

DATE: 08/14/93 ACCT: 888235-01
 INDEX: N/A CAT NO: F79P4 PO NBR: N/A

FORMALDEHYDE SOLUTION, 37% (10-15% METHANOL)
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MATERIAL SAFETY DATA SHEET

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SUBSTANCE IDENTIFICATION

SUBSTANCE: **FORMALDEHYDE SOLUTION, 37% (10-15% METHANOL)**

TRADE NAMES/SYNONYMS:
 FORMALIN; FORMOL; MORBICID; FORMALDEHYDE (37% SOLUTION); METHANAL;
 FORMALDEHYDE SOLUTION; FORMALIN; FORMALIC ALDEHYDE SOLUTION;
 METHANAL SOLUTION; FORMALIN, STABILIZED; FORMOL-CHLORAL; FORMALIN 100%;
 FORMALDEHYDE; RCRA U122; UN 1198; F77; F79; F77P; ACC50002

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=2 REACTIVITY=0 PERSISTENCE=0
 NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=2 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: FORMALDEHYDE PERCENT: 37.0
 CAS# 50-00-0

COMPONENT: METHANOL PERCENT: 10-15
 CAS# 67-56-1

COMPONENT: WATER PERCENT: 47-52

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:

FORMALDEHYDE:
 0.75 PPM OSHA TWA; 2 PPM OSHA 15 MINUTE STEL; 0.5 PPM OSHA ACTION LEVEL
 0.3 PPM (0.37 MG/M3) ACGIH CEILING
 ACGIH A-2-SUSPECTED HUMAN CARCINOGEN
 0.016 PPM NIOSH RECOMMENDED TWA; 0.1 PPM NIOSH RECOMMENDED 15 MIN. CEILING
 0.5 PPM (0.6 MG/M3) DFG MAK TWA;
 1 PPM (1.2 MG/M3) DFG MAK 5 MINUTE PEAK, MOMENTARY VALUE, 8 TIMES/SHIFT

MEASUREMENT METHOD: PARTICULATE FILTER/IMPINGER (2); VISIBLE SPECTROPHOTOMETRY; (NIOSH VOL. III # 3500).
 ALSO: XAD-2(R) TUBE; TOLUENE; GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION; (NIOSH VOL. III # 2541).

500 POUNDS SARA SECTION 302 THRESHOLD PLANNING QUANTITY
 1000 POUNDS SARA SECTION 304 REPORTABLE QUANTITY
 100 POUNDS CERCLA SECTION 103 REPORTABLE QUANTITY
 1000 POUNDS OSHA PROCESS SAFETY MANAGEMENT THRESHOLD QUANTITY
 SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING
 SUBJECT TO CALIFORNIA PROPOSITION 65 CANCER AND/OR REPRODUCTIVE TOXICITY WARNING AND RELEASE REQUIREMENTS- (JANUARY 1, 1988)

METHYL ALCOHOL (METHANOL):

200 PPM (262 MG/M3) OSHA TWA (SKIN); 250 PPM (328 MG/M3) OSHA STEL
 200 PPM (262 MG/M3) ACGIH TWA (SKIN); 250 PPM (328 MG/M3) ACGIH STEL
 200 PPM (262 MG/M3) NIOSH RECOMMENDED TWA (SKIN);
 250 PPM (328 MG/M3) NIOSH RECOMMENDED STEL
 200 PPM (262 MG/M3) DFG MAK TWA (SKIN);
 400 PPM (524 MG/M3) DFG MAK 30 MINUTE PEAK, AVERAGE VALUE, 4 TIMES/SHIFT

MEASUREMENT METHOD: SILICA GEL TUBE; WATER; GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION; (NIOSH VOL. III # 2000, METHANOL).

5000 POUNDS CERCLA SECTION 103 REPORTABLE QUANTITY
 SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING

OSHA REVOKED THE FINAL RULE LIMITS OF JANUARY 19, 1989 IN RESPONSE TO THE 11TH CIRCUIT COURT OF APPEALS DECISION (AFL-CIO V. OSHA) EFFECTIVE JUNE 30, 1993. SEE 29 CFR 1910.1000 (58 FR 35338)

PHYSICAL DATA

DESCRIPTION: COLORLESS LIQUID WITH A PUNGENT ODOR; MAY BECOME CLOUDY OR

DATE: 08/14/93 ACCT: 888235-01
 INDEX: N/A CAT NO: F79P4 PO NBR: N/A

PRECIPITOUS ON STANDING, ESPECIALLY IN THE COLD.

BOILING POINT: 205 F (96 C) MELTING POINT: 5 F (-15 C)

SPECIFIC GRAVITY: 1.08 VOLATILITY: 100%

VAPOR PRESSURE: 67-88 MMHG @ 20 C EVAPORATION RATE: NOT AVAILABLE

PH: 2.8-4.0 SOLUBILITY IN WATER: MISCIBLE ODOR THRESHOLD: 1 PPM

VAPOR DENSITY: 1.04

SOLVENT SOLUBILITY: SOLUBLE IN ALCOHOLS, ACETONE

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
 MODERATE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO A SOURCE OF IGNITION AND FLASH BACK.

VAPOR-AIR MIXTURES ARE EXPLOSIVE ABOVE FLASH POINT.

FLASH POINT: 140 F (60 C) (CC) UPPER EXPLOSIVE LIMIT: 73%

LOWER EXPLOSIVE LIMIT: 7% AUTOIGNITION TEMP.: 806 F (430 C)

FLAMMABILITY CLASS(OSHA): II

FIREFIGHTING MEDIA:
 DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM
 (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR REGULAR FOAM
 (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FIREFIGHTING:
 MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS. FOR MASSIVE FIRE IN CARGO AREA, USE UNMANNED HOSE HOLDER OR MONITOR NOZZLES; IF THIS IS IMPOSSIBLE, WITHDRAW FROM AREA AND LET FIRE BURN. WITHDRAW IMMEDIATELY IN CASE OF RISING SOUND FROM VENTING SAFETY DEVICE OR ANY DISCOLORATION OF TANK DUE TO FIRE. ISOLATE FOR 1/2 MILE IN ALL DIRECTIONS IF TANK, RAIL CAR OR TANK TRUCK IS INVOLVED IN FIRE (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE PAGE 27).

EXTINGUISH ONLY IF FLOW CAN BE STOPPED. USE FLOODING AMOUNTS OF WATER AS A FOG, SOLID STREAMS MAY BE INEFFECTIVE. COOL CONTAINERS WITH FLOODING AMOUNTS OF WATER, APPLY FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING VAPORS, KEEP UPWIND.

TRANSPORTATION DATA

FORMALDEHYDE SOLUTIONS:
 DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49-CFR 172.101:
 ORM-A (IN CONTAINERS OF 110 GALLONS OR LESS)

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49-CFR 172.101 AND SUBPART E:
 NONE

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49-CFR 173.510
 EXCEPTIONS: 49-CFR 173.505

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49-CFR 172.101:
 COMBUSTIBLE LIQUID (IN CONTAINERS OVER 110 GALLONS)

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49-CFR 172.101 AND SUBPART E:
 NONE

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49-CFR 173.118A
 EXCEPTIONS: NONE

FINAL RULE ON HAZARDOUS MATERIALS REGULATIONS (HMR, 49 CFR PARTS 171-180), DOCKET NUMBERS HM-181, HM-181A, HM-181B, HM-181C, HM-181D AND HM-204. EFFECTIVE DATE OCTOBER 1, 1991. HOWEVER, COMPLIANCE WITH THE REGULATIONS IS AUTHORIZED ON AND AFTER JANUARY 1, 1991. (55 FR 52402, 12/21/90)

EXCEPT FOR EXPLOSIVES, INHALATION HAZARDS, AND INFECTIOUS SUBSTANCES, THE EFFECTIVE DATE FOR HAZARD COMMUNICATION REQUIREMENTS IS EXTENDED TO OCTOBER 1, 1993. (56 FR 47158, 09/18/91)

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
 FORMALDEHYDE, SOLUTIONS-UN 1198

DATE: 08/14/93
INDEX: N/A

ACCT: 888235-01
CAT NO: F79P4

PAGE: 3
PO NBR: N/A

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
3 - FLAMMABLE LIQUID

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101:
PG III

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101
AND SUBPART E:
FLAMMABLE LIQUID

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:
EXCEPTIONS: 49 CFR 173.150
NON-BULK PACKAGING: 49 CFR 173.203
BULK PACKAGING: 49 CFR 173.242

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: 60 L
CARGO AIRCRAFT ONLY: 220 L

TOXICITY

FORMALDEHYDE:

IRRITATION DATA: 150 UG/3 DAYS INTERMITTENT SKIN-HUMAN MILD; 2 MG/24 HOURS SKIN-RABBIT SEVERE; 540 MG OPEN SKIN-RABBIT MILD; 50 MG/24 HOURS SKIN-RABBIT MODERATE; 4 PPM/5 MINUTES EYE-HUMAN; 1 PPM/6 MINUTES NONSTANDARD EXPOSURE EYE-HUMAN MILD; 750 UG/24 HOURS EYE-RABBIT SEVERE; 750 UG EYE-RABBIT SEVERE; 10 MG EYE-RABBIT SEVERE

TOXICITY DATA: 17 MG/M3/30 MINUTES INHALATION-HUMAN TCLD; 300 UG/M3 INHALATION-MAN TCLD; 203 MG/M3 INHALATION-RAT LC50; 400 MG/M3/2 HOURS INHALATION-MOUSE LC50; 400 MG/M3/2 HOURS INHALATION-CAT LCLO; 92 MG/M3 INHALATION-MAMMAL LC50; 270 MG/KG SKIN-RABBIT LD50; 108 MG/KG ORAL-WOMAN LDLO; 643 MG/KG ORAL-MAN TDLO; 100 MG/KG ORAL-RAT LD50; 42 MG/KG ORAL-MOUSE LD50; 260 MG/KG ORAL-GUINEA PIG LD50; 420 MG/KG SUBCUTANEOUS-RAT LD50; 300 MG/KG SUBCUTANEOUS-MOUSE LD50; 350 MG/KG SUBCUTANEOUS-DOG LDLO; 240 MG/KG SUBCUTANEOUS-RABBIT LDLO; 87 MG/KG INTRAVENOUS-RAT LD50; 48 MG/KG INTRAVENOUS-RABBIT LDLO; 30 MG/KG INTRAVENOUS-CAT LDLO; 70 MG/KG INTRAVENOUS-DOG LDLO; 16 MG/KG INTRAPERITONEAL-MOUSE LDLO; 477 MG/KG UNREPORTED-MAN LDLO; 800 MG/KG PARENTERAL-FROG LDLO; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS); TUMORIGENIC DATA (RTECS); CARCINOGEN STATUS: OSHA CARCINOGEN; ANTICIPATED HUMAN CARCINOGEN (NTP); HUMAN LIMITED EVIDENCE, ANIMAL SUFFICIENT EVIDENCE (IARC GROUP-2A); EPIDEMIOLOGICAL STUDIES AND CASE REPORTS INDICATE AN EXCESS OCCURRENCE OF A NUMBER OF CANCERS, BUT EVIDENCE FOR INVOLVEMENT OF FORMALDEHYDE IS STRONGEST FOR NASAL AND NASOPHARYNGEAL CANCER. A SIGNIFICANT INCIDENCE OF SQUAMOUS CELL CARCINOMA OF THE NASAL CAVITY WAS INDUCED IN RATS EXPOSED TO FORMALDEHYDE GAS.

LOCAL EFFECTS: CORROSIVE- INHALATION, SKIN, EYE, INGESTION.
ACUTE TOXICITY LEVEL: HIGHLY TOXIC BY INHALATION; TOXIC BY DERMAL ABSORPTION AND INGESTION.
TARGET EFFECTS: SENSITIZER- RESPIRATORY, DERMAL. POISONING MAY ALSO AFFECT THE KIDNEYS
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH ASTHMA, CHRONIC SKIN DISEASE OR PREEXISTING LUNG DISEASE.

METHYL ALCOHOL (METHANOL):

IRRITATION DATA: 20 MG/24 HOURS SKIN-RABBIT MODERATE; 40 MG EYE-RABBIT MODERATE; 100 MG/24 HOURS EYE-RABBIT MODERATE.
TOXICITY DATA: 86,000 MG/M3 INHALATION-HUMAN TCLD; 300 PPM INHALATION-HUMAN TCLD; 64,000 PPM/4 HOURS INHALATION-RAT LC50; 1000 PPM INHALATION-MONKEY LCLO; 50 GM/M3/2 HOURS INHALATION-MOUSE LCLO; 44,000 MG/M3/6 HOURS INHALATION-CAT LCLO; 15,800 MG/KG SKIN-RABBIT LD50; 393 MG/KG SKIN-MONKEY LDLO; 428 MG/KG ORAL-HUMAN LDLO; 143 MG/KG ORAL-HUMAN LDLO; 6422 MG/KG ORAL-MAN LDLO; 3429 MG/KG ORAL-MAN TDLO; 4 GM/KG ORAL-WOMAN TDLO; 7 GM/KG ORAL-MONKEY LD50; 5628 MG/KG ORAL-RAT LD50; 7300 MG/KG ORAL-MOUSE LD50; 14,200 MG/KG ORAL-RABBIT LD50; 7500 MG/KG ORAL-DOG LDLO; 9800 MG/KG SUBCUTANEOUS-MOUSE LD50; 2131 MG/KG INTRAVENOUS-RAT LD50; 4710 MG/KG INTRAVENOUS-MOUSE LD50; 8907 MG/KG INTRAVENOUS-RABBIT LD50; 4641 MG/KG INTRAVENOUS-CAT LDLO; 7529 MG/KG INTRAPERITONEAL-RAT LD50; 10,765 MG/KG INTRAPERITONEAL-MOUSE LD50; 1826 MG/KG INTRAPERITONEAL-RABBIT LD50; 3556 MG/KG INTRAPERITONEAL-GUINEA PIG LD50; 8555 MG/KG INTRAPERITONEAL-HAMSTER LD50; 868 MG/KG UNREPORTED-MAN LDLO; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS).
CARCINOGEN STATUS: NONE
LOCAL EFFECTS: IRRITANT- SKIN, EYE.
ACUTE TOXICITY LEVEL: SLIGHTLY TOXIC BY DERMAL ABSORPTION AND INGESTION; RELATIVELY NON-TOXIC BY INHALATION.
TARGET EFFECTS: CENTRAL NERVOUS SYSTEM DEPRESSANT; NEUROTOXIN.
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH KIDNEY, EYE OR SKIN DISORDERS.

HEALTH EFFECTS AND FIRST AID

INHALATION:

FORMALDEHYDE:

CORROSIVE/SENSITIZER/CARCINOGEN/HIGHLY TOXIC.

ACUTE EXPOSURE- CONCENTRATIONS OF 0.1-5.0 PPM MAY CAUSE IRRITATION OF THE NOSE AND THROAT; 10-20 PPM MAY CAUSE DIFFICULTY IN BREATHING, A BURNING SENSATION IN THE NOSE AND THROAT, AND COUGHING; 25-50 PPM MAY CAUSE TISSUE DAMAGE AND SERIOUS RESPIRATORY TRACT INJURY SUCH AS PNEUMONITIS AND,

DATE: 08/14/93
INDEX: N/A

ACCT: 888235-01
CAT NO: F79P4

PAGE: 4
PO NBR: N/A

RARELY. PULMONARY EDEMA. OTHER SYMPTOMS MAY INCLUDE SNEEZING, WHEEZING, PHARYNGITIS, TRACHEITIS, CHEST CONSTRICTION, BRONCHITIS, HEADACHE, DYSPHAGIA, EXCESSIVE THIRST, WEAKNESS, PALPITATIONS, NAUSEA AND VOMITING. VERY HIGH CONCENTRATIONS HAVE CAUSED HUMAN DEATHS. HYPERSENSITIVITY REACTIONS SUCH AS LARYNGEAL EDEMA, ASTHMATIC BRONCHITIS, SEVERE OBSTRUCTIVE TRACHEOBRONCHITIS, AND URTICARIA HAVE BEEN REPORTED IN PREVIOUSLY EXPOSED INDIVIDUALS.
CHRONIC EXPOSURE- REPEATED OR PROLONGED EXPOSURE MAY CAUSE HEADACHE, RHINITIS, NAUSEA, DROWSINESS, RESPIRATORY IMPAIRMENT, KIDNEY INJURY, AND PULMONARY SENSITIZATION. NEUROPSYCHOLOGICAL EFFECTS MAY INCLUDE SLEEP DISORDERS, IRRITABILITY, ALTERED SENSE OF BALANCE, MEMORY DEFICITS, LOSS OF CONCENTRATION, AND MOOD ALTERATIONS. MENSTRUAL DISORDERS AND SECONDARY STERILITY HAVE OCCURRED IN WOMEN. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS. OFFSPRING OF RATS EXPOSED CONTINUOUSLY DURING PREGNANCY DISPLAYED NO VISIBLE MALFORMATIONS. LITTER SIZES, DURATION OF PREGNANCY, AND WEIGHT OF FETAL ADRENALS AND KIDNEYS WERE INCREASED AND WEIGHT OF FETAL LUNGS AND LIVER WERE DECREASED. LONG TERM EXPOSURE TO FORMALDEHYDE IS REPORTED TO BE ASSOCIATED WITH AN INCREASED RISK OF CANCER OF THE NOSE AND ACCESSORY SINUSES AND NASOPHARYNGEAL AND OROPHARYNGEAL CANCER IN HUMANS. SLIGHT EXCESSES IN THE OCCURRENCE OF LUNG CANCER HAVE BEEN NOTED IN SEVERAL STUDIES; HOWEVER, THE INCREASES OF LUNG CANCERS DID NOT DISPLAY THE PATTERNS OF INCREASED RISK WITH VARIOUS MEASURES OF EXPOSURE USUALLY SEEN FOR OCCUPATIONAL CARCINOGENS. ANIMAL STUDIES SHOW THAT REPEATED EXPOSURE TO LEVELS OF 14.3 PPM INDUCED NASAL CAVITY SQUAMOUS CELL CARCINOMA IN RATS, AND ACUTE DEGENERATION, NECROSIS, INFLAMMATION, AND INCREASED CELL REPLICATION IN THE NASAL MUCOSA OF RATS AND MICE. THE INCIDENCES OF A VARIETY OF NON-NEOPLASTIC LESIONS WERE SIGNIFICANTLY INCREASED IN MICE AND RATS.

METHYL ALCOHOL (METHANOL):

NARCOTIC/NEUROTOXIN. 25,000 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH. ACUTE EXPOSURE- MAY CAUSE IRRITATION OF THE MUCOUS MEMBRANES, COUGHING, OPPRESSION IN THE CHEST, TRACHEITIS, BRONCHITIS, TINNITUS, UNSTEADY GAIT, TWITCHING, COLIC, CONSTIPATION, NYSTAGMUS, AND BOPHAROSPASM. SYMPTOMS FROM OCCUPATIONAL EXPOSURE INCLUDE PARESTHESIAS, NUMBNESS AND SHOOTING PAINS IN THE HANDS AND FOREARMS, METABOLIC ACIDOSIS, AND EFFECTS ON THE EYES AND CENTRAL NERVOUS SYSTEM MAY OCCUR AS DETAILED IN ACUTE INGESTION.

CHRONIC EXPOSURE- REPEATED OR PROLONGED EXPOSURE MAY CAUSE EFFECTS AS IN ACUTE INGESTION. REPEATED EXPOSURE TO 200-375 PPM CAUSED RECURRENT HEADACHES IN WORKERS. EXPOSURE FOR 4 YEARS TO 1200-8000 PPM RESULTED IN MARKED DIMINUTION OF VISION AND ENLARGEMENT OF THE LIVER IN A WORKMAN. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION. MAINTAIN AIRWAY AND BLOOD PRESSURE AND ADMINISTER OXYGEN IF AVAILABLE. KEEP AFFECTED PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. ADMINISTRATION OF OXYGEN SHOULD BE PERFORMED BY QUALIFIED PERSONNEL. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:

FORMALDEHYDE:

CORROSIVE/SENSITIZER/TOXIC.

ACUTE EXPOSURE- VAPORS OR SOLUTIONS MAY CAUSE SMARTING, WHITE DISCOLORATION, ROUGHNESS, HARDNESS, ANESTHESIA, AND FIRST DEGREE BURNS. SENSITIZATION DERMATITIS CHARACTERIZED BY AN ECZEMATOUS, VESICULAR REACTION WHICH OCCURS SUDDENLY WITH ERUPTIONS ON THE EYELIDS, FACE, NECK, SCROTUM, AND ARMS. MAY OCCUR IN PREVIOUSLY EXPOSED INDIVIDUALS. URTICARIA HAS ALSO BEEN REPORTED. THE LETHAL DOSE IN RABBITS WAS 270 MG/KG. THE SYMPTOMS WERE NOT REPORTED.

CHRONIC EXPOSURE- PROLONGED OR REPEATED EXPOSURE MAY CAUSE SECOND DEGREE BURNS, NUMBNESS, AN ITCHING RASH, FINGERNAIL DAMAGE, HARDENING AND TANNING OF THE SKIN AND SENSITIZATION. THE RESULTING DERMATITIS MAY BE EITHER A SUDDEN VESICULAR REACTION, OR MAY BE DELAYED SEVERAL YEARS WITH ERUPTIONS STARTING ON THE DIGITAL AREAS, WRISTS AND OTHER PARTS OF THE BODY. MICE DEVELOPED SEVERE LIVER DAMAGE FOLLOWING TREATMENT ON THE SKIN.

METHYL ALCOHOL (METHANOL):

IRRITANT/NARCOTIC/NEUROTOXIN

ACUTE EXPOSURE- CONTACT WITH LIQUID MAY CAUSE IRRITATION. SKIN ABSORPTION MAY OCCUR AND CAUSE METABOLIC ACIDOSIS AND EFFECTS ON THE EYES AND CENTRAL NERVOUS SYSTEM AS DETAILED IN ACUTE INGESTION.
CHRONIC EXPOSURE- REPEATED OR PROLONGED CONTACT WITH THE LIQUID MAY CAUSE DEFTATING OF THE SKIN RESULTING IN ERYTHEMA, SCALING, AND ECZEMATOID DERMATITIS. CHRONIC ABSORPTION MAY RESULT IN METABOLIC ACIDOSIS AND EFFECTS AS DETAILED IN ACUTE INGESTION.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). IN CASE OF CHEMICAL BURNS, COVER AREA WITH STERILE, DRY DRESSING. BANDAGE SECURELY, BUT NOT TOO TIGHTLY. GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:

FORMALDEHYDE:

CORROSIVE.

ACUTE EXPOSURE- CONCENTRATIONS OF 0.05-3.0 PPM MAY CAUSE IRRITATION WITH REDNESS, ITCHING, PAIN, BLURRED VISION, AND MILD LACRIMATION. 4-20 PPM MAY CAUSE PROFUSE LACRIMATION, AND OCULAR DAMAGE. AQUEOUS SOLUTIONS

DATE: 08/14/93

ACCT: 888235-01

PAGE: 5

INDEX: N/A

CAT NO: F79P4

PO NBR: N/A

HAVE CAUSED EFFECTS RANGING FROM TRANSIENT, MINOR INJURY AND DISCOMFORT TO SEVERE, PERMANENT CORNEAL OPACIFICATION, AND LOSS OF VISION. CORNEAL OPACIFICATION MAY BE DELAYED FROM SEVERAL MINUTES TO HOURS. CHRONIC EXPOSURE- EFFECTS DEPEND ON THE CONCENTRATION AND DURATION OF EXPOSURE. REPEATED OR PROLONGED CONTACT WITH CORROSIVE SUBSTANCES MAY RESULT IN CONJUNCTIVITIS OR EFFECTS AS IN ACUTE EXPOSURE.

METHYL ALCOHOL (METHANOL):

IRRITANT:

ACUTE EXPOSURE- VAPORS MAY CAUSE IRRITATION. HIGH CONCENTRATIONS HAVE BEEN REPORTED TO CAUSE VIOLENT INFLAMMATION OF THE CONJUNCTIVA AND EPITHELIAL DEFECTS ON THE CORNEA. MILD IRRITATION MAY OCCUR WITH DILUTE SOLUTIONS; THE UNDILUTED LIQUID HAS PRODUCED MODERATE CORNEAL OPACITY AND CONJUNCTIVAL REDNESS IN RABBITS. APPLICATION OF A DROP OF METHANOL IN RABBIT EYES CAUSED A MILD REVERSIBLE REACTION, GRADED 3 ON A SCALE OF 1-10 AFTER 24 HOURS. CHRONIC EXPOSURE- REPEATED OR PROLONGED CONTACT MAY CAUSE CONJUNCTIVITIS.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). CONTINUE IRRIGATING WITH NORMAL SALINE UNTIL THE PH HAS RETURNED TO NORMAL (39-60 MINUTES). COVER WITH STERILE BANDAGES. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:

FORMALDEHYDE:

CORROSIVE/TOXIC.

ACUTE EXPOSURE- INGESTION OF THE GAS IS NOT LIKELY TO OCCUR; HOWEVER, INGESTION OF SOLUTIONS MAY CAUSE BURNING OF THE MOUTH, THROAT AND STOMACH, DIFFICULTY SWALLOWING, NAUSEA, VOMITING AND DIARRHEA, POSSIBLY BLOODY, SEVERE ABDOMINAL PAIN, HEADACHE, HYPOTENSION, VERTIGO, STUPOR, CONVULSIONS, UNCONSCIOUSNESS AND COMA. DEGENERATIVE CHANGES OF THE LIVER, HEART AND BRAIN, AND DAMAGE OF THE SPLEEN, PANCREAS, CENTRAL NERVOUS SYSTEM, AND KIDNEYS WITH ALBUMINURIA, HEMATURIA, ANURIA, AND ACIDOSIS MAY OCCUR. ASPIRATION MAY RESULT IN CHEMICAL PNEUMONITIS. DELAYED STENOSIS OF THE UPPER GASTROINTESTINAL TRACT MAY ALSO OCCUR. DEATH MAY BE DELAYED FOR SEVERAL HOURS TO DAYS AND MAY BE DUE TO SHOCK OR CIRCULATORY OR RESPIRATORY FAILURE. A MEAN FATAL DOSE IN HUMANS IS 1-2 OUNCES OF A 37% SOLUTION. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS. CHRONIC EXPOSURE- REPEATED INGESTION OF SMALL AMOUNTS OF FORMALDEHYDE MAY CAUSE GASTROINTESTINAL IRRITATION, VOMITING, AND DIZZINESS. SENSITIZATION REACTIONS HAVE BEEN REPORTED. MEN WHO INGESTED FORMALDEHYDE IN MILK FOR 15 DAYS COMPLAINED OF STOMACH OR INTESTINAL PAIN AND HEADACHE. OTHER REPORTED SYMPTOMS INCLUDED A BURNING SENSATION IN THE THROAT, A SLIGHT DECREASE IN BODY TEMPERATURE, AND, IN 4 OF THE MEN, AN ITCHING RASH ON THE CHEST AND THIGHS.

METHYL ALCOHOL (METHANOL):

NARCOTIC/NEUROTOXIN.

ACUTE EXPOSURE- MAY CAUSE MILD AND TRANSIENT INEBRIATION AND SUBSEQUENT DROWSINESS FOLLOWED BY AN ASYMPTOMATIC PERIOD LASTING 8-48 HOURS. FOLLOWING THE DELAY, COUGHING, DYSPNEA, HEADACHE, DULLNESS, WEAKNESS, VERTIGO OR DIZZINESS, NAUSEA, VOMITING, OCCASIONAL DIARRHEA, ANOREXIA, VIOLENT PAIN IN THE BACK, ABDOMEN, AND EXTREMITIES, RESTLESSNESS, APATHY OR DELIRIUM, AND RARELY, EXCITEMENT AND MANIA MAY OCCUR. RAPID, SHALLOW RESPIRATION DUE TO METABOLIC ACIDOSIS, COLD AND CLAMMY SKIN, HYPOTENSION, CYANOSIS, OPHTHICUS, CONVULSIONS, MILD TACHYCARDIA, CARDIAC DEPRESSION, PERIPHERAL NEURITIS, CEREBRAL AND PULMONARY EDEMA, UNCONSCIOUSNESS AND COMA ARE POSSIBLE. EFFECTS ON THE EYE MAY INCLUDE OPTIC NEURITIS, BLURRED OR DIMMED VISION, DILATED, UNRESPONSIVE PUPILS, PTOSIS, EYE PAIN, CONCENTRIC CONSTRICTION OF VISUAL FIELDS, DIPLOPIA, CHANGE IN COLOR PERCEPTION, PHOTOPHOBIA, AND OPTIC NERVE ATROPHY. PARTIAL BLINDNESS OR POSSIBLY DELAYED TRANSIENT OR PERMANENT BLINDNESS MAY OCCUR. BILATERAL SENSORINEURAL DEAFNESS HAS BEEN REPORTED IN A SINGLE CASE. LIVER, KIDNEY, HEART, STOMACH, INTESTINAL AND PANCREATIC DAMAGE MAY ALSO OCCUR. DEATH MAY BE DUE TO RESPIRATORY FAILURE OR RARELY FROM CIRCULATORY COLLAPSE. AS LITTLE AS 15 ML HAS CAUSED BLINDNESS; THE USUAL FATAL DOSE IS 60-240 ML. PROLONGED ASTHENA AND IRREVERSIBLE EFFECTS ON THE NERVOUS SYSTEM INCLUDING DIFFICULTY IN SPEECH, MOTOR DYSFUNCTION WITH RIGIDITY, SPASTICITY, AND HYPOKINESIS HAVE BEEN REPORTED. CHRONIC EXPOSURE- REPEATED INGESTION MAY CAUSE VISUAL IMPAIRMENT AND BLINDNESS AND OTHER SYSTEMIC EFFECTS AS DETAILED IN ACUTE INGESTION. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID- DILUTE, INACTIVATE, OR ABSORB INGESTED FORMALDEHYDE BY GIVING MILK, ACTIVATED CHARCOAL, OR TAP WATER. DO NOT USE GASTRIC LAVAGE OR EMETICS. ANY ORGANIC MATERIAL WILL INACTIVATE FORMALDEHYDE (DREISBACH, HANDBOOK OF POISONING, 12TH ED.) GET MEDICAL ATTENTION IMMEDIATELY. TREATMENT SHOULD BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL.

ANTIDOTE:

NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
FORMALDEHYDE SOLUTIONS ARE STABLE IN CLOSED CONTAINERS UNDER NORMAL TEMPERATURES AND PRESSURES; MAY OXIDIZE SLOWLY ON EXPOSURE TO AIR.

DATE: 08/14/93

ACCT: 888235-01

PAGE: 6

INDEX: N/A

CAT NO: F79P4

PO NBR: N/A

INCOMPATIBILITIES:

FORMALDEHYDE:

ACIDS (INORGANIC): FORMALDEHYDE SOLUTIONS REACT.
ALKALIES (STRONG): FORMALDEHYDE SOLUTIONS REACT.
AMMONIA: INCOMPATIBLE.
ANHYDRIDES: FORMALDEHYDE SOLUTIONS REACT.
ANILINE + PERCHLORIC ACID: ANILINE TREATED WITH PERCHLORIC ACID, THEN WITH FORMALDEHYDE, GIVES A RESINOUS PRODUCT WHICH BURNS WITH EXPLOSIVE VIOLENCE.
BISULFIDES: INCOMPATIBLE.
COPPER: FORMALDEHYDE SOLUTIONS MAY BE CORROSIVE.
COPPER ALLOYS: FORMALDEHYDE SOLUTIONS MAY BE CORROSIVE.
COPPER SALTS: FORMALDEHYDE SOLUTIONS MAY BE CORROSIVE.
IODINE: INCOMPATIBLE.
IRON PREPARATIONS: INCOMPATIBLE.
ISOCYANATES: FORMALDEHYDE SOLUTIONS REACT.
HYDROCHLORIC ACID: FORMS HIGHLY TOXIC BIS(CHLOROMETHYL) ETHER.
HYDROGEN PEROXIDE: VIOLENT REACTION.
NITROGEN DIOXIDE: SLOW REACTION BECOMES EXPLOSIVE AROUND 180 C.
NITROMETHANE: FORMS EXPLOSIVE COMPOUND IN THE PRESENCE OF ALKALIES.
OXIDES: FORMALDEHYDE SOLUTIONS REACT.
OXIDIZERS (STRONG): FIRE AND EXPLOSION HAZARD.
PEROXYFORMIC ACID (CONCENTRATED): VIOLENT OXIDATION REACTION.
PHENOL: POLYMERIZATION REACTION WITH SUDDEN PRESSURE DEVELOPMENT.
POTASSIUM PERMANGANATE: INCOMPATIBLE.
SILVER SALTS: INCOMPATIBLE.
STEEL: FORMALDEHYDE SOLUTIONS MAY BE CORROSIVE.
UREA: FORMALDEHYDE SOLUTIONS REACT.

METHYL ALCOHOL (METHANOL):

ACETYL BROMIDE: VIOLENT REACTION WITH FORMATION OF HYDROGEN BROMIDE.
ALKYL ALUMINUM SOLUTIONS: VIOLENT REACTION.
ALUMINUM: CORRODES.
BARIUM PERCHLORATE: DISTILLATION YIELDS HIGHLY EXPLOSIVE ALKYL PERCHLORATE.
BERYLLIUM HYDRIDE: VIOLENT REACTION, EVEN AT -196 C.
BROMINE: VIGOROUSLY EXOTHERMIC REACTION.
CALCIUM CARBIDE: VIOLENT REACTION.
CHLORINE: POSSIBLE IGNITION AND EXPLOSION HAZARD.
CHLOROFORM AND SODIUM HYDROXIDE: EXPLOSIVE REACTION.
CHROMIUM TRIOXIDE (CHROMIC ANHYDRIDE): POSSIBLE IGNITION.
CYANURIC CHLORIDE: VIOLENT REACTION.
DICHLOROMETHANE: POSSIBLE IGNITION AND EXPLOSION.
DIETHYL ZINC: POSSIBLE IGNITION AND EXPLOSION.
HYDROGEN PEROXIDE + WATER: EXPLOSION HAZARD.
IODINE + ETHANOL + MERCURIC OXIDE: EXPLOSION HAZARD.
LEAD: CORRODES.
LEAD PERCHLORATE: EXPLOSION HAZARD.
MAGNESIUM: VIOLENT REACTION.
MAGNESIUM (POWDERED): MIXTURES ARE CAPABLE OF DETONATION.
METALS: INCOMPATIBLE.
NICKEL: POSSIBLE IGNITION IN THE PRESENCE OF NICKEL CATALYST.
NITRIC ACID (CONCENTRATED): MIXTURES OF GREATER THAN 25% ACID MAY DECOMPOSE VIOLENTLY.
OXIDIZERS (STRONG): FIRE AND EXPLOSION HAZARD.
PERCHLORIC ACID: EXPLOSION HAZARD.
PHOSPHOROUS TRIOXIDE: POSSIBLE VIOLENT REACTION AND IGNITION.
PLASTICS, RUBBER, COATINGS: MAY BE ATTACKED.
POTASSIUM: POSSIBLE DANGEROUS REACTION.
POTASSIUM HYDROXIDE + CHLOROFORM: EXOTHERMIC REACTION.
POTASSIUM TERT-BUTOXIDE: FIRE AND EXPLOSION HAZARD.
SODIUM + CHLOROFORM: POSSIBLE EXPLOSION.
SODIUM HYPOCHLORITE: EXPLOSION HAZARD.
SODIUM METHOXIDE + CHLOROFORM: VIOLENT REACTION.
SULFURIC ACID: FIRE AND EXPLOSION HAZARD.
ZINC: EXPLOSION HAZARD.

DECOMPOSITION:

THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC AND HAZARDOUS FUMES OF FORMALDEHYDE AND OXIDES OF CARBON.

POLYMERIZATION:

FORMALDEHYDE:

MAY UNDERGO A NON-HAZARDOUS SELF-POLYMERIZATION TO FORM PARAFORMALDEHYDE WHICH PRECIPITATES OUT OF SOLUTION. (METHANOL IS ADDED AS AN INHIBITOR IN TECHNICAL GRADES).
IT WILL POLYMERIZE WITH ACTIVE ORGANIC MATERIALS, SUCH AS PHENOL, WITH SUDDEN PRESSURE DEVELOPMENT.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE.

****STORAGE****

STOR AWAY FROM INCOMPATIBLE SUBSTANCES.

DATE: 08/14/93
INDEX: N/A

ACCT: 888235-01
CAT NO: F79P4

PAGE: 7
PO NBR: N/A

CONDITIONS TO AVOID

AVOID CONTACT WITH HEAT, SPARKS, FLAMES OR OTHER IGNITION SOURCES. VAPORS MAY BE EXPLOSIVE. MATERIAL IS CORROSIVE; AVOID CONTACT WITH SKIN OR EYES. DO NOT ALLOW CONTAMINATION OF WATER SOURCES.

SPILL AND LEAK PROCEDURES

SOIL SPILL:
DIG HOLDING AREA SUCH AS LAGOON, POND OR PIT FOR CONTAINMENT.

DIKE FLOW OF SPILLED MATERIAL USING SOIL OR SANDBAGS OR FOAMED BARRIERS SUCH AS POLYURETHANE OR CONCRETE.

USE CEMENT POWDER OR FLY ASH TO ABSORB LIQUID MASS.

AIR SPILL:
KNOCK DOWN VAPORS WITH WATER SPRAY. KEEP UPWIND.

WATER SPILL:
APPLY UNIVERSAL GELLING AGENT TO IMMOBILIZE TRAPPED SPILL AND INCREASE EFFICIENCY OF REMOVAL.

LIMIT SPILL MOTION AND DISPERSION WITH NATURAL BARRIERS OR OIL SPILL CONTROL BOOMS.

APPLY DETERGENTS, SOAPS, ALCOHOLS OR ANOTHER SURFACE ACTIVE AGENT.

USE SUCTION HOSES TO REMOVE TRAPPED SPILL MATERIAL.

USE MECHANICAL DREDGES OR LIFTS TO EXTRACT IMMOBILIZED MASSES OF POLLUTION AND PRECIPITATES.

ADD SUITABLE AGENT TO NEUTRALIZE SPILLED MATERIAL TO PH-7.

OCCUPATIONAL SPILL:
SHUT OFF IGNITION SOURCES. DO NOT TOUCH SPILLED MATERIAL. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. DO NOT GET WATER INSIDE CONTAINER. FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. NO SMOKING, FLAMES OR FLARES IN HAZARD AREA. KEEP UNNECESSARY PEOPLE AWAY; ISOLATE HAZARD AREA AND DENY ENTRY.

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE LOCAL EXHAUST OR PROCESS ENCLOSURE VENTILATION TO MEET THE PUBLISHED EXPOSURE LIMITS. VENTILATION EQUIPMENT MUST BE EXPLOSION-PROOF.

RESPIRATOR:
THE FOLLOWING RESPIRATORS ARE THE MINIMUM LEGAL REQUIREMENTS AS SET FORTH BY THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION FOUND IN 29 CFR 1910, SUBPART Z.

FORMALDEHYDE:

UP TO 7.5 PPM- FULL FACEPIECE WITH CARTRIDGES OR CANISTERS SPECIFICALLY (10X PEL) APPROVED FOR PROTECTION AGAINST FORMALDEHYDE. *

UP TO 75 PPM- FULL-FACE MASK WITH CHIN STYLE OR CHEST OR BACK MOUNTED TYPE (100X PEL) WITH INDUSTRIAL SIZE CANISTER SPECIFICALLY APPROVED FOR PROTECTION AGAINST FORMALDEHYDE.
TYPE C SUPPLIED AIR RESPIRATOR, PRESSURE DEMAND OR CONTINUOUS FLOW TYPE, WITH FULL FACEPIECE, HOOD OR HELMET.

ABOVE 75 PPM- SELF-CONTAINED BREATHING APPARATUS WITH POSITIVE PRESSURE OR UNKNOWN FULL FACEPIECE.
(EMERGENCIES) COMBINATION SUPPLIED-AIR FULL FACEPIECE POSITIVE PRESSURE RESPIRATOR WITH AUXILIARY SELF-CONTAINED AIR SUPPLY.

FIREFIGHTING- SELF-CONTAINED BREATHING APPARATUS WITH POSITIVE PRESSURE IN FULL FACEPIECE.

ESCAPE- SELF-CONTAINED BREATHING APPARATUS IN DEMAND MODE.
FULL-FACE MASK WITH CHIN STYLE OR FRONT OR BACK MOUNTED TYPE WITH INDUSTRIAL SIZE CANISTER SPECIFICALLY APPROVED FOR PROTECTION AGAINST FORMALDEHYDE.

*- A HALF-MASK RESPIRATOR WITH CARTRIDGES SPECIFICALLY APPROVED FOR PROTECTION AGAINST FORMALDEHYDE CAN BE SUBSTITUTED FOR THE FULL FACEPIECE RESPIRATOR PROVIDED THAT EFFECTIVE GAS-PROOF GOGGLES ARE PROVIDED AND USED IN COMBINATION WITH THE HALF-MASK RESPIRATOR.

THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS, OR NIOSH CRITERIA DOCUMENTS.

DATE: 08/14/93
INDEX: N/A

ACCT: 888235-01
CAT NO: F79P4

PAGE: 8
PO NBR: N/A

THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

FORMALDEHYDE:
AT ANY DETECTABLE CONCENTRATION:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.
ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ESCAPE- ANY AIR-PURIFYING, FULL-FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE, FRONT- OR BACK-MOUNTED CANISTER PROVIDING PROTECTION AGAINST FORMALDEHYDE.
ANY APPROPRIATE ESCAPE-TYPE, SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT ANY POSSIBILITY OF SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES AND A FACESHIELD TO PREVENT CONTACT WITH THIS SUBSTANCE.

EMERGENCY WASH FACILITIES:
WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES AND/OR SKIN MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN AND QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

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