MATERIAL SAFETY DATA SHEET

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I. PRODUCT IDENTIFICATION

PRODUCT NAME: **Aqua Seal**
PRODUCT I.D.: **STI-03-0.03 A**
CHEMICAL FAMILY: Polymeric MDI.

II. HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

INGREDIENT NAME/ CAS NUMBER	*%*	*EXPOSURE LIMITS OSHA PEL*	*ACGIH TLV*
Polymethylene polyphenyl isocyanate (CAS# 9016-87-9) Containing 4,4'Methylene bisphenyl isocyanate (CAS# 101-68-8)	100% 42-45%	0.02 ppm Ceiling (0.2 mg/m3-Ceiling)	0.005 ppm TWA (0.055 mg/m3)

III. PHYSICAL / CHEMICAL CHARACTERISTICS

APPEARANCE (physical form, color, texture, etc.)	Brown liquid.
ODOR:	Slightly musty.
MELTING POINT:	Not established.
FREEZE POINT:	Not established.
BOILING POINT:	410° F (210° C) @ 5 mmHg
VAPOR PRESSURE (mm Hg):	$< 1 \times 10^{-5}$ mmHg @ 77° F (25° C)
VAPOR DENSITY (Air = 1)	8.5
SPECIFIC GRAVITY (H_2O = 1):	1.24 @ 68°F (20° C)
EVAPORATION RATE (Butyl Acetate = 1):	Not established.
SOLUBILITY IN WATER:	Insoluble in water, reacts with evolution of CO2.
NFPA RATINGS:	Health = 3 Flammability = 1 Reactivity = 1

IV. FIRE & EXPLOSION HAZARD DATA

FLASH POINT (Method Used):	> 400° F (204° C) Pensky-Martens Closed Cup
AUTOIGNITION TEMPERATURE:	> 1100° F (600° C)
FLAMMABLE LIMITS:	
LEL (Lower Explosion Limit)=	Not applicable.
UEL (Upper Explosion Limit)=	Not applicable.

EXTINGUISHING MEDIA: Carbon dioxide (CO2), dry chemical, foam, water fog or fine spray. Alcohol resistant foams (ATC type) are preferred if available. General purpose synthetic foams (including AFFF) or protein foams may function, but much less effectively. Do not use direct water stream as this may spread the fire.

SPECIAL FIRE FIGHTING PROCEDURES: Keep people away. Isolate fire area and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Water is not recommended but may be applied in very large quantities as a fine spray when other extinguishing agents are not available. Contain fire water run-off if possible. Do not use direct water stream as this may spread the fire. Fight fire from protected location or safe distance. Consider use of unmanned hose holder or monitor nozzles. Use water spray to cool fire exposed containers and fire affected zone until fire is out. Immediately withdraw all personnel from area in case of rising sound from venting safety device or discoloration of the container. Move container from fire area if this is possible without hazard.

HAZARDOUS COMBUSTION PRODUCTS: During a fire, smoke may contain the original material in addition to unidentified toxic and/or irritating compounds. Hazardous combustion products may include but are not limited to: nitrogen oxides, isocyanates, hydrogen cyanide, carbon monoxide (CO), and carbon dioxide (CO2).

UNUSUAL FIRE & EXPLOSION HAZARDS: Product reacts with water. Reaction may produce heat and/or gases. Reaction may be violent. Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Dense smoke is produced when product burns. Spills of these organic liquids on hot fibrous insulations may lead to lowering of the auto ignition temperatures possibly resulting in spontaneous combustion.

PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant clothing with SCBA. This will not provide sufficient fire protection; consider fighting fire from a remote location. For protective equipment in post-fire or non-fire, clean-up situations, refer to the relevant sections.

V. REACTIVITY DATA

STABILITY: Stable under recommended storage conditions.
CONDITIONS TO AVOID (if unstable): Avoid temperatures above 105° F (41° C). Avoid temperatures below 75° F (24° C). Can react with itself at temperatures above 320° F (160° C). Product can decompose at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems. Pressure build-up can be rapid. Avoid moisture. Material reacts slowly with water, releasing carbon dioxide (CO2), which can cause pressure buildup and rupture of closed containers. Elevated temperatures accelerate this reaction.

INCOMPATIBILITY (MATERIALS TO AVOID): Avoid contact with acids, water, alcohols, amines, ammonia, bases, moist air, and strong oxidizers. Avoid contact with metals such as aluminum, brass, copper, galvanized metals, tin, zinc. Avoid contact with moist organic absorbents. Reaction with water will generate carbon dioxide (CO2) and heat. Generation of gas can cause pressure buildup in closed systems. Avoid unintended contact with polyols. The reaction of polyols and isocyanates generates heat. Diisocyanates react with many materials and the rate of reaction increases with temperature as well as increased contact. These reactions can become violent. Contact is increased by stirring or if the other material mixes with the diisocyanate. Diisocyanates are not soluble in water and are denser than water and sink to the bottom, but react slowly at the interface. The reaction forms carbon dioxide gas and a layer of solid polyurea.

HAZARDOUS DECOMPOSITION OF BYPRODUCTS: Hazardous decomposition products depend upon temperature, air supply and the presence of other materials. Gases are released during decomposition.

HAZARDOUS POLYMERIZATION: Can occur. Polymerization can be catalyzed by: strong bases and water. Can react with itself at temperatures above 320° F (160° C).
CONDITIONS TO AVOID (if polymerization may occur): See above.

VI. HEALTH HAZARD DATA

ROUTES OF ENTRY:

INHALATION?	Yes.
SKIN CONTACT?	Yes.
EYE CONTACT?	Yes.
INGESTION?	Yes.

VI. HEALTH HAZARD DATA (Continued)

HEALTH HAZARDS:

INHALATION- At room temperature, vapors are minimal due to low vapor pressure. However, certain operations may generate vapor or aerosol concentrations sufficient to cause irritation or other adverse effects. Such operations include those in which the material is heated, sprayed or otherwise mechanically dispersed such as drumming, venting or pumping. Excessive exposure may cause irritation to upper respiratory tract and lungs, and pulmonary edema (fluid in the lungs). May cause respiratory sensitization in susceptible individuals. MDI concentrations sensitized. Symptoms may include coughing, difficult breathing and a feeling of tightness in the chest. Effects may be delayed. Decreased lung function has been associated with overexposure to isocyanates. Tissue injury in the upper respiratory tract and lungs has been observed in laboratory animals after repeated excessive exposures to MDI/polymeric MDI aerosols.

SKIN- Prolonged or repeated exposure may cause slight skin irritation. May cause allergic skin reaction in susceptible individuals. Animal studies have shown that skin contact with isocyanates may play a role in respiratory sensitization. May stain skin. A single prolonged exposure is not likely to result in the material being absorbed in harmful amounts.

EYE- May cause moderate eye irritation. May cause very slight transient (temporary) corneal injury.

INGESTION- Single dose oral toxicity is considered to be low. No hazards anticipated from swallowing small amounts incidental to normal handling operations.

OTHER- In laboratory animals, MDI/polymeric MDI did not cause birth defects; other fetal effects occurred only at high doses which were toxic to the mother.
Also, the reaction of polyols and isocyanates generate heat. Contact of the reacting materials with skin or eyes can cause severe burns and may be difficult to remove from the affected areas. In addition, such contact increases the risk of isocyanate vapors.

CARCINOGENICITY:

NTP (National Toxicology Program)? No.
IARC (International Agency for Research on Cancer)? No.
OSHA REGULATED? No.

NOTE: Lung tumors have been observed in laboratory animals exposed to aerosol droplets of MDI/Polymeric MDI 96mg/m3) for their lifetime. Tumors occurred concurrently with respiratory irritation and lung injury. Current exposure guidelines are expected to protect against these effects reported for MDI.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None known.

VI. HEALTH HAZARD DATA (Continued)

EMERGENCY & FIRST AID PROCEDURES:

INHALATION- Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

SKIN- Remove material from skin immediately by washing with soap and plenty of water (warm water is preferable if readily available). Remove contaminated clothing and shoes while washing. Seek medical attention if irritation persists. An MDI skin decontamination study demonstrated that cleaning very soon after exposure is important, and that a polyglycol-based skin cleanser or corn oil may be more effective than soap and water.

EYE- Irrigate with flowing water immediately and continuously for 15 minutes. Consult medical personnel.

INGESTION- If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

NOTE TO PHYSICIAN- No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient. May cause respiratory sensitization or asthma-like symptoms. Bronchodilators, expectorants, and pulmonary edema, may be delayed. Persons receiving significant exposure should be observed for 24-48 hours for signs of respiratory distress.

VII. PRECAUTIONS FOR SAFE HANDLING & USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

- Evacuate "immediate" spill area and keep nonessential or unprotected personnel away.
- Contact your supervisor.
- Equip clean-up personnel with necessary personal protective equipment (see Section VIII-Control Measures).
- Stop the spill, leak, or other flow of product.
- Contain or dike the spilled product, creating a barrier around the spill and the inlet to any sewers or drains.
- Ventilate spill area.
- If temporary control of isocyanate vapor is required, a blanket of protein foam (available at most fire departments) may be placed over the spill.
- Prevent spilled material from entering soil, sewers, surface water, ground water, streams, or any other bodies of water.
- Retain any contaminated water for removal and treatment.

VII. PRECAUTIONS FOR SAFE HANDLING & USE (Continued)

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED (Continued):

- Absorb small spills with inert absorbent material (e.g. vermiculite, saw dust, clay earth, sweeping compound, sand, etc.).
- Large spills may be pumped or vacuumed into a closed, but not sealed container and then finished off with dry absorbent.
- Scoop up absorbed material and absorbent and place in a metal drum or other approved chemical waste container (a closed, but not sealed container).
- Apply neutralizing solution to the absorbed material in the waste container to ensure adequate decontamination. Lid should remain loose and not sealed or tightened as dangerous pressures may result from the neutralization process.
- Move the loosely covered drum to a well-ventilated area (outside, etc.) .
- Monitor the drum frequently for the next 48-hours in case over pressurization results from continued reaction and while carbon dioxide escapes.
- Decontaminate receiving surface (floor, etc.) with neutralizing solution and let it stand for at least 15 minutes.
- Acceptable neutralizing solutions are:
  80% water + 20% non-ionic Tergitol
  OR 90% water + 5% ammonia solution + 5% detergent
- Recommended ratio for thorough decontamination is 1 part of spilled material to 10 parts of neutralizing solution.
- Report spill per regulatory requirements.

WASTE DISPOSAL METHOD: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal methods must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations my vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator.
FOR UNUSED AND UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: recycler, reclaimer, incinerator or other thermal destruction device.

PRECAUTIONS TO BE TAKEN IN HANDLING & STORING:

Handling: Avoid contact of this product with water at all times during handling and storage. Use only with adequate ventilation. Keep equipment clean. Use disposal containers and tools where possible. Do not eat, drink or smoke in working areas.

Storage: Store in a dry place. Store between 75F-105F (24C-41C). Keep containers tightly closed when not in use. Protect from atmospheric moisture. Maintain a nitrogen atmosphere. Do not store product contaminated with water to prevent potentially hazardous reaction.

OTHER PRECAUTIONS: None known.

VIII. CONTROL MEASURES (INCLUDING PERSONAL PROTECTION)

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When atmospheric levels may exceed the exposure guideline, use an approved air-purifying respirator equipped with an organic vapor sorbent and a particle filter. For situations where the atmospheric levels may exceed the level for which an air-purifying respirator is effective, use a positive-pressure air-supplying respirator (airline or self-contained breathing apparatus). For emergency response or for situations where the atmospheric level is unknown, use an approved positive-pressure self-contained breathing apparatus.

VENTILATION: Use only with adequate ventilation. Provide general and or local exhaust ventilation to control airborne levels below the exposure guidelines. Exhaust systems should be designed to move the air away from the source of vapor/aerosol generation and the people working at this point. Odor is inadequate warning of excessive exposure.

SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as face shield, gloves, boots, apron, or full-body suit will depend on operation. Remove contaminated clothing immediately, wash skin area with soap and water (warm water if available) and launder clothing before reuse. Items which cannot be decontaminated, such as shoes, belts and watchbands, should be removed and destroyed.

EYE PROTECTION: Use chemical goggles.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Safety showers and eyewash stations should be readily available and in working condition.

WORK/HYGIENIC PRACTICES: Wash hands, forearms, and face thoroughly after handling product and before eating, smoking, using lavatory, and at the end of the day. Educate and train employees in safe use of product. Follow all label instructions.

IX. OTHER INFORMATION

OSHA HAZARD COMMUNICATION STATUS: This product is hazardous as defined under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.

RCRA STATUS: MDI is not listed as a hazardous waste. To the best of our knowledge, MDI does not meet the criteria of a hazardous waste if discarded in its purchased form. However, under RCRA, it is the responsibility of the user of products to determine, at the time of disposal, whether a product meets any of the criteria for a hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting material hazardous, under the criteria of ignitability, corrosivity, reactivity, and EP toxicity (40 CFR 261.20-24).

IX. OTHER INFORMATION (Continued)

US INVENTORY (TSCA): The ingredients of this product are listed on the TSCA inventory or are not required to be listed on the TSCA inventory.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA), TITLE III:

Section 302 - Extremely Hazardous Substances:

None.

Section 311/312 – Hazard Categories:

An immediate health hazard
A delayed health hazard

Section 313 - Toxic Chemical Notification & Release Reporting:

Methylene bis(phenylisocyanate) (MDI)	
(CAS# 101-68-8)	42-45%
Polymeric diphenylmethane diisocyanate	
(CAS# 9016-87-9)	100%

This information must be included in all MSDSs that are copied and distributed for this material.

X. APPROVALS

PREPARED BY: JanetBalvin/PW
APPROVED BY: Steve Longacre

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XI. PRODUCT IDENTIFICATION

PRODUCT NAME: **Aqua Seal**
PRODUCT I.D : **STI-03-0.03 B**
CHEMICAL FAMILY: Polyester polyol blend

XII. HAZARDOUS INGREDIENTS

INGREDIENT NAME/ CAS NUMBER	*%*	*EXPOSURE LIMITS OSHA PEL*	*ACGIH TLV*
1,4-Butanediol (aka-BDO) (CAS# 110-63-4)	1-10%	Not established.	Not established.
Carbon Black (CAS# 1333-86-4)	1-10%	Not established.	Not established.

XIII. PHYSICAL / CHEMICAL CHARACTERISTICS

APPEARANCE (physical form, color, texture, etc.)	Black liquid at room temperature.
ODOR:	Low odor.
MELTING POINT:	68° F (20° C) for BDO.
FREEZE POINT:	68° F (20° C) for BDO
BOILING POINT:	442° F (228° C) @ 760 mm Hg for BDO
VAPOR PRESSURE (mm Hg):	<1 mm Hg at 68° F (20° C) for BDO
VAPOR DENSITY (Air = 1)	3.2 for BDO
SPECIFIC GRAVITY (H_2O = 1):	1.0171 for BDO
EVAPORATION RATE (Butyl Acetate = 1):	Less than 1 for BDO
SOLUBILITY IN WATER:	BDO is easily soluble in cold water.

XIV. FIRE & EXPLOSION HAZARD DATA

FLASH POINT (Method Used): 311° F (155° C) (Open Cup)

FLAMMABLE LIMITS:
LEL (Lower Explosion Limit)= Not Available.
UEL (Upper Explosion Limit)= Not Available.

EXTINGUISHING MEDIA: Foam, water spray, dry chemical, carbon dioxide (CO_2).
For SMALL FIRE – use DRY chemical powder. For LARGE FIRE – use water spray, fog or foam. (Alcohol resistant foam). Do not use water jet or straight streams of water as this may spread fire. NOTE: Direct application of water or foam may cause frothing. Use water spray to cool containers exposed to fire.

SPECIAL FIRE FIGHTING PROCEDURES: Prevent human exposure to fire, fumes, smoke, and products of combustion. Evacuate non-essential personnel. Firefighters should wear NIOSH approved positive pressure self-contained breathing apparatus with full-face mask and impervious protective clothing. Do not spray pool fires with direct water stream (see above).

UNUSUAL FIRE & EXPLOSION HAZARDS: May be combustible at high temperature. Products of combustion are carbon oxides (carbon monoxide (CO) & carbon dioxide (CO_2)) and Tetrahydrofuran. When heated in the presence of sulfuric acid (H2SO4), forms highly flammable tetrahydrofuran. This material is not explosive as defined by established regulatory criteria. Hot organic chemical vapors may spontaneously ignite or explode when mixed with air, even at temperatures below their published auto ignition temperature. Vapors are heavier than air and may collect in low areas.

XV. REACTIVITY DATA

STABILITY: Stable under normal conditions. Unstable with heat. Flammable tetrahydrofuran (THF) begins to form at about 302° F (150° C).
CONDITIONS TO AVOID (if unstable): Heat, heated surfaces, static electricity, electric arcs, sparks & flames. Exposure to moisture.

INCOMPATIBILITY (MATERIALS TO AVOID): Reactive with oxidizing agents or bleaching agents such as chlorine, oxygen, permanganates, perchlorates, percarbonates, peroxides, chromates, hypochlorites, nitric acid, sulfuric acid, and hydrogen peroxide. Isocyanates and other materials that react with hydroxyl groups.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: Products of combustion are carbon oxides (carbon monoxide (CO) & carbon dioxide (CO_2)) and Tetrahydrofuran.

HAZARDOUS POLYMERIZATION: Will not occur.
CONDITIONS TO AVOID (if polymerization may occur): Not applicable.
OTHER: Avoid inhalation of vapors and spray mist. Avoid all possible sources of ignition (spark or flame).

XVI. HEALTH HAZARD DATA

ROUTES OF ENTRY:

INHALATION?	Yes.
SKIN CONTACT?	Yes.
EYE CONTACT?	Yes.
INGESTION?	Yes.

HEALTH HAZARDS:

NOTES- Repeated or prolonged exposure to BDO can produce nervous system damage. There is experimental evidence that BDO may cause toxicity to the developing fetus at maternally toxic doses.

The Carbon Black pigments in this product may become a dust nuisance when removed by abrasive blasting, sanding, or grinding.

INHALATION- No significant health hazards identified. May cause respiratory irritation. At normal ambient temperatures this product will be unlikely to present an inhalation hazard because of its low volatility.

SKIN- Contact may cause slight irritation. May be absorbed through the skin to cause effects similar to ingestion. Prolonged or repeated skin contact may cause skin irritation with discomfort or rash.

EYE- Slightly irritating to the eyes, with discomfort, tearing, or blurring of vision.

INGESTION- MAY BE FATAL IF SWALLOWED. Human deaths have been reported following intentional ingestion of BDO. The lethal dose of BDO in humans (in its pure form) is estimated to be 5.4 – 20 grams (approx 0.2 – 0.7 fluid ounces). May cause temporary nervous system depression with anesthetic effects such as dizziness, headache, drowsiness, nausea, confusion, incoordination, and loss of consciousness. Gross overexposure of BDO by ingestion may cause damage to the kidneys, central nervous system (CNS), &/or respiratory system. Other side effects may be gastric disturbances.

CARCINOGENICITY: For Carbon Black-Based on the IARC conclusion that there is sufficient evidence in experimental animals for the carcinogenicity of carbon black dust and inadequate evidence of carcinogenicity in humans, IARC's overall evaluation is that carbon black dust is possibly carcinogenic to humans (Group B). Consult IARC's Monograph Volume 65. The results of the working group were based on studies involving the inhalation of carbon black and other insoluble fine dust particles. Other routes of entry were not reviewed as part of this study. This dispersion contains carbon black in a 'wet out' form and does not pose an inhalation hazard. Good hygiene practices should be followed to minimize exposures to any respirable dusts. The study findings produced results consistent with the massive accumulation of fine dust particles in the lung, which overwhelm the natural lung clearance mechanisms, known as the 'lung overload' phenomenon, rather than from a specific chemical effect of the dust particle in the lung. Carbon Black has not been listed as a carcinogen by the NTP or OSHA. The National Institute of

VI. HEALTH HAZARD DATA (Continued)

CARCINOGENICITY (Continued):
Occupational Safety and Health (NIOSH) criteria document on carbon black recommends that only carbon blacks with a PAH level greater than 0.1% be considered suspect carcinogens.

NTP (National Toxicology Program)? No.

IARC (International Agency for Research on Cancer)? Yes (Carbon Black). (Class 2B-possibly carcinogenic to humans.)

OSHA REGULATED? No.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Individuals with preexisting diseases of the central nervous system, or possibly the kidneys, may be at increased risk from exposure to this chemical.

EMERGENCY & FIRST AID PROCEDURES:

INHALATION- Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

SKIN- Immediately wash exposed skin with soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly before reuse. Thoroughly clean shoes before reuse. Get medical attention if symptoms appear.

EYE- Immediately flush eyes with large amounts of water, preferably, lukewarm water for at least 15 minutes, holding eyelids open all the time to ensure that the eyes are being irrigated. Get medical attention if irritation occurs.

INGESTION- Get medical attention immediately. DO NOT INDUCE VOMITING unless directed to do so by medical personnel. Rinse mouth with water. Dilute stomach by giving 1 to 2 cups of water or activated charcoal slurry (To prepare activated charcoal slurry, suspend 50 grams activated charcoal in 400 ml of water and mix thoroughly. Give 5 ml/kg of body weight, or 350 ml for an average adult.)
DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. If vomiting occurs spontaneously, keep head below hips to prevent breathing vomit into lungs. Treatment should in general be symptomatic and directed to relieving any effects.

NOTES TO PHYSICIAN: There is no specific antidote. Treatment should be directed at control of symptoms and the clinical condition. Pure 1,4-Butanediol is a pharmacologic analogue of gamma-butyrolactone and is metabolized to gamma-hydroxybutyrate.
Lower oral doses of pure 1,4-Butanediol (less than 2 milliliters) may result in diaphoresis, confusion, agitation, ataxia, and a shallow level of consciousness.
Moderate doses of pure 1,4-Butanediol (2-5 milliliters) may result in loss of consciousness, lethargy, amnesia, agitation, combativeness, ataxia, and urinary incontinence.
Higher doses of pure 1,4-Butanediol (greater than 5 milliliters) may result in dysarthria, loss of consciousness, dizziness, vomiting, urinary and/or fecal incontinence, amnesia, respiratory depression and death.

VI. HEALTH HAZARD DATA (Continued)

EMERGENCY & FIRST AID PROCEDURES (Continued):
NOTES TO PHYSICIAN (Continued):
The lethal dose of pure 1,4-Butanediol in humans is estimated to be 5.4-20 milliliters or 0.2 – 0.7 fluid ounces. Chronic abuse may cause physical dependency with severe withdrawal symptoms, including auditory, visual and tactile hallucinations, paranoid delusions, agitation and tremor when use is discontinued.

VII. PRECAUTIONS FOR SAFE HANDLING & USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

- Stop the leak / spill.
- Review Section IV-Fire & Explosion Hazard Data before proceeding with clean up.
- Use appropriate personal protective equipment. (See Section VIII-Control Measures).
- Contain / dike spilled material.
- Ensure runoff does not reach a waterway.
- Minimize contact of spilled material with soils to prevent runoff to surface waterways.
- Soak up liquid with noncombustible inert absorbent and transfer to dry, clean, covered, sealed liquid-proof containers. (Soil may be used in the absence of other suitable materials.)
- Sweep, shovel, or vacuum up and place into dry, clean, covered, sealed liquid-proof containers for recovery or disposal.
- Flush spill area with water.
- Comply with Federal, State, and local regulations on reporting releases.

WASTE DISPOSAL METHOD: Avoid contact of spilled material and runoff with soil, sewers, and surface waterways. Preferred method of disposal is incineration. Dispose of material in accordance with all Federal, State and local regulations. Local regulations may be more stringent than Federal or State.

EMPTY CONTAINER PRECAUTIONS: Empty containers may contain harmful, flammable/combustible or explosive residue or vapors. Do not cut, grind, drill, weld, reuse, or dispose of containers unless adequate precautions are taken against these hazards. Labels should not be removed from containers until they have been cleaned. Do not incinerate closed containers.

PRECAUTIONS TO BE TAKEN IN HANDLING & STORING: Do not ingest. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Avoid breathing vapor or mist. Wash thoroughly after handling.

Keep container tightly closed. Keep container in a cool, dry, well-ventilated area. Store and use away from heat, sparks, open flame, or any other ignition source. Do not store with powerful inorganic oxidants, such as nitric acid or hydrogen peroxide. Limit steam pressure for heating tank cars, tank trucks, and storage tans to 40 psig to avoid possibility of overheating.

VIII. CONTROL MEASURES (INCLUDING PERSONAL PROTECTION)

VENTILATION: Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits.

RESPIRATORY PROTECTION: Use only with adequate ventilation. Do not breathe vapor or mist. If ventilation is inadequate, use respirator that will protect against organic vapor and dust/mist. If respirator is used, a Respiratory protection program must be in compliance with OSHA requirements in 29 CFR 1910.134.

SKIN PROTECTION: Do not get on skin or clothing. Wear clothing and footwear that cannot be penetrated by chemicals or oils (impervious apron, boots). Wear gloves that cannot be penetrated by chemicals or oil (PVC or Neoprene gloves). If there is potential for contact with hot/molten material, wear heat resistant impervious clothing and footwear.

EYE PROTECTION: Avoid contact with eyes. Wear chemical splash goggles or face shield. Do not wear contact lenses when working with chemicals.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Safety showers and eyewash stations should be available.

WORK/HYGIENIC PRACTICES: Wash hands, forearms, and face thoroughly after handling compounds and before eating, smoking, using lavatory, and at the end of the day. Educate and train employees in safe use of product. Follow all label instructions.

IX. OTHER INFORMATION

OSHA HAZARD COMMUNICATION STATUS: This product is considered hazardous as defined under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.

RCRA STATUS: No information available.

US INVENTORY (TSCA): The ingredients of this product are listed on the TSCA inventory or are not required to be listed on the TSCA inventory.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA), TITLE III:

Sections 301-303 – Emergency Planning - Extremely Hazardous Substances:

None.

Section 304 – Emergency Release Notification – Reportable Substances:

None.

Section 311/312 – Community Right-to-Know Reporting Requirements - Emergency Hazard Categories:

Immediate health hazard.

Section 313 – Toxic Chemical Notification & Release Inventory Reporting – Listed Substances:

None.

IX. OTHER INFORMATION (Continued)

This information must be included in all MSDSs that are copied and distributed for this material.

HMIS RATINGS:

Health – 2 Flammability – 1 Reactivity – 0

(0=Minimal; 1=Slight; 2=Moderate; 3=Serious; 4=Severe)

PPE – B (safety glasses, gloves; assuming a non-splash work environment with adequate ventilation. See Section VIII-Control Measures (Including Personal Protection) for more information.)

X. APPROVALS

PREPARED BY: Janet Balvin.
APPROVED BY: Steven Longacre.