EQUIPPED WITH PROPER RESPIRATORY AND SKIN/EYE PROTECTION (SEE SECTION 8) SHOULD BE PERMITTED IN AREA. DIKE AREA TO CONTAIN SPILL. TAKE PRECAUTIONS AS NECESSARY TO PREVENT CONTAMINATION OF GROUND AND SURFACE WATERS. RECOVER SPILLED MATERIALS ON ADSORBENTS, SUCH AS SAWDUST OR VERMICULITE, AND SWEEP INTO CLOSED CONTAINERS FOR DISPOSAL. AFTER ALL VISIBLE TRACES, INCLUDING IGNITABLE VAPORS, HAVE BEEN REMOVED, THOROUGHLY WET VACUUM THE AREA. DO NOT FLUSH TO SEWER. IF AREA OF SPILL IS POROUS, REMOVE AS MUCH CONTAMINATED EARTH, GRAVEL, ETC. AS NECESSARY AND PLACE IN CLOSED CONTAINERS FOR DISPOSAL.

**WASTE DISPOSAL METHOD:**

CONTAMINATED SAWDUST, VERMICULITE OR POROUS SURFACE MUST BE DISPOSED OF IN A PERMITTED HAZARDOUS WASTE MANAGEMENT FACILITY. RECOVERED LIQUIDS MAY BE REPROCESSED OR INCINERATED OR MUST BE TREATED IN A PERMITTED HAZARDOUS WASTE MANAGEMENT FACILITY. CARE MUST BE TAKEN WHEN USING OR

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DISPOSING OF CHEMICAL MATERIALS AND/OR THEIR CONTAINERS TO PREVENT ENVIRONMENTAL CONTAMINATION. IT IS YOUR DUTY TO DISPOSE OF THE CHEMICAL MATERIALS AND/OR THEIR CONTAINERS IN ACCORDANCE WITH THE CLEAN AIR ACT, THE CLEAN WATER ACT, THE RESOURCE CONSERVATION AND RECOVERY ACT J AS WELL AS ANY OTHER RELEVANT FEDERAL, STATE, OR LOCAL LAWS/REGULATIONS REGARDING DISPOSAL

**SECTION 8 SPECIAL PROTECTION INFORMATION**

**RESPIRATOR PROTECTION:**

USE A HALF OR FULL FACEPIECE ORGANIC VAPOR CHEMICAL CARTRIDGE OR CANISTER RESPIRATOR WHEN CONCENTRATIONS EXCEED THE PERMISSIBLE LIMITS. USE SELF-CONTAINED BREATHING APPARATUS (SCBA) OR FULL FACEPIECE AIRLINE RESPIRATOR WITH AUXILIARY SCBA OPERATED IN THE PRESSURE-DEMAND MODE FOR EMERGENCIES AND FOR ALL WORK PERFORMED IN STORAGE VESSELS, POORLY VENTILATED ROOMS, AND OTHER CONFINED AREAS. RESPIRATORS MUST BE APPROVED BY NIOSH/MSHA. THE RESPIRATOR USE LIMITATIONS MADE BY NIOSH/MSHA AND BY THE MANUFACTURER MUST BE OBSERVED. RESPIRATORY PROTECTION PROGRAMS MUST BE IN ACCORDANCE WITH 29 CFR 1910.134.

**VENTILATION (TYPE):**

USE LOCAL EXHAUST OR DILUTION VENTILATION AS APPROPRIATE TO CONTROL EXPOSURES TO BELOW PERMISSIBLE LIMITS.

**EYE PROTECTION:**

SPLASHPROOF GOG&LES

**G LOVES:**

VITON(R), SILVER SHIELD(R),  
POLYVINYL ALCOHOL (DEGRADES IN WATER).

**OTHER PROTECTIVE EQUIPMENT:**

BOOTS, APRONS, OR CHEMICAL SUITS SHOULD BE USED WHEN NECESSARY TO PREVENT SKIN CONTACT. PERSONAL PROTECTIVE CLOTHING AND USE OF EQUIPMENT MUST BE IN ACCORDANCE WITH 29 CFR 1910.132 AND 29 CFR 1910.133.

**SECTION 9 SPECIAL PRECAUTIONS**

**PRECAUTIONS TO BE TAKEN DURING HANDLING AND STORING:**

- DO NOT USE IN POORLY VENTILATED OR CONFINED SPACES WITHOUT PROPER RESPIRATORY PROTECTION (SEE SECTION 8).
- TRICHLOROETHYLENE VAPORS ARE HEAVIER THAN AIR AND WILL COLLECT IN LOW AREAS.
- KEEP CONTAINER CLOSED WHEN NOT IN USE.
- STORE ONLY IN CLOSED, PROPERLY LABELED CONTAINERS.
- LIQUID OXYGEN OR OTHER STRONG OXIDANTS MAY FORM EXPLOSIVE MIXTURES WITH TRICHLOROETHYLENE.
- THIS MATERIAL OR ITS VAPORS WHEN IN CONTACT WITH FLAMES, HOT GLOWING SURFACES OR ELECTRIC ARCS CAN DECOMPOSE TO FORM HYDROGEN CHLORIDE GAS AND TRACES OF PHOSGENE.
- AVOID CONTAMINATION OF WATER SUPPLIES. HANDLING, STORAGE AND USE PROCEDURES MUST BE CAREFULLY MONITORED TO AVOID SPILLS OR LEAKS. ANY SPILL OR LEAK HAS THE POTENTIAL TO CAUSE UNDERGROUND WATER CONTAMINATION, WHICH MAY, IF SUFFICIENTLY SEVERE, RENDER A DRINKING WATER SOURCE UNFIT FOR HUMAN CONSUMPTION. CONTAMINATION THAT DOES OCCUR CANNOT BE EASILY CORRECTED.
- A CHLORINATED SOLVENT USED AS A FLASHPOINT SUPPRESSANT MUST BE ADDED IN SUFFICIENT QUANTITY OR THE RESULTANT MIXTURE MAY HAVE A FLASHPOINT LOWER THAN THE FLAMMABLE COMPONENT.
- DO NOT USE CUTTING OR WELDING TORCHES ON DRUMS THAT CONTAINED TRICHLOROETHYLENE UNLESS PROPERLY PURGED AND CLEANED.
- DO NOT SHIP LIGHTLY STABILIZED GRADES IN ALUMINUM TRAILERS. THE ONLY EXCEPTION IS TYPE 145 VAPOR DEGREASING GRADE.

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**OTHER PRECAUTIONS:**

- DO NOT BREATHE VAPORS. HIGH VAPOR CONCENTRATIONS CAN CAUSE DIZZINESS, UNCONSCIOUSNESS OR DEATH. LONG-TERM OVEREXPOSURE MAY CAUSE LIVER/KIDNEY INJURY AND POSSIBLE CENTRAL NERVOUS SYSTEM DAMAGE.
- USE ONLY WITH ADEQUATE VENTILATION. VENTILATION MUST BE SUFFICIENT TO LIMIT EMPLOYEE EXPOSURE TO TRICHLOR BELOW PERMISSIBLE LIMITS. OBSERVANCE OF LOWER LIMITS IS ADVISABLE (OUTLINED IN SECTION 5). EYE IRRITATION, DIZZINESS AND/OR DRUNKENNESS ARE SIGNS OF OVEREXPOSURE.
- AVOID CONTACT WITH EYES. WILL CAUSE IRRITATION AND PAIN.
- AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. MAY CAUSE IRRITATION OR DERMATITIS.
- DO NOT SWALLOW. SWALLOWING MAY CAUSE INJURY OR DEATH.
- DO NOT EAT, DRINK OR SMOKE IN WORK AREAS.

**COMMENTS:**

TSCA - TRICHLOROETHYLENE IS ON THE TSCA INVENTORY UNDER CAS #79-01-6.

SARA TITLE III - A) 311/312 CATEGORIES - ACUTE AND CHRONIC, B) LISTED IN SECTION 313 UNDER TRICHLOROETHYLENE, C) NOT LISTED AS AN "EXTREMELY HAZARDOUS SUBSTANCE" IN SECTION 302.

CERCLA - LISTED IN TABLE 302.4 OF 40 CFR PART 302 AS A HAZARDOUS SUBSTANCE WITH A REPORTABLE QUANTITY OF 100 POUNDS. RELEASES TO AIR, LAND OR WATER WHICH EXCEED THE RQ MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER, 800-424-8802.

RCRA - WASTE TRICHLOR AND CONTAMINATED SOILS/MATERIALS FROM SPILL CLEANUP AND U228 HAZARDOUS WASTE AS PER 40 CFR 261.33 AND MUST BE DISPOSED OF ACCORDINGLY UNDER RCRA. SEE 40 CFR 261.33(C) AND 261.7(B)(3) FOR CLEANING REQUIREMENTS FOR EMPTY CONTAINERS.

CALIFORNIA PROP. 65 - THIS PRODUCT IS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

NEW JERSEY RIGHT-TO-KNOW - ALSO CONTAINS BUTYLENE OXIDE (CAS NO. 106-88-7)

CANADIAN WHMIS - A) SENSITIZATION TO PRODUCT: NONE KNOWN, B) REPRODUCTIVE TOXICITY: NONE KNOWN, C) ODOR THRESHOLD: NOT KNOWN, D) PRODUCT USE: DEGREASING SOLVENT, E) REQUIRES POISON SYMBOL (CLASS D.1).

REVISIONS MADE TO 7/12/93, 12TH EDITION - DATE, EDITION, NOTE REGARDING ALUMINUM TRAILERS ADDED TO PAGE 1 AND HANDLING PRECAUTIONS (PAGE 6), UPDATED PERMISSIBLE EXPOSURE LIMITS (PAGE 3).