Gil Manufacturing, Inc.
MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI, Canadian WHMIS, Australian NOHSC, New Zealand, Japanese, Chinese, Korean, Mexican NOM018-STPS 2000 and European Union Standards

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED):	**OMEGO MIST 4-4 OSC**
CHEMICAL NAMES:	Mixture of Permethrin, Piperonyl Butoxide and Mineral Oil
PRODUCT USE:	Mosquito Control/Insecticide
SYNONYMS:	PERMETHRIN & PBO
EPA REGISTRATION NUMBER:	11930.3
U.N. NUMBER:	Not Applicable
U.N. DANGEROUS GOODS CLASS/SUBSIDIARY RISK:	Not Applicable
HAZCHEM CODE (AUSTRALIA):	Not Applicable
POISONS SCHEDULE NUMBER (AUSTRALIA):	None Allocated
SUPPLIER/MANUFACTURER'S NAME (USA/Canada):	**GIL MANUFACTURING**
ADDRESS:	PO Box 242725 Montgomery, AL 36124
BUSINESS PHONE:	1-334-409-2303 (8 a.m. to 5 p.m. EST)
EMERGENCY PHONE:	1-800-535-5053 (INFOTRAC) U.S., Canada/ Puerto Rico (24 hrs) +1-918-673-2201 International (8:00 a.m. to 4:30 p.m., Mon.-Fri.)
EMAIL ADDRESS FOR PRODUCT INFORMATION:	gilmfgmosquito@aol.com
MSDS NUMBER:	11930.3
DATE OF PREPARATION:	October 25, 2009
DATE OF UP-DATE:	New

For Use by Public Health Officials, Mosquito Abatement and Other Mosquito Control Programs

Concentrated Public Health Insecticide That Will Not Dilute with Water

NOTE: ALL United States Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalent Standards, European Union [Regulation (EC) 1907/2006 Annex II], Australian [NOHSC:2011 (2003)], New Zealand Code of Practice for Safety Data Sheets, Japanese Industrial Standard (JIS Z 7250: 2005), Mexican NOM-018-STPS-2000, Singapore SPRING, Chinese and Korean regulations and the Canadian Workplace Hazardous Materials Standard. Refer to Section 15 (Regulatory Information) for specific regulatory citations.

2. HAZARD IDENTIFICATION

EU AND AUSTRALIAN LABELING AND CLASSIFICATION: This product meets the definition of Harmful and Dangerous for the Environment as defined by the European Union Council Directive 67/548/EEC and subsequent Directives and by the Australian National Occupational Health and Safety Commission [NOHSC(1008:2004)].

CLASSIFICATION: Xi (Irritant); N (Dangerous for the Environment)

RISK PHRASES: R: 43; R: 50/53; R: 57; R: 65

SAFETY PHRASES: S: 2; S: 3/7; S: 13; S: 24; S: 27/28; S: 36/37/39; S: 60/61

See Section 16 for Definitions of Terms Used.

EMERGENCY OVERVIEW: Product Description: This product is a honey to amber-colored, viscous liquid with a mild solvent odor. **Health Hazards:** This product may cause irritation by inhalation, skin and eye contact. This may cause allergic reaction in susceptible individuals. Accidental ingestion may be harmful or fatal. **Flammability Hazards:** This product is combustible and can be ignited if exposed to direct flame or if heated above 126.6°C (260°F). If involved in a fire, this product will decompose and produce toxic gases (e.g. hydrogen chloride, nitrogen oxide, sulfur oxides, carbon oxides, sulfur and phosphorus oxides, reactive hydrocarbons and polycyclic aromatic hydrocarbons (PAHs)). During a fire involving this product care should be taken to avoid inhalation of fumes. **Reactivity Hazards:** Negligible. **Environmental Hazards:** This product contains compounds that are toxic to insects and aquatic organisms; all release to the environment should be avoided. **Emergency Considerations:** Emergency responders must wear the proper personal protective equipment (and have appropriate fire-suppression equipment) suitable for the situation to which they are responding. Appropriate precautions should be taken in event of rupture of container under emergency conditions including fire.

3. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	EUROPEAN EINECS #	JAPANESE MITI/ENC#	KOREAN ECL #	CHINESE IECSC 2008 INVENTORY	NEW ZEALAND NZIoC	% w/w	EU CLASSIFICATION FOR COMPONENTS
Permethrin	52645-53-1	258-067-9	3-4010	KE-10126	Listed	HSR003111	4.0%	HAZARD CLASSIFICATION: Xn, N RISK PHRASES: R: 20/22; R: 43; R: 50/53
Piperonyl Butoxide	51-03-6	200-076-7	Unlisted	KE-04141	Listed	HSR002869	4.0%	HAZARD CLASSIFICATION: Not Applicable RISK PHRASES: Not Applicable
Mineral Oil, Petroleum Distillates, Hydrotreated (Severe) Light Paraffinic	64742-55-8	265-158-7	Unlisted	Unlisted	Listed	Unlisted	92.5%	NOTE: This Material Is Severely Hydrotreated HAZARD CLASSIFICATION: Not Applicable. RISK PHRASES: Not Applicable.

See Section 15 for full EU/Australian classification information of product and components.

4. FIRST-AID MEASURES

If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Take a copy of label and MSDS to physician or health professional with the contaminated individual. If necessary, physicians should refer to Section 11 (Toxicological Information) in the event there is an adverse affect occurs after inhalation, skin contact or ingestion exposure.

SKIN EXPOSURE: If adverse skin effects occur, discontinue use and flush contaminated area. Seek medical attention if adverse effect occurs after flushing.

EYE EXPOSURE: If sprays, vapors or fumes from the product contaminate the eyes, rinse eyes under gently running water. Use sufficient force to open eyelids and then "roll" eyes while flushing. Minimum flushing is for 20 minutes. Seek medical attention if adverse effect continues after flushing.

INHALATION: If sprays, vapors or fumes from the product are inhaled remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Seek medical attention.

INGESTION: If the unlikely event that the activated carbon contained in this product are swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, DO NOT INDUCE VOMITING. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow. If victim is convulsing, maintain an open airway and obtain immediate medical attention.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing skin or respiratory conditions may be aggravated by exposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Eliminate exposure and treat symptoms. Antihistamines are effective in controlling most allergic reactions. Severe asthmatic reactions, particularly in predisposed persons, may require administration of inhaled B2-agonists and/or systemic corticosteroids. Inhalation exposure should be carefully avoided in the future. Anaphylaxis-type reactions may require subcutaneous epinephrine, epinephrine, and respiratory support.

5. FIRE-FIGHTING MEASURES

FLASH POINT: 126.6°C (260°F)

AUTOIGNITION TEMPERATURE: Not available for product.

FLAMMABLE LIMITS (in air by volume, %): Not available for product.

FIRE EXTINGUISHING MATERIALS: The following extinguishing materials are recommended for fires involving this product.

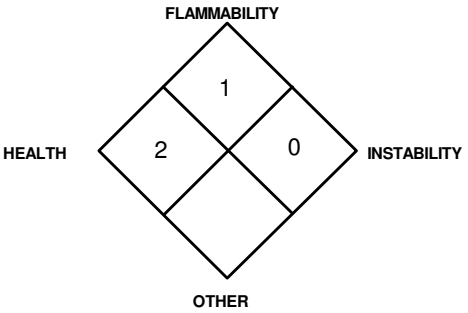
Carbon Dioxide: OK Foam: OK Water Spray: OK (for cooling only)
Dry Chemical: OK Halon: OK Other: Any "ABC" Class

FIRE EXTINGUISHING MATERIALS NOT TO BE USED: None known.

UNUSUAL FIRE AND EXPLOSION HAZARDS: This product is combustible and can be ignited if exposed to direct flame or if heated above 126.6°C (260°F). If involved in a fire, the chemicals contained in the case may decompose and produce toxic gases (e.g. hydrogen chloride, nitrogen oxide, sulfur oxides, carbon oxides, sulfur and phosphorus oxides, reactive hydrocarbons and polycyclic aromatic hydrocarbons (PAHs)).

Explosion Sensitivity to Mechanical Impact: Not sensitive.
Explosion Sensitivity to Static Discharge: Not sensitive.

NFPA RATING



Hazard Scale: **0** = Minimal **1** = Slight **2** = Moderate **3** = Serious **4** = Severe

SPECIAL FIRE-FIGHTING PROCEDURES: Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus (SCBA) and full protective equipment. Chemical resistant clothing may be necessary. Move containers from fire area if it can be done without risk to personnel. Water spray can be used to cool fire-exposed containers. Water fog or spray can also be used by trained firefighters to disperse this product's vapors and to protect personnel. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Trained personnel using pre-planned procedures should respond to uncontrolled releases. Proper protective equipment should be used. In case of a spill, clear the affected area and protect people. Eliminate all sources of ignition before cleanup begins. Call CHEMTREC (1-800-424-9300) for emergency assistance. Or if in Canada, call CANUTEC (613-996-6666). The atmosphere must have levels of components lower than those listed in Section 8, (Exposure Controls and Personal Protective Equipment), if applicable, and have at least 19.5 percent oxygen before personnel can be allowed into the area without Self-Contained Breathing Apparatus.

