MATERIAL ***S***AFETY ***D***ATA ***S***HEET

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FOR PRODUCT AND SALES INFORMATION

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PRODUCT IDENTIFICATION

PRODUCT NAME: **Formalin 10% Buffered In Acetate**

TRADE NAMES/SYNONYMS: Buffered Formalin Solution; Buffered Formalin; SF99; ACC41129

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 CAS# 50-00-0	PERCENT:	3.9-4.0
	METHYL ALCOHOL CAS # 67-56-1		2.0
	SODIUM ACETATE CAS# 127-09-3		1.2-2.0
	WATER		92.0-93.0

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 A2-Suspected Human Carcinogen.
0.016 ppm NIOSH recommended TWA; 0.1 ppm NIOSH recommended 15 min ceiling
0.5ppm (0.6 mg/m3) DFG MAK TWA;
1ppm (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

PHYSICAL DATA

DESCRIPTION: Liquid
BOILING POINT: Not available
SPECIFIC GRAVITY: Not available
SOLUBILITY IN WATER: Soluble

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
Moderate fire hazard when exposed to heat or flame.

Vapor-air mixtures are explosive above flash point.

FIREFIGHTING MEDIA:
Dry chemical, carbon dioxide, water spray or regular foam
(1993 Emergency Response Guidebook, RSPA P 5800.6).

For larger fires, use water spray, fog or regular foam

FIREFIGHTING:

Move container from fire area if you can do it without risk. Do
Not scatter spilled material with high-pressure water streams.
Dike fire-control water for later disposal

Use agents suitable for type of surrounding fire. Avoid breathing hazardous vapors, keep upwind.

TOXICITY

FORMALDEHYDE:

IRRITATION DATA:

150 ug/3 days intermittent skin-human mild; 2mg/24 hours skin-rabbit severe; 540 mg open skin-rabbit mild; 50 mg/24 hours skin moderate; 4ppm/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 TCLo; 300 ug/m3 inhalation-man TCLo; 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; 40 ppm/6 hours/13 weeks-intermittent inhalation-mouse TCLo; 270 mg/kg skin-rabbit LD50; 108 mg/kg oral-woman LDLo; 643 mg/kg oral-man TDLo; 646 mg/kg oral-man TDLo; 100 mg/kg oral-rat LD50; 42 mg/kg oral-mouse LD50; 260 mg/kg oral guinea pig LD50; 3500 mg/kg/4 weeks-continuous oral-rat TDLo; 60 gm/kg/2 years continuous oral-rat TDLo; 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:

86000 mg/m3 inhalation-human TCLo; 300 ppm inhalation-human TCLo; 64000 ppm/4 hours inhalation-rat LC50; 1000 ppm inhalation-monkey LCLo; 50

gm/m3/2 hours inhalation-mouse LCLo; 44 gm/m3/6 hours inhalation-cat LCLo; 50 mg/m3/12 hours/13 weeks-intermittent inhalation-rat TCLo; 15800 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 LDLo; 4 gm/kg oral-woman TDLo; 7 gm/kg oral monkey LD50; 5628 mg/kg oral-rat LD50; 7300 mg/kg oral-mouse LD50; 14200 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; 10765 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.
ADDITIONAL DATA: May cause blindness.

SODIUM ACETATE:
IRRITATION DATA:
ANHYDROUS: 500 mg/24 hours skin-rabbit mild; 10 mg eye-rabbit mild.
TOXICITY DATA:
ANHYDROUS: 3530 mg/kg oral-rat LD50; 6891 mg/kg oral-mouse LD50; 3200 mg/kg subcutaneous-mouse LD50; 1195 mg/kg intravenous-mouse LDLo; 1300 mg/kg intravenous-rabbit LDLo.
MONOHYDRATE: Reproductive effects data (RTECS).
TRIHYDRATE: 3530 mg/kg oral-rat LD50; 8000 mg/kg subcutaneous-mouse LD50; 335 mg/kg intravenous-mouse LD50; mutagenic data (RTECS).
CARCINOGEN STATUS: None
ACUTE TOXICITY LEVEL: Moderately toxic by ingestion.
TARGET EFFECTS: No data available.

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, 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
continously 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. 25,000ppm 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 blepharospasm.
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 200-375ppm caused recurrent
headaches in workers. Exposure for 4 years to 1200-8000ppm resulted in
marked diminution of vision and enlargement of the liver in a workman.

Reproductive effects have been reported in animals.

SODIUM ACETATE:
ACUTE EXPOSURE- Inhalation of dusts may cause irritation with coughing and shortness of breath.
CHRONIC EXPOSURE- No data available.

FIRST AID- Remove from exposure area to fresh air immediately. Perform artificial respiration if necessary. Maintain airway, blood pressure and respiration. Keep warm and at rest. Treat symptomatically and supportively. Get medical attention immediately. Qualified medical personnel should consider administering oxygen.

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 defatting of the skin resulting in erythema, scaling, and eczematoid dermatitis. Chronic absorption may result in metabolic acidosis and effects as detailed in acute ingestion.

SODIUM ACETATE:
ACUTE EXPOSURE- Application of 500mg of anhydrous sodium acetate to rabbit skin for 24 hours produced mild irritation.
CHRONIC EXPOSURE- No data available.

FIRST-AID- Remove contaminated clothing and shoes immediately. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minutes). If burns occur, proceed with the following: Cover affected area securely with
sterile, dry, loose-fitting dressing. Treat symptomatically and supportively. 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 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.

SODIUM ACETATE:
ACUTE EXPOSURE- Application of 10mg of anhydrous sodium acetate to rabbit eyes produced mild irritation.
CHRONIC EXPOSURE- No data available.

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 (30-60 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, opisthotonos, 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 60-240ml. Prolonged asthenia and irreversible effects on the nervous system including difficulty in speech, motor dysfunction with rigidity, spasticity, and hypokiness 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.

SODIUM ACETATE:
ACUTE EXPOSURE- Ingestion may cause abdominal pain and vomiting.
Animal studies with the monohydrate indicate that effects on female fertility may occur when administered during gestation.

FIRST AID- It is unlikely that emergency treatment will be required.
If adverse effects occur, proceed with the following: Treat symptomatically and supportively. Get medical attention.

REACTIVITY

REACTIVITY: Stable under normal temperatures and pressures.

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^{o}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.
ALKYLALUMINUM SOLUTIONS: violent reaction.
ALUMINUM: Corrodes.
BARIUM PERCHLORATE: Distillation yields highly explosive alkyl perchlorate.
BERYLLIUM HYDRIDE: Violent reaction, even at -196^{o}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.

SODIUM ACETATE:
ACIDS (STRONG): Forms acetic acid fumes.
DIKETENE: May cause violent polymerization.
FLUORINE: Explosive reaction involving formation of diacetyl peroxide.
OXIDIZERS: Fire and explosion hazard.

POTASSIUM NITRATE: May form explosive mixtures.

DECOMPOSITION:
Thermal decomposition may release toxic and/or hazardous gases.

POLYMERIZATION:
Hazardous polymerization has not been reported to occur under normal temperatures and pressures.

STORAGE AND DISPOSAL

Observe all Federal, State and local regulations when storing or disposing of this substance.

STORAGE: Store away from incompatible substances.

Threshold Planning Quantity (TPQ):
The Superfund Amendments and Reauthorization Act (SARA) Section 302 requires that each facility where any extremely hazardous substance is present in a quantity equal to or greater than the TPQ established for that substance notify the state emergency response commission for the state in which it is located. Section 303 of SARA requires these facilities to participate in local emergency response planning (40 CFR 355.30).

CONDITIONS TO AVOID

May burn but does not ignite readily. Avoid contact with strong oxidizers, excessive heat, sparks, or open flame.

SPILL AND LEAK PROCEDURES

WATER SPILL:
The California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) prohibits contaminating any known source of drinking water with substances known to cause cancer and/or reproductive toxicity.

OCCUPATIONAL SPILL:

Stop leak if you can do it without risk. For small spills, take up with sand or other absorbent material and place into clean, dry containers for later disposal. Keep unnecessary people away. Isolate hazard area and deny entry.

Reportable Quantity (RQ):
The Superfund Amendments and Reauthorization Act (SARA) Section 304 requires that a release equal to or greater than the reportable quantity established for that substance be immediately reported to the local emergency planning committee and the state emergency response commission (40 CFR 355.40). If the release of this substance is reportable under CERCLA Section 103, the National Response Center must be notified immediately (40 CFR 302.6).

PROTECTIVE EQUIPMENT

VENTILATION:

Provide local exhaust or process enclosure ventilation to meet the published exposure limits. Ventilation equipment should be explosion-proof if explosive concentrations of dust, vapor or fume are present.

Formaldehyde:

Ventilation should meet the requirements in 29 CFR 1910.1048 (f).

RESPIRATOR:
The following respirators are the minimum legal requirements as set forth by the Occupational Safety and Health Administration found in 29 CFR 1910, Sub-part Z.

FORMALDEHYDE:

Up to 7.5 ppm- (10x PEL) Full facepiece with cartridges or canisters specifically approved for protection against formaldehyde. *

Up to 75 ppm- (100x PEL) Full-face mask with chin style or chest or back mounted 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
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.

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.

FORMALDEHYDE:

Protective clothing should meet the requirements for personal protective equipment in 29 CFR 1910.1048(h).

GLOVES:
Employee must wear appropriate protective gloves to prevent contact with this substance.

FORMALDEHYDE:

Protective gloves should meet the requirements for personal protective equipment in 29 CFR 1910.1048(h).

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 than 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.

FORMALDEHYDE:
Protective eye equipment should meet the requirements for protective clothing and equipment in 29 CFR 1910. 1048(h).