Small Spills: In the event of an incidental release (e.g., under 1 L), wear apron, gloves and goggles. Absorb spills with appropriate non-reactive material. Absorb releases polypads or other inert material. Place spilled material in appropriate container for disposal, sealing tightly. Remove all residue before decontamination of spill area.

Large Spills: In the event of a non-incidental release, minimum Personal Protective Equipment should be as follows: Level B: triple-gloves (rubber gloves and nitrile gloves, over latex gloves), chemically resistant suit and boots, hard-hat, and Self-Contained Breathing Apparatus. Wear Self-Contained Breathing Apparatus when oxygen levels are below 19.5% or are unknown. Dike or otherwise contain spill and absorb spilled liquid with polypads or other appropriate inert material. Decontaminate the area thoroughly with flooding quantities of water.

6. ACCIDENTAL RELEASE MEASURES (Continued)

SPILL AND LEAK RESPONSE (continued): Place all spill residue in an appropriate container and seal. If necessary, decontaminate spill-response equipment and spill area with soap and water solution. Do not mix with wastes from other materials. Report spill per regulatory requirements. Pesticide waste or spill material must be disposed of as hazardous waste at approved waste disposal facility. Containers of this product that are disposed of as waste must be triple-rinsed and offered for recycling or reconditioning. If Dispose of in accordance with applicable Federal, State, and local procedures (see Section 13, Disposal Considerations).

7. HANDLING and USE

Follow all directions for Use, Precautionary Statements, First Aid and Disposal Statements found on this product's EPA registered Label.

KEEP OUT OF REACH OF CHILDREN!

WORK PRACTICES AND HYGIENE PRACTICES: Minimize all exposures to this product. As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product. Avoid breathing vapors or mists generated by this product. Remove contaminated clothing immediately and launder before reuse. Follow SPECIFIC USE INSTRUCTIONS supplied with product.

STORAGE AND HANDLING PRACTICES: Use in a well-ventilated location, segregated from other materials and operations. Preparations of this product should be stored in well-closed containers at a temperature less than 40°C (104°F), preferably between 15-30°C (59-86°F). Keep away from water, heat, sparks, and other sources of ignition. Use non-sparking tools. Bond and ground containers during transfers of material. Containers of this product must be properly labeled. Keep container tightly closed when not in use. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers or in a diked area, as appropriate. Store containers away from incompatible chemicals (see Section 10, Stability and Reactivity). Containers should be separated from oxidizing materials by a minimum distance of 20 ft. or by a barrier of non-combustible material at least 5 ft. high having a fire-resistance rating of at least 0.5 hours. Storage areas should be made of fire resistant materials. **Local Fire Departments should be notified of the storage of this product on site. Storage and processing areas of this product should be identified with a NFPA 704 placard (diamond) large enough to be seen from a distance.** Post warning and "NO SMOKING" signs in storage and use areas, as appropriate. Have appropriate extinguishing equipment in the storage area (such as sprinkler systems or portable fire extinguishers). Inspect all incoming containers before storage to ensure containers are properly labeled and not damaged. Refer to NFPA 30, *Flammable and Combustible Liquids Code*, for additional information on storage.

SPECIFIC INFORMATION ON PESTICIDES: Do not contaminate water, feed or food by storage or disposal. Store pesticides in closed, up-right original containers at room temperature in a dry, locked place, designated for pesticides and away from children. Residual material in containers should be emptied into application equipment or mix tank. Fill container ¼ full with water and replace and tighten container closures. Tip container back and forth and roll it back and forth, ensuring at least one complete revolution for at least 30 seconds. Stand container on its side and tip back and forth several times. Empty rinsates into application equipment or mix tank. Repeat procedure two more times. Rinsed containers must be offered for recycling or reconditioning or disposed of as hazardous waste (see Section 6 – Accidental Release Procedures).

SPECIFIC USE(S): This product is for use as an insecticide and mosquito control. Follow all directions for Use, Precautionary Statements, First Aid and Disposal Statements found on this product's EPA registered Label.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain that application equipment is locked and tagged-out safely. Always use this product in areas where adequate ventilation is provided. Decontaminate equipment thoroughly, before maintenance begins. Collect all rinsates and dispose of according to applicable Federal, State, or local procedures.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: This product is usually used outdoors. If use is indoors, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits provided in this section, if applicable. Use a non-sparking, grounded, explosion-proof ventilation system separate from other exhaust ventilation systems. Exhaust directly to the outside, taking necessary precautions for environmental protection. An eyewash and safety shower should be readily accessible.

EXPOSURE LIMITS/GUIDELINES:

CHEMICAL NAME	CAS #	EXPOSURE LIMITS IN AIR							
		ACGIH-TLVs		OSHA-PELs		NIOSH-RELs		NIOSH	OTHER
		TWA ppm	STEL ppm	TWA ppm	STEL ppm	TWA ppm	STEL ppm	IDLH ppm	ppm
Mineral Oil, Petroleum Distillates, Hydrotreated (Severe) Light Paraffinic Exposure limits are for mineral oil and severely refined.	64742-55-8	NE	NE	NE	NE	NE	NE	NE	Carcinogen: TLV-A4, IARC-3
Permethrin	52645-53-1	NE	NE	NE	NE	NE	NE	NE	Carcinogen:IARC-3
Piperonyl Butoxide	51-03-6	NE	NE	NE	NE	NE	NE	NE	Carcinogen:IARC-3

NE = Not Established. See Section 16 for Definitions of Other Terms Used

8. EXPOSURE CONTROLS - PERSONAL PROTECTION (Continued)

INTERNATIONAL OCCUPATIONAL EXPOSURE LIMITS: In addition to the exposure limit values cited in this section, other exposure limits have been established by various countries for the components of this mixture. Limits can change and these limits may not be the most current. It is recommended that competent authorities in specific countries to determine if more currents limits are in force.

PERMETHRIN:

Russia: STEL = 1 mg/m^3 JUN 2003

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132), equivalent standards of Canada (including CSA Standard Z94.4-02 and CSA Standard Z94.3-07), standards of EU member states (including EN 529:2005 for respiratory PPE, CEN/TR 15419:2006 for hand/body protection, and CR 13464:1999 for face/eye protection), standards of Australia (including AS/NZS 1715:1994 for respiratory PPE, AS/NZS 4501.2:2006 for protective clothing, AS/NZS 2161.1:2000 for glove selection, and AS/NZS 1336:1997 for eye protection), or standards of Japan (including JIS T 8116:2005 for glove selection, JIS T 8150:2006 for respiratory PPE, JIS T 8147:2003 for eye protectors, and JIS T 8030:2005 for protective clothing),or the Mexican Standard NOM-017-STPS-1994. Please reference applicable regulations and standards for relevant details.

RESPIRATORY PROTECTION: If fumes or sprays from this product are created during use, use appropriate respiratory protection. If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-02, European Standard EN 529:2005, EU member state standards, Australian Standard 1716-Respiratory Protective Devices and Australian Standard 1715-Selection, Use, and Maintenance of Respiratory Protective Devices, or Japanese Standard JIS T 8150:2006 and standards of Korea, Mexico and China. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under U.S. Federal OSHA's Respiratory Protection Standard (1910.134-1998).

EYE PROTECTION: Splash goggles or safety glasses. Wear a face shield when handling a more than 1 gallon or where excessive sprays may be generated. If necessary, refer to U.S. OSHA 29 CFR 1910.133, Canadian CSA Standard Z94.3-07, European Standard CR 13464:1999, Australian Standard 1337-Eye Protection for Industrial Applications and Australian Standard 1336-Recommended Practices for Eye Protection in the Industrial Environment, or Japanese Standard JIS T 8147:2003 and standards of Korea, Mexico and China.

HAND PROTECTION: Wear butyl rubber, Teflon™, Barricade™, Chemrel™, or similar gloves for routine industrial use. Use triple gloves for spill response. If necessary, refer to U.S. OSHA 29 CFR 1910.138, Australian Standard 2161-Industrial Safety Gloves and Mittens, European Standard CEN/TR 15419:2006, or Japanese Standard JIS T 8116:2005 and standards of Korea, Mexico and China.

BODY PROTECTION: Use body protection appropriate for task (e.g., lab coat, coveralls, Tyvek suit). Chemically impervious clothing should be used if airborne mists or sprays are generated during use. If necessary, refer to OSHA Technical Manual (Section VII: Personal Protective Equipment), European Standard CEN/TR 15419:2006, Australian Standard 3765-Clothing for Protection Against Hazardous Chemicals, or Japanese Standard JIS T 8030:2005 and standards of Korea, Mexico and China. If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects may pierce the soles of the feet or where employee's feet may be exposed to electrical hazards, use foot protection, as described in U.S. OSHA 29 CFR 1910.136, Canadian CSA Standard Z195.1-02, *Guideline on Selection, Care, and Use of Protective Footwear,* or European Standard CEN ISO/TR 18690:2006.

DEGREE OF EFFECT TO THE HEALTH OF THE POLLUTING AGENT OF ENVIRONMENT OF WORK (per Mexican NOM-010 STPS-1999): 2 (Reversible Severe Effects)

9. PHYSICAL and CHEMICAL PROPERTIES

BOILING POINT: Not available.

FREEZING/MELTING POINT: Not available.

EVAPORATION RATE (n-butyl acetate = 1): Not applicable.

SOLUBILITY IN WATER: Soluble.

VAPOR PRESSURE: Not available.

SPECIFIC GRAVITY: 0.845 (wt.); 7.052 lb/g

pH: Not applicable.

VAPOR DENSITY (air = 1): Not available.

COEFFICIENT WATER/OIL DISTRIBUTION: Not available.

ODOR THRESHOLD: Not available.

APPEARANCE, ODOR, AND COLOR: This product is a honey to amber-colored, viscous liquid with a mild solvent odor.

HOW TO DETECT THIS SUBSTANCE (warning properties in event of accidental release): The color and odor of this product may assist in identification of the solution.

10. STABILITY and REACTIVITY

STABILITY: Stable under condition of normal temperature.

DECOMPOSITION PRODUCTS: *Combustion:* Products of thermal decomposition can include hydrogen chloride, nitrogen oxide, sulfur oxides, carbon oxides, sulfur and phosphorus oxides, reactive hydrocarbons and polycyclic aromatic hydrocarbons (PAHs). *Hydrolysis:* None known.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: This product may be incompatible with strong oxidizers, strong bases and calcium nitrate.

CONDITIONS TO AVOID: Avoid exposure to or contact with sparks, flames, or other sources of ignition, extreme temperatures, and incompatible chemicals.

11. TOXICOLOGICAL INFORMATION

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE: The most significant routes of industrial or occupational exposure to this product are by inhalation and skin and eye contact and are described as follows:

INHALATION: If use produces mists or sprays that are inhaled, irritation of the nose, throat and respiratory tract may occur. Prolonged or repeated exposure to very high concentrations of oil mists may lead to lung disease (a benign form of pulmonary fibrosis). Symptoms may include cough, mucous formation and difficulty breathing. Long-term animal toxicity studies with mineral oils indicate that inhalation of high concentrations (100 mg/m^3 and above) of aerosols can result in inflammatory lung reactions and fatty deposits (lipoid granulomas). Some data suggests that, as a pyrethrin compound, the Piperonyl Butoxide component may cause sensitization and allergic reaction by inhalation in susceptible individuals.

CONTACT WITH SKIN or EYES: Depending on the duration and concentration of overexposure, eye contact with vapors may result in mild irritation. Direct eye contact with liquid or mist may cause conjunctival irritation. Contact with the skin may cause irritation of the skin, depending on duration and concentration of contact. Repeated or prolonged contact may produce defatting of the skin leading to irritation and dermatitis, with symptoms of dryness, redness and cracking. Long-term exposure to oils with a high polycyclic aromatic hydrocarbon (PAH) content may also cause an abnormal sensitivity to sunlight (photosensitivity) and/or darkening of the skin. Contact with heated product may cause burns. Skin contact may result in sensitization and allergic reaction in susceptible individuals. Symptoms may include welts, rash and itchy skin. Symptoms can include paresthesia, which is a sensation of tingling, pricking, or numbness of a the skin. This effect is not known to be permanent.

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM

HEALTH HAZARD	(BLUE)	2
FLAMMABILITY HAZARD	(RED)	1
PHYSICAL HAZARD	(YELLOW)	0

PROTECTIVE EQUIPMENT

EYES	RESPIRATORY	HANDS	BODY
	SEE SECTION 8		SEE SECTION 8

For Routine Industrial Use and Handling Applications

Hazard Scale: **0** = Minimal **1** = Slight **2** = Moderate
3 = Serious **4** = Severe * = Chronic hazard

SKIN ABSORPTION: Components of this product may be absorbed via intact skin and be harmful is a large area of skin is involved.

INGESTION: Ingestion is not anticipated to be a significant route of occupational exposure. If this product is swallowed, it may cause gastrointestinal irritation and vomiting. Ingestion may lead to aspiration into the lungs. Aspiration may lead to chemical pneumonitis which is characterized by pulmonary edema and hemorrhage, and may be fatal. Signs of lung involvement include increased respiration rate, increased heart rate, and a bluish discoloration of the skin. Coughing, choking, and gagging are often noted at the time of aspiration.

INJECTION: Injection is not a likely route of exposure for this product.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms. In the event of overexposure, the following symptoms may be observed.

Acute: This product may cause irritation by inhalation, skin and eye contact. May be harmful by skin absorption. Ingestion of this product may be harmful or fatal and may lead to aspiration into the lungs.

Chronic: Repeated skin contact may cause dermatitis. Skin contact may result in sensitization and allergic reaction in susceptible individuals. Animal studies involving the Piperonyl Butoxide component indicated adverse affects on the liver by ingestion route.

TARGET ORGANS: ACUTE: Respiratory system, skin, peripheral nervous system, eyes. CHRONIC: Skin, liver (based on animal data).

TOXICITY DATA: There are no specific toxicity data available for this product. The following are data currently available for the components of this product.

MINERAL OIL, PETROLEUM DISTILLATES, HYDROTREATED (SEVERE) LIGHT PARAFFINIC:

LC_{50} (Inhalation-Rat) 3900 mg/m^3/4 hours: Behavioral: tremor; Lungs, Thorax, or Respiration: dyspnea; Kidney/Ureter/Bladder: urine volume increased

PERMETHRIN:

TDLo (Oral-Human) 2270 mg/kg: Behavioral: coma; Gastrointestinal: hypermotility, diarrhea; Nutritional and Gross Metabolic: metabolic acidosis

LD_{50} (Unreported-Man) > 4 gm/kg

LC_{50} (Inhalation-Rat) 485 mg/m^3

LC_{50} (Inhalation-Mouse) 685 mg/m^3

LD_{50} (Oral-Rat) 383 mg/kg

LD_{50} (Oral-Mouse) 424 mg/kg

LD_{50} (Oral-Rabbit) 4 gm/kg

LD_{50} (Oral-Chicken) 7 gm/kg: Behavioral: tremor, irritability; Gastrointestinal: changes in structure or function of salivary glands

PERMETHRIN (continued):

LD_{50} (Oral-Guinea Pig) 4 gm/kg

LD_{50} (Oral-Quail) 13,500 mg/kg

LD_{50} (Oral-Duck) 11,300 mg/kg

LD_{50} (Oral-Bird Domestic) 32 gm/kg

LD_{50} (Skin-Rat) 1750 mg/kg

LD_{50} (Skin-Rabbit) > 2 gm/kg

LD_{50} (Skin-Mouse) > 10 gm/kg

LD_{50} (Subcutaneous-Rat) 6600 mg/kg: Behavioral: tremor, ataxia

LD_{50} (Subcutaneous-Mouse) 10 gm/kg: Behavioral: tremor, ataxia

LD_{50} (Intraperitoneal-Mouse) 429 mg/kg

LD_{50} (Intravenous-Mouse) 31 mg/kg: Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: other Enzymes

LD_{50} (Unreported-Rat) 537 mg/kg: Behavioral: convulsions or effect on seizure threshold, ataxia

PERMETHRIN (continued):

LD_{50} (Unreported-Rat) 1200 mg/kg

LD_{50} (Unreported-Mouse) 680 mg/kg: Behavioral: convulsions or effect on seizure threshold, ataxia, coma

LD (Intravenous-Rat) > 270 mg/kg

LDLo (Intracerebral-Mouse) 600 µg/kg

LDLo (Skin-Mouse) 1650 µL/kg: Behavioral: ataxia; Endocrine: changes in thymus weight; Immunological Including Allergic: decrease in cellular immune response

TDLo (Oral-Rat) 180 mg/kg: Endocrine: other changes; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: other Enzymes

TDLo (Oral-Rat) 50 mg/kg: Brain and Coverings: other degenerative changes; Biochemical: Metabolism (Intermediary): other

TDLo (Oral-Rat) 5166 mg/kg/14 days-continuous: Behavioral: tremor; Liver: changes in liver weight

TOXICITY DATA (continued):

PERMETHRIN (continued):

TDLo (Oral-Rat) 33,855 mg/kg/26 weeks-continuous: Liver: changes in liver weight

TDLo (Oral-Rat) 72 gm/kg/2 years-continuous: Liver: other changes, changes in liver weight; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: other Enzymes

TDLo (Oral-Mouse) 4 mg/kg/10 days-intermittent: Immunological Including Allergic: decrease in cellular immune response

TDLo (Oral-Mouse) 2184 mg/kg/104 weeks-continuous: Lungs, Thorax, or Respiration: tumors

TDLo (Oral-Mouse) 196 mg/kg/28 days-intermittent: Behavioral: tremor, changes in motor activity (specific assay); Nutritional and Gross Metabolic: weight loss or decreased weight gain

TDLo (Oral-Mouse) 196 mg/kg: male 28 day(s) pre-mating female 28 day(s) pre-mating: Reproductive: Effects on Newborn: growth statistics (e.g.%, reduced weight gain), behavioral, physical

TDLo (Oral-Mouse) 196 mg/kg: male 28 day(s) pre-mating female 28 day(s) pre-mating: Reproductive: Effects on Newborn: viability index (e.g., # alive at day 4 per # born alive)

TDLo (Oral-Quail) 1098 mg/kg/7 days-continuous: Liver: changes in liver weight; Nutritional and Gross Metabolic: weight loss or decreased weight gain; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: hepatic microsomal mixed oxidase (dealkylation, hydroxylation, etc.)

TDLo (Intraperitoneal-Rat) 60 mg/kg: Behavioral: changes in motor activity (specific assay)

TDLo (Intraperitoneal-Mouse) 4.5 mg/kg/2 weeks-intermittent: Brain and Coverings: other degenerative changes; Biochemical: Neurotransmitters or modulators (putative): dopamine in striatum

TDLo (Intraperitoneal-Mouse) 0.6 mg/kg/2 weeks-intermittent: Brain and Coverings: other degenerative changes; Biochemical: Metabolism (Intermediary): other proteins

TDLo (Intraperitoneal-Mouse) 4.5 mg/kg/2 weeks-intermittent: Biochemical: Neurotransmitters or modulators (putative): dopamine in striatum

TDLo (Intraperitoneal-Mouse) 150 mg/kg/2 weeks-intermittent: Biochemical: Metabolism (Intermediary), other, Neurotransmitters or modulators (putative): dopamine in striatum

TDLo (Intraperitoneal-Mouse) 2.4 mg/kg/2 weeks-intermittent: Brain and Coverings: other degenerative changes; Biochemical: Metabolism (Intermediary): effect on active transport

TDLo (Intraperitoneal-Mouse) 4.5 mg/kg/2 weeks-intermittent: Biochemical: Neurotransmitters or modulators (putative): dopamine at other sites

TDLo (Intraperitoneal-Mouse) 600 mg/kg/2 weeks-intermittent: Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: dehydrogenases

TDLo (Intraperitoneal-Mouse) 75 mg/kg/2 weeks-intermittent: Brain and Coverings: other degenerative changes; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: true cholinesterase

TDLo (Intraperitoneal-Mouse) 2.4 mg/kg/15 days-intermittent: Biochemical: Neurotransmitters or modulators (putative): dopamine in striatum

TDLo (Intraperitoneal-Mouse) 9 mg/kg/15 days-intermittent: Brain and Coverings: other degenerative changes; Biochemical: Neurotransmitters or modulators (putative): dopamine in striatum

TDLo (Intraperitoneal-Mouse) 16.5 mg/kg/11 weeks-intermittent: Biochemical: Neurotransmitters or modulators (putative): dopamine in striatum

TDLo (Intraperitoneal-Mouse) 20.8 mg/kg/26 weeks-intermittent: Brain and Coverings: other degenerative changes

TDLo (Skin-Rat) 0.39 mg/kg/30 days-intermittent: Behavioral: changes in psychophysiological tests

TDLo (Skin-Rat) 5.85 mg/kg/45 days-intermittent: Brain and Coverings: other degenerative changes; Behavioral: changes in motor activity (specific assay), Enzyme inhibition, induction, or change in blood or tissue levels: true cholinesterase

TDLo (Skin-Rat) 3.9 mg/kg/30 days-intermittent: Brain and Coverings: other degenerative changes; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: true cholinesterase

PERMETHRIN (continued):

TDLo (Skin-Rat) 7.8 mg/kg/60 days-intermittent: Brain and Coverings: recordings from specific areas of CNS, other degenerative changes

TDLo (Skin-Rat) 3.64 mg/kg/28 days-intermittent: Brain and Coverings: other degenerative changes

TDLo (Skin-Rat) 5.85 mg/kg/45 days-intermittent: Behavioral: alteration of classical conditioning

TDLo (Skin-Rat) 3.9 mg/kg/30 days-intermittent: Brain and Coverings: other degenerative changes; Behavioral: changes in motor activity (specific assay); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: true cholinesterase

TDLo (Skin-Mouse) 440 mg/kg: Endocrine: changes in spleen weight

TDLo (Skin-Mouse) 660 mg/kg: Endocrine: changes in spleen weight, changes in thymus weight

TDLo (Skin-Mouse) 660 mg/kg: Endocrine: changes in thymus weight; Blood: changes in spleen; Immunological Including Allergic: decrease in cellular immune response

TDLo (Skin-Mouse) 660 mg/kg/10 days-intermittent: Immunological Including Allergic: decrease in cellular immune response

TDLo (Skin-Mouse) 924 mg/kg/14 days-intermittent: Immunological Including Allergic: decrease in cellular immune response

TDLo (Skin-Mouse) 6160 mg/kg/28 days-intermittent: Immunological Including Allergic: decrease in cellular immune response

TDLo (Skin-Mouse) 660 mg/kg/30 days-intermittent: Immunological Including Allergic: decrease in cellular immune response

TCLo (Inhalation-Rat) 1500 µg/m^3/24 hours/13 weeks-continuous: Brain and Coverings: recordings from specific areas of CNS; Blood: changes in leukocyte (WBC) count; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: phosphatases

Micronucleus Test (Human-Lymphocyte) 10 mg/L

DNA Inhibition (Human-Lymphocyte) 140 µmol/L

Sister Chromatid Exchange (Human-Lymphocyte) 50 mg/L

Specific Locus Test (Multiple Routes-*Drosophila melanogaster*) 100 ppb

Micronucleus Test (Oral-Rat) 139 µg/kg

DNA Inhibition (Mouse-Leukocyte) 110 µmol/L

Cytogenetic Analysis (Oral-Mouse) 150 mg/kg

DNA Damage (Oral-Mouse) 9000 mg/kg/60 days-intermittent

PIPERONYL BUTOXIDE:

LD_{50} (Skin-Rat) > 7950 mg/kg

LD_{50} (Oral-Rat) > 6 gm/kg

LD_{50} (Oral-Mouse) 2600 mg/kg: Behavioral: somnolence (general depressed activity), tremor; Skin and Appendages: hair

LD_{50} (Oral-Dog) 7500 µL/kg

LD_{50} (Oral-Rabbit) 2650 mg/kg

LD_{50} (Skin-Rabbit) 200 mg/kg

LDLo (Intraperitoneal-Mouse) 1 gm/kg

TCLo (Inhalation-Dog) 15,000 ppm/20 minutes: Blood: changes in platelet count, changes in other cell count (unspecified)

TCLo (Inhalation-Rat) 512 mg/m^3/90 days-intermittent: Liver: changes in liver weight; Kidney/Ureter/Bladder: changes in kidney weight; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: transaminases

TDLo (Oral-Rat) 3850 mg/kg/7 days-intermittent: Liver: changes in liver weight; Nutritional and Gross Metabolic: weight loss or decreased weight gain; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: hepatic microsomal mixed oxidase (dealkylation, hydroxylation, etc.)

TDLo (Oral-Rat) 109 gm/kg/13 weeks-continuous: Blood: changes in serum composition (e.g. TP, bilirubin, cholesterol); Liver: changes in liver weight; Kidney/Ureter/Bladder: changes in bladder weight

TDLo (Oral-Rat) 140 gm/kg/6 weeks-continuous: Nutritional and Gross Metabolic: weight loss or decreased weight gain; Related to Chronic Data: death

TDLo (Oral-Rat) 548 gm/kg/2 years-continuous: Liver: other changes; Nutritional and Gross Metabolic: weight loss or decreased weight gain; Related to Chronic Data: death

TDLo (Oral-Rat) 167.13 gm/kg/90 days-intermittent: Liver: changes in liver weight; Related to Chronic Data: death

TDLo (Oral-Rat) 7000 mg/kg/4 weeks-continuous: Liver: other changes, changes in liver weight

PIPERONYL BUTOXIDE (continued):

TDLo (Oral-Rat) 56 gm/kg/4 weeks-continuous: Blood: other changes; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: phosphatases

TDLo (Oral-Rat) 2.5 mL/kg/3 days-continuous: Related to Chronic Data: death

TDLo (Oral-Rat) 109.2 gm/kg/13 weeks-continuous: Nutritional and Gross Metabolic: weight loss or decreased weight gain

TDLo (Oral-Rat) 54.6 gm/kg/13 weeks-continuous: Blood: normocytic anemia

TDLo (Oral-Rat) 27.3 gm/kg/13 weeks-continuous: Liver: changes in liver weight; Kidney/Ureter/Bladder: changes in kidney weight

TDLo (Oral-Rat) 1500 mg/kg/3 days-intermittent: Kidney/Ureter/Bladder: incontinence

TDLo (Oral-Rat) 20 gm/kg/10 days-intermittent: Behavioral: ataxia, convulsions or effect on seizure threshold; Lungs, Thorax, or Respiration: dyspnea

TDLo (Oral-Rat) 50.5 mL/kg/31 days-intermittent: Behavioral: food intake (animal); Nutritional and Gross Metabolic: weight loss or decreased weight gain; Related to Chronic Data: death

TDLo (Oral-Rat) 5000 mg/kg/10 days-intermittent: Nutritional and Gross Metabolic: weight loss or decreased weight gain

TDLo (Oral-Rat) 595 gm/kg/68 weeks-continuous: Liver: multiple effects; Related to Chronic Data: death

TDLo (Oral-Rat) 36.5 gm/kg/2 years-continuous: Liver: other changes

TDLo (Oral-Rat) 182.5 gm/kg/2 years-continuous: Gastrointestinal: ulceration or bleeding from large intestine

TDLo (Oral-Rat) 294.56 gm/kg/40 weeks-continuous: Related to Chronic Data: death

TDLo (Oral-Rat) 353.47 gm/kg/96 weeks-continuous: Gastrointestinal: other changes; Liver: other changes; Nutritional and Gross Metabolic: weight loss or decreased weight gain

TDLo (Oral-Rat) 353.47 gm/kg/96 weeks-continuous: Blood: thrombocytopenia

TDLo (Oral-Rat) 4200 mg/kg/42 days-continuous: Liver: changes in liver weight; Biochemical: Metabolism (Intermediary): other proteins

TDLo (Oral-Rat) 700 mg/kg/7 days-continuous: Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: cytochrome oxidases (including oxidative phosphorylation)

TDLo (Oral-Rat) 42 gm/kg/4 weeks-continuous: Liver: other changes

TDLo (Oral-Rat) 77.7 gm/kg/42 days-continuous: Behavioral: food intake (animal); Nutritional and Gross Metabolic: weight loss or decreased weight gain

TDLo (Oral-Rat) 44.1 gm/kg/42 days-continuous: Liver: other changes

TDLo (Oral-Rat) 39,375 mg/kg/6 weeks-continuous: Liver: other changes, changes in liver weight; Nutritional and Gross Metabolic: weight loss or decreased weight gain

TDLo (Oral-Rat) 526 gm/kg/2 years-continuous: Tumorigenic: carcinogenic by RTECS criteria; Liver: tumors

TDLo (Oral-Rat) 706.94 gm/kg/96 weeks-continuous: Tumorigenic: carcinogenic by RTECS criteria; Liver: tumors

TDLo (Oral-Rat) 51.2 gm/kg: Multi-generations: Reproductive: Effects on Newborn: growth statistics (e.g.%, reduced weight gain)

TDLo (Oral-Rat) 3 gm/kg: female 6-15 day(s) after conception: Reproductive; Fertility: post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants)

TDLo (Oral-Rat) 2130 mg/kg: female 11-12 day(s) after conception: Reproductive: Maternal Effects: other effects; Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus); Specific Developmental Abnormalities: musculoskeletal system

TDLo (Oral-Rat) 3600 mg/kg: female 11-12 day(s) after conception: Reproductive: Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus); Specific Developmental Abnormalities: musculoskeletal system

TDLo (Oral-Mouse) 4200 mg/kg/6 weeks-intermittent: Liver: other changes, changes in liver weight; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: hepatic microsomal mixed oxidase (dealkylation, hydroxylation, etc.)

TDLo (Oral-Mouse) 2100 mg/kg/7 days-intermittent: Liver: other changes, changes in liver weight

11. TOXICOLOGICAL INFORMATION (Continued)

TOXICITY DATA (continued):

PIPERONYL BUTOXIDE (continued):

TDLo (Oral-Mouse) 9000 mg/kg/20 days-continuous: Nutritional and Gross Metabolic: weight loss or decreased weight gain

TDLo (Oral-Mouse) 27 gm/kg/20 days-continuous: Liver: changes in liver weight: Nutritional and Gross Metabolic: weight loss or decreased weight gain

TDLo (Oral-Mouse) 27 gm/kg/20 days-continuous: Kidney/Ureter/Bladder: changes in kidney weight; Endocrine: changes in spleen weight; Blood: changes in serum composition (e.g. TP, bilirubin, cholesterol)

TDLo (Oral-Mouse) 27 gm/kg/20 days-continuous: Blood: other changes; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: peptidases

TDLo (Oral-Mouse) 90 gm/kg/90 days-continuous: Nutritional and Gross Metabolic: weight loss or decreased weight gain

TDLo (Oral-Mouse) 9000 mg/kg/90 days-continuous: Liver: other changes, changes in liver weight

TDLo (Oral-Mouse) 11.56 gm/kg/7 weeks-continuous: Behavioral: changes in motor activity (specific assay)

TDLo (Oral-Mouse) 9800 mg/kg/4 weeks-continuous: Behavioral: changes in psychophysiological tests

TDLo (Oral-Mouse) 116.032 gm/kg/112 weeks-continuous: Nutritional and Gross Metabolic: weight loss or decreased weight gain

TDLo (Oral-Mouse) 116.032 gm/kg/112 weeks-continuous: Liver: other changes

TDLo (Oral-Mouse) 350.4 gm/kg/1 year-continuous: Nutritional and Gross Metabolic: weight loss or decreased weight gain

TDLo (Oral-Mouse) 700.8 gm/kg/1 year-continuous: Related to Chronic Data: death

TDLo (Oral-Mouse) 54.6 gm/kg/78 weeks-continuous: Liver: other changes, changes in liver weight

TDLo (Oral-Mouse) 263 gm/kg/1 year-continuous: Tumorigenic: carcinogenic by RTECS criteria; Liver: tumors

TDLo (Oral-Mouse) 262 gm/kg/1 year-continuous: Tumorigenic: carcinogenic by RTECS criteria; Liver: tumors

TDLo (Oral-Mouse) 5 gm/kg: male 5 day(s) pre-mating: Reproductive: Fertility: post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants)

PIPERONYL BUTOXIDE (continued):

TDLo (Oral-Mouse) 350.4 gm/kg/1 year-continuous: Tumorigenic: carcinogenic by RTECS criteria; Liver: tumors

TDLo (Oral-Mouse) 1385 mg/kg: female 9 day(s) after conception: Reproductive: Effects on Newborn: behavioral

TDLo (Oral-Mouse) 89,600 µg/kg: Multi-generations: Reproductive: Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus), growth statistics (e.g.%, reduced weight gain), behavioral…

TDLo (Oral-Mouse) 200 mg/kg: male 1 day(s) pre-mating: Reproductive: Fertility: post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants)

TDLo (Oral-Mouse) 93.8 gm/kg: Multi-generations: Reproductive: Effects on Newborn: growth statistics (e.g.%, reduced weight gain)

TDLo (Oral-Mouse) 1385 mg/kg: female 9 day(s) after conception: Reproductive: Fertility: post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants)

TDLo (Oral-Mouse) 1065 mg/kg: female 9 day(s) after conception: Reproductive: Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus)

TDLo (Oral-Rabbit) 1300 mg/kg/13 days-intermittent: Nutritional and Gross Metabolic: weight loss or decreased weight gain

TDLo (Oral-Dog) 109 mL/kg/1 year-intermittent: Liver: other changes; Related to Chronic Data: death

TDLo (Oral-Dog) 525 mg/kg/1 weeks-continuous: Behavioral: food intake (animal)

TDLo (Oral-Dog) 1400 mg/kg/8 weeks-continuous: Nutritional and Gross Metabolic: weight loss or decreased weight gain

TDLo (Oral-Dog) 1400 mg/kg/8 weeks-continuous: Liver: change in gall bladder structure or function, other changes, changes in liver weight

TDLo (Oral-Dog) 2800 mg/kg/8 weeks-continuous: Reproductive: Paternal Effects: testes, epididymis, sperm duct; Related to Chronic Data: changes in testicular weight

TDLo (Oral-Dog) 58.4 gm/kg/1 year-continuous: Liver: changes in liver weight; Kidney/Ureter/Bladder: changes in kidney weight; Nutritional and Gross Metabolic: weight loss or decreased weight gain

PIPERONYL BUTOXIDE (continued):

TDLo (Oral-Dog) 2800 mg/kg/8 weeks-continuous: Liver: other changes

TDLo (Oral-Dog) 18.25 gm/kg/1 year-continuous: Behavioral: food intake (animal); Liver: changes in liver weight; Nutritional and Gross Metabolic: weight loss or decreased weight gain

TDLo (Oral-Dog) 116.8 gm/kg/1 year-continuous: Related to Chronic Data: death

TDLo (Oral-Dog) 9125 mg/kg/26 weeks-continuous: Blood: other changes; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: phosphatases

TDLo (Oral-Dog) 18.25 gm/kg/1 year-continuous: Blood: changes in serum composition (e.g. TP, bilirubin, cholesterol)

TDLo (Oral-Mammal-Domestic) 12.48 gm/kg/1 year-intermittent: Liver: other changes

TDLo (Skin-Rabbit) 4500 mg/kg/3 weeks-intermittent: Skin and Appendages: primary irritation (after topical exposure)

TDLo (Subcutaneous-Mouse) 1000 mg/kg: Tumorigenic: equivocal tumorigenic agent by RTECS criteria; Lungs, Thorax, or Respiration: tumors; Liver: tumors

TDLo (Subcutaneous-Mouse) 9 gm/kg: female 6-14 day(s) after conception: Reproductive: Fertility: pre-implantation mortality (e.g. reduction in number of implants per female; total number of implants per corpora lutea), litter size (e.g. # fetuses per litter; measured before birth); Effects on Embryo or Fetus: extra-embryonic structures (e.g., placenta, umbilical cord)

TDLo (Subcutaneous-Mouse) 9 gm/kg: female 6-14 day(s) after conception: Reproductive: Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus), fetal death; Specific Developmental Abnormalities: eye/ear

Mutation in Mammalian Somatic Cells (Human-Embryo) 50 µg/L

Mutation in Mammalian Somatic Cells (Mouse-Lymphocyte) 30 mg/L

Morphological Transformation (Hamster-Embryo) 500 µg/L

Sister Chromatid Exchange (Hamster-Ovary) 250 µmol/L

Morphological Transformation (Oral-Rat) 3600 mg/kg/7 days-intermittent

DNA Inhibition (Oral-Rat) 3850 mg/kg/7 days-continuous

Specific Locus Test (Mouse-Liver) 148 µmol/L

IRRITANCY OF PRODUCT: This product may be irritating to contaminated tissues.

SENSITIZATION OF PRODUCT: This product contains a known human skin sensitizer and a potential respiratory sensitizer.

SUSPECTED CANCER AGENTS: The components of this product are listed by agencies tracking the carcinogenic potential of chemical compounds as follows:

MINERAL OIL, PETROLEUM DISTILLATES, HYDROTREATED (SEVERE) LIGHT PARAFFINIC: ACGIH-TLV-A4 (Not Classifiable as a Human Carcinogen); **IARC-3** (Unclassifiable at to Carcinogenicity in Humans)

PERMETHRIN: IARC-3 (Unclassifiable at to Carcinogenicity in Humans)

PIPERONYL BUTOXIDE: IARC-3 (Unclassifiable at to Carcinogenicity in Humans)

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects this product and its components on human and animal reproductive systems.

Mutagenicity: Components of this product are not reported to cause human mutagenic effects. I

Embryotoxicity: Components of this product are not reported to cause human embryotoxic effects.

Teratogenicity: Components of this product are not reported to cause human teratogenic effects. The Piperonyl Butoxide component was administered to pregnant mice by gavage. Early and late fetal deaths were significantly increased in the higher dose groups and those effects were significantly dose related. The average body weights of male and female fetuses were significantly reduced in a dose related fashion. The external malformation of oligodactyly in forelimbs was significantly increased in higher treatment groups in a dose related manner. The dose levels of Piperonyl Butoxide in the present study produced adverse effects on developmental parameters.

Reproductive Toxicity: Components of this product are not reported to cause human reproductive effects.

A mutagen is a chemical that causes permanent changes to genetic material (DNA) such that the changes will propagate through generation lines. An embryo toxin is a chemical that causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical that causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance that interferes in any way with the reproductive process.

ACGIH BIOLOGICAL EXPOSURE INDICES (BEIs): Currently, there are no ACGIH Biological Exposure Indices (BEIs) determined for the components of this product.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

MOBILITY: This product has not been tested for mobility in soil. The information on the following page is available for the Permethrin and Piperonyl Butoxide components.

12. ECOLOGICAL INFORMATION (Continued)

MOBILITY (continued):

PERMETHRIN: Koc values for Permethrin range from 10,471 to 86,000. Koc values for silt loam (Ohio), sandy loam (Wisconsin), sediment (Georgia), and sand (Florida) were 19,300 (Kd = 236; organic matter, 0.71%), 20,900 (Kd = 217; organic matter, 0.60%), 44,700 (Kd = 401; organic matter, 0.91%), and 60,900 (Kd = 140; organic matter, 0.13%), respectively. The Kd for Permethrin was measured to be 400 on a red earth soil from Australia with an organic matter content of 1.09%; the Koc was about 63,100. According to a classification scheme, these Koc values suggest that Permethrin is expected to be immobile in soil. The distribution coefficients (Kd) for Permethrin on clean (i.e., without organic matter) montomorillonite, aluminum oxide and kaolinite clay mineral surfaces were 61, 41, and 5 ml/g, respectively.

PIPERONYL BUTOXIDE: The Koc of Piperonyl Butoxide is in the range of 399-830. According to a classification scheme, these Koc values suggest that Piperonyl Butoxide is expected to have moderate to low mobility in soil..

PERSISTENCE AND BIODEGRADABILITY: This product has not been tested for persistence and biodegradability. The following information is available for the Permethrin and Piperonyl Butoxide components.

PERMETHRIN: If released to air, a vapor pressure of 2.18X10-8 mm Hg at 25°C indicates Permethrin will exist in both the vapor and particulate phases in the ambient atmosphere. Vapor-phase Permethrin will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals and ozone; the half-lives for these reactions in air are estimated to be 9.8 hours and 49 days, respectively. Particulate-phase Permethrin will be removed from the atmosphere by wet and dry deposition. If released to soil, Permethrin is expected to have no mobility based upon a range of Koc values from 10,471 to 86,000. Volatilization from moist soil surfaces is expected to be an important fate process based upon an estimated Henry's Law constant of 1.9X10-6 atm-cu m/mole. However, adsorption to soil is expected to attenuate volatilization. In soil, the photolysis half-life is 30 days. The biodegradation half-life of Permethrin in an aerobically incubated soil was less than 4 weeks. If released into water, Permethrin is expected to adsorb to suspended solids and sediment based upon its Koc values. The biodegradation half-life of Permethrin in a sediment-seawater solution was less than 2.5 days. Volatilization from water surfaces is expected to be an important fate process based upon this compound's estimated Henry's Law constant. Estimated volatilization half-lives for a model river and model lake are 26 days and 290 days, respectively. However, volatilization from water surfaces is expected to be attenuated by adsorption to suspended solids and sediment in the water column. BCF values for rainbow trout and sheepshead minnow of approx 560 and 480, respectively, suggest bioconcentration in aquatic organisms is high. At pH 5 and pH 7, Permethrin is stable towards abiotic hydrolysis; at pH 9, the abiotic hydrolysis half-life is about 50 days. The photolysis half-life in water is 33 days.

PIPERONYL BUTOXIDE: If released to soil, Piperonyl Butoxide is expected to have moderate to low mobility based upon Koc values in the range of 399-830. Volatilization from moist soil surfaces is not expected to be an important fate process based upon an estimated Henry's Law constant of 8.9X10-11 atm-cu m/mole. Piperonyl Butoxide is not expected to volatilize from dry soil surfaces based on its estimated vapor pressure. Piperonyl Butoxide is rapidly degraded in soil, with a half-life of 14 days in aerobic soils. If released into water, Piperonyl Butoxide is expected to adsorb to suspended solids and sediment based upon the Koc. Volatilization from water surfaces is not expected to be an important fate process based upon this compound's estimated Henry's Law constant. Piperonyl butoxide is stable to hydrolysis at pH 5, 7 and 9 under sterile, dark conditions, but was rapidly degraded (half-life 8.4 hours) in aqueous solution when illuminated with sunlight.

BIO-ACCUMULATION POTENTIAL: This product has not been tested for bio-accumulation potential. The following information is available for the Permethrin and Piperonyl Butoxide components.

PERMETHRIN: The BCF values for rainbow trout (*Oncorhynchus mykiss*) and sheepshead minnow (*Cyprinodon vagiegatus*) were approximately 560 and 480, respectively. According to a classification scheme, these BCF values suggest the potential for bioconcentration in aquatic organisms is high. A BCF of 1,900 was also reported for oysters. Insect BCF values after 6 hr of exposure to sub-lethal Permethrin concentrations were 18, 30, 7, 4, and 24 for black fly, caddisfly, damsefly, water scavenger, and mayfly, respectively.

PIPERONYL BUTOXIDE: An estimated BCF of 90 was calculated for Piperonyl Butoxide, using a log Kow of 4.75 and a regression-derived equation. According to a classification scheme, this BCF suggests the potential for bioconcentration in aquatic organisms is moderate.

AQUATIC TOXICITY: This product contains a known aquatic toxin and may cause harm in the aquatic environment, although it has not been specifically tested. The following toxicity data is available for the Permethrin and Piperonyl Butoxide components.

PERMETHRIN:

LD_{50} (Japanese quail) > 13,500 mg/kg /cis-:trans-isomer ratio of 40:60

LC_{50} (*Pimephales promelas* fathead minnow) 96 hours = 16.0 mg/L (confidence limit 8.71- 29.6 mg/L), flow-through bioassay with measured concentrations, 25.4°C, dissolved oxygen 7.5 mg/L hardness 45.7 mg/l calcium carbonate, alkalinity 41.6 mg/l calcium carbonate, and pH 7.1

LC_{50} (Bluegill sunfish) 48 hours = 1.8 µg/L/Conditions of bioassay not specified

LC_{50} (Rainbow trout) 48 hours = 5.4 µg/L/Conditions of bioassay not specified

PERMETHRIN (continued):

LC_{50} (Brook trout) 96 hours = (1.2g) @ 12°C 3.2 (2.2-4.8) µg/L Static bioassay without aeration, pH 7.2-7.5, water hardness 40-50 mg/L as calcium carbonate nd alkalinity of 30-35 mg/L/Technical material 92.5%

LC_{50} (Brook trout) 96 hours = (1.2 g) @ 12°C. 5.2 (3.5 - 7.9) µg/L Static bioassay without aeration, pH 7.2-7.5, water hardness 40-50 mg/L as calcium carbonate and alkalinity of 30-35 mg/L/Liquid 5.7

LC_{50} (Brook trout) 96 hours = (1.2 g) @ 12°C 2.3 (1.4 - 3.7) µg/L. Static bioassay without aeration, pH 7.2-7.5, water hardness 40-50 mg/L as calcium carbonate and alkalinity of 30-35 mg/L/emulsifiable concentrate 13.3%

PIPERONYL BUTOXIDE:

LC_{50} (Japanese quail *Coturnix japonica*), 14 days old, oral (5 day ad libitum in diet) > 5,000 ppm /Technical grade, 100% active ingredient

LC_{50} (*Asellus*) 96 hours = 12 µg/L @ 15°C (95% confidence limit 7-22 µg/L), mature

LC_{50} (rainbow trout) 96 hours = 3.4 µg/L @ 12°C (95% confidence limit 2.7-4.3 µg/L), wt 0.6 g

LC_{50} (bluegill) 96 hours = 4.2 µg/L @ 18°C (95% confidence limit 3.8-4.6 µg/L), wt 0.7 g

OTHER ADVERSE EFFECTS: This product does not contain any component with known ozone depletion potential.

ENVIRONMENTAL EXPOSURE CONTROLS: Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHODS: It is the responsibility of the generator to determine at the time of disposal whether the product meets the criteria of a hazardous waste per regulations of the area in which the waste is generated and/or disposed of. Waste disposal must be in accordance with appropriate Federal, State, and local regulations. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority. Shipment of wastes must be done with appropriately permitted and registered transporters.

PRECAUTIONS TO BE FOLLOWED DURING WASTE HANDLING: Wear proper protective equipment when handling waste materials. Dispose of in accordance with applicable Federal, State, and local procedures and standards.

PESTICIDE DISPOSAL: Do not contaminate water, food or feed by disposal. Wastes resulting from the use of this product may be disposed of on site or at an approved wastes disposal facility.

CONTAINER DISPOSAL: Non-refillable; 2 ½; 5; 30; 55 gallon container. Do not reuse or refill this container. Offer for reconditioning if appropriate. Refillable 275 gallon container. Refill this container with pesticide only. Do not use this container for any other purpose. Clean container promptly after emptying. **(Metal) *Triple rinse** or equivalent. Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill or by other approved State and local procedures. **(Plastic) *Triple rinse** or equivalent. Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill or incineration, or if allowed by State and local authorities, by burning. If burned, stay out of smoke.

13. DISPOSAL CONSIDERATIONS (Continued)

CONTAINER DISPOSAL (continued): *Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times.

DISPOSAL CONTAINERS: Waste materials must be placed in and shipped in appropriate 5-gallon or 55 gallon poly or metal waste pails or drums. Permeable cardboard containers are not appropriate and should not be used. Ensure that any required marking or labeling of the containers be done to all applicable regulations.

U.S. EPA WASTE NUMBER: Not applicable.

EUROPEAN WASTE CODES: Not applicable.

14. TRANSPORTATION INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION: This product is classified as dangerous goods, per U.S. DOT regulations, under 49 CFR 172.101.

Proper Shipping Name:	Environmentally hazardous substances, liquid, n.o.s. (Permethrin)
Hazard Class Number and Description:	9 (Miscellaneous Hazardous Material)
UN Identification Number:	UN 3082
Packing Group:	III
Dot Label(s) Required:	Class 9
Emergency Response Guidebook Number, 2008:	171

Note: Shipments of this product can qualify for specific exceptions, as follows:

Shipments under 30 mL (1 ounce): Such shipments qualify for the small quantity exception (per 49 CFR 173.4). These shipments must be properly marked and packaged, per 49 CFR 173.4.

Shipments of not more than 5 L (1.3 gallons): Such shipments qualify for limited quantity exception. These shipments must be properly marked and packaged, per 49 CFR 173.155.

Non-bulk shipments (packaging has a maximum capacity of 450 L (119 gallons) or less as a receptacle for a liquid per 49 CFR 171.8) are not subject to the shipping requirements specific to marine pollutants when transported by motor vehicles, rail cars, or aircraft per 49 CFR 171.4(c).

Marine Pollutant: Permethrin meets the criteria for marine pollutants, per Appendix B to 49 CFR 172.101.

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: This product is classified as Dangerous Goods, per regulations of Transport Canada.

Proper Shipping Name:	Environmentally hazardous substances, liquid, n.o.s. (Permethrin)
Hazard Class Number and Description:	Class 9 (Miscellaneous Products, Substances or Organisms)
UN Identification Number:	UN 3082
Packing Group:	III
Hazard Label(s) Required:	Class 9
Special Provisions:	16
Explosive Limit & Limited Quantity Index:	5
ERAP Index:	None
Passenger Carrying Ship Index:	None
Passenger Carrying Road or Rail Vehicle Index:	None

Marine Pollutant: Permethrin meets the criteria for marine pollutants, per Part 2, Section 2.7 of the Consolidated Transportation of Dangerous Goods Regulations.

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA): This product is classified as dangerous goods under rules of IATA.

UN Identification Number:	UN 3082
Proper Shipping Name:	Environmentally hazardous substances, liquid, n.o.s. (Permethrin)
Hazard Class Number and Description:	9 (Miscellaneous Dangerous Substances and Articles)
Packing Group:	III
Hazard Label(s) Required:	Class 9
Passenger and Cargo Aircraft Packing Instruction:	914
Passenger and Cargo Aircraft Maximum Net Quantity Per Pkg.:	No Limit
Passenger and Cargo Aircraft Limited Quantity Packing Instruction:	Y914
Passenger and Cargo Aircraft Limited Quantity Maximum Net Quantity Per Pkg.:	30 kg/G
Cargo Aircraft Only Packing Instruction:	914
Cargo Aircraft Only Maximum Net Quantity Per Pkg.:	No Limit
Special Provisions:	A97

INTERNATIONAL MARITIME ORGANIZATION (IMO) DESIGNATION: This product is classified as Dangerous Goods by the International Maritime Organization.

Proper Shipping Name:	Environmentally hazardous substances, liquid, n.o.s. (Permethrin)
Hazard Class Number and Description:	9 (Miscellaneous Dangerous Substances and Articles)
UN Identification Number:	UN 3082
Packing Group:	III
Label(s) Required:	Class 9
Special Provisions:	274, 909, 944
Packing Instructions:	P001, LP01
EmS:	F-A, S-F
Stowage and Segregation:	Category A

Marine Pollutant: Permethrin meets the criteria for marine pollutants.

Note: This product may be shipped under the Dangerous Goods in Limited Quantities Regulations (IMGD CODE Amendment 28-96 Section 18). The maximum quantity per inner packaging for Class 9, Packing Group III materials is 5 L.

14. TRANSPORTATION INFORMATION (Continued)

EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR): This product is classified by the United Nations Economic Commission for Europe to be dangerous goods.

Substance Identification No.:	3082
Name of Substance:	Environmentally hazardous substances, liquid, n.o.s. (Permethrin)
Class:	9
Classification Code:	M6
Packing Group:	III
Label:	9
Special Provisions:	274
Limited Quantities:	LQ7
Packing Instructions:	P001, IBC03, LP01, R001
Mixed Packing Provisions:	MP15
Hazard Identification No.:	90

AUSTRALIAN FEDERAL OFFICE OF ROAD SAFETY CODE FOR THE TRANSPORTATION OF DANGEROUS GOODS BY ROAD OR RAIL: This product is classified as dangerous goods, per regulations of the Australian Federal Office of Road Safety.

U.N. Number:	3082
Name Of Substance:	Environmentally hazardous substances, liquid, n.o.s. (Permethrin)
Hazard Class:	9
Packing Group:	PG III
Hazchem Code:	2X
Packaging Code:	3.8.9

OFFICIAL MEXICAN STANDARD; REGULATION FOR THE TRANSPORT OF DANGEROUS GOODS AND RESIDUES: This product is classified as Dangerous Goods, per transport regulations of Mexico.

UN Identification Number:	UN 3082
Proper Shipping Name:	Environmentally hazardous substances, liquid, n.o.s. (Permethrin)
Hazard Class Number and Description:	9 (Miscellaneous Dangerous Substances and Articles)
Packing Group:	III
Hazard Label(s) Required:	Class 9

SINGAPORE STANDARD 286: PART A: This product is classified as hazardous under the Specification for Caution Labeling for Hazardous Substances, Part 4: Marking of Packages, Containers and Vehicles.

UN Identification Number:	UN 3082
Proper Shipping Name:	Environmentally hazardous substances, liquid, n.o.s. (Permethrin)
Hazard Class Number and Description:	9 (Miscellaneous Dangerous Substances and Articles)
Packing Group:	III
Hazard Label(s) Required:	Class 9

15. REGULATORY INFORMATION

ADDITIONAL UNITED STATES REGULATIONS:

U.S. SARA REPORTING REQUIREMENTS: The components of this product are subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act, as follows:

CHEMICAL NAME	SARA 302 (40 CFR 355, Appendix A)	SARA 304 (40 CFR Table 302.4)	SARA 313 (40 CFR 372.65)
Permethrin	No	No	Yes
Piperonyl Butoxide	No	No	Yes

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for the components of this product. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. SARA HAZARD CATEGORIES (SECTION 311/312, 40 CFR 370-21): ACUTE: Yes; CHRONIC: No; FIRE: No; REACTIVE: No; SUDDEN RELEASE: No

U.S. CERCLA REPORTABLE QUANTITY (RQ): Not applicable.

U.S. TSCA INVENTORY STATUS: The components of this product are listed on the TSCA Inventory.

OTHER U.S. FEDERAL REGULATIONS: This product is regulated under the EPA Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), Title 40 CFR, Parts 150-189.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): No component of this product is on the CA Proposition 65 Lists.

ANSI LABELING (Z129.1): As a registered pesticide, the labeling of this product is regulated by the EPA.

ADDITIONAL CANADIAN REGULATIONS:

CANADIAN DSL INVENTORY: The components of this product are on the DSL Inventory.

OTHER CANADIAN REGULATIONS: This product is regulated under the Pest Control Product Act (PCPA) and is subject to requirements under this regulation.

CANADIAN ENVIRONMENTAL PROTECTION AGENCY (CEPA) PRIORITIES SUBSTANCES LISTS: As a Pesticide, this product is excepted from requirements under the CEPA as it is regulated under requirements of the Pest Control Product Act (PCPA).

15. REGULATORY INFORMATION (Continued)

ADDITIONAL CANADIAN REGULATIONS (continued):

CANADIAN WHMIS CLASSIFICATION and SYMBOLS: This product is classified as B3: Combustible Liquid and D2B: Poisonous and Infectious Material – Materials Causing Other Toxic Effects.

ADDITIONAL EUROPEAN UNION REGULATIONS:

EU LABELING AND CLASSIFICATION: This product is classified as Harmful and Dangerous for the Environment, as defined by the European Union Council Directive 67/548/EEC or subsequent Directives.

EU CLASSIFICATION: Xi [Irritant]; N [Dangerous for the Environment]

EU RISK PHRASES: [R: 43]: May cause sensitisation by skin contact. [R: 50/53]: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. [R: 57]: Toxic to bees. [R: 65]: Harmful: may cause lung damage if swallowed.

EU SAFETY PHRASES: [S: 1/2]: Keep locked up and out of the reach of children*. *(*This safety phrase can be omitted from the label when the substance or preparation is sold for industrial use only.*) [S: 3/7]: Keep container tightly closed in a cool place. [S: 13]: Keep away from food, drink and animal feeding stuffs. [S: 24]: Avoid contact with skin. [S: 27/28]: After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water. [S: 36/37/39]: Wear suitable protective clothing, gloves and eye/face protection. [S: 60]: This material and its container must be disposed of as hazardous waste. [S: 61]: Avoid release to the environment. Refer to special instructions/safety data sheet.

EU ANNEX II HAZARD SYMBOLS:

INFORMATION FOR COMPONENTS:

Mineral Oil:

Classification: This substance is not subject to the classification published in Commission Directives 93/72/EEC or 94/69EC as severely hydrotreated.

Permethrin:

Classification: [Xn]: Harmful. [N]: Dangerous for the Environment

Risk Phrases: [R 20/22]: Harmful by inhalation, in contact with skin and if swallowed. [R: 43]: May cause sensitisation by skin contact. R: 50/53]: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases: [S 2]: Keep out of reach of children. (*This safety phrase can be omitted from the label when the substance or preparation is sold for industrial use only.*) [S: 13]: Keep away from food, drink and animal feeding stuffs. [S: 24]: Avoid contact with skin. [S: 36/37/39]: Wear suitable protective clothing, gloves and eye/face protection. [S: 60]: This material and its container must be disposed of as hazardous waste. [S: 61]: Avoid release to the environment. Refer to special instructions/safety data sheet.

Piperonyl Butoxide:

Classification: An official classification for this substance has not been published in Commission Directives 93/72/EEC or 94/69EC.

REGULATION (EC) NO 1907/2006 AS OF DECEMBER 18, 2006: This product does not contain SVHC's on the Candidate list published by the ECHA (European Chemicals Agency) on 28 Oct 2008 above 0,1% w/w.

ADDITIONAL AUSTRALIAN REGULATIONS:

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS: The components of this product are listed on the AICS.

HAZARDOUS SUBSTANCES INFORMATION SYSTEM (HSIS): The Permethrin component of this product is listed in the HSIS.

LABELING AND CLASSIFICATION [NOHSC: 10005 (1994)]: This product is classified as Harmful as defined by Australian NOHSC: 1008 (2004).

LABELING AND CLASSIFICATION: XI [Irritant]; N [Dangerous for the Environment]

RISK PHRASES: [R: 43]: May cause sensitisation by skin contact. R: 50/53]: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. [R: 57]: Toxic to bees. [R: 65]: Harmful: may cause lung damage if swallowed.

SAFETY PHRASES: [S: 1/2]: Keep locked up and out of the reach of children*. *(*This safety phrase can be omitted from the label when the substance or preparation is sold for industrial use only.*) [S: 3/7]: Keep container tightly closed in a cool place. [S: 13]: Keep away from food, drink and animal feeding stuffs. [S: 24]: Avoid contact with skin. [S: 27/28]: After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water. [S: 36/37/39]: Wear suitable protective clothing, gloves and eye/face protection. [S: 60]: This material and its container must be disposed of as hazardous waste. [S: 61]: Avoid release to the environment. Refer to special instructions/safety data sheet.

HAZARD SYMBOLS:

OTHER AUSTRALIAN REGULATIONS: As a pesticide, this product is regulated and has requirements under the Australian Agricultural and Veterinary Chemicals Administration Act, the Agricultural and Veterinary Chemicals Code Act and the Agricultural and Veterinary Chemicals Code Regulation.

15. REGULATORY INFORMATION (Continued)

ADDITIONAL JAPANESE REGULATIONS:

JAPANESE EXISTING AND NEW CHEMICAL SUBSTANCE LIST (ENCS) STATUS: The Permethrin component of this product is on the Japanese ENCS Inventory. The remaining components are not on the Inventory.

JAPANESE POISONOUS AND DELETERIOUS SUBSTANCES CONTROL LAW: Not applicable.

CLASS DESIGNATED CHEMICAL SUBSTANCE REGULATIONS: The Permethrin component is listed as a Class I Designated Chemical Substance.

OTHER JAPANESE REGULATIONS: This product may have requirements under the following Japanese regulations: Agricultural Chemicals Regulation Law; Japan New Chemical Control Law; Promotion of Chemical Management Law; Chemical Substance Control Law (CSCL); and the Waste Disposal and Public Clearing Law.

ADDITIONAL NEW ZEALAND REGULATIONS:

HSNO CHEMICAL CLASSIFICATION INFORMATION DATABASE (CCID): The Mineral Oil component is not listed on the New Zealand Inventory of Chemicals. The remaining components are listed.

OTHER NEW ZEALAND REGULATIONS: As a pesticide, this product may have requirements under the following New Zealand regulations: Agricultural Compounds and Veterinary Medicines Act (ACVM Act) and HNSOCOP 9-1: Code of Practice of Product Labeling and Documentation Guide for Agricultural Compounds and Veterinary Medicines.

ADDITIONAL KOREAN REGULATIONS:

KOREAN EXISTING CHEMICALS LIST (ECL) STATUS: The Mineral Oil component is not listed on the ECL. The remaining components are listed.

ADDITIONAL SINGAPORE REGULATIONS:

CODE OF PRACTICE ON POLLUTION CONTROL REQUIREMENTS: The components of this product are NOT subject to the requirements under the Singapore Code of Practice on Pollution Control.

PESTICIDE REGULATIONS: As a pesticide, this product is subject to regulations under the Environmental Health Department (EHD).

ADDITIONAL MEXICAN REGULATIONS:

PESTICIDE REGULATIONS: As a pesticide, this product is regulated by the Intersecretarial Commission for the Control of the Production and Use of Pesticides, Fertilizers and Toxic Substances (CICOPLFEST) and has requirements under the following regulations:

NOM-044-SSA1-1993, Containers and Packaging. Requirements For Containing Pesticides.
NOM-045-SSA1-1993, Pesticides. Products for agricultural use, forestry, livestock, gardening, urban and industrial. Labeling.
NOM-046-SSA1-1993, Pesticides-Products for domestic use- Labeling.
NOM-048-SSA1-1993, Establishes a standardized method for the evaluation of risks to health from environmental agents.

OTHER MEXICAN REGULATIONS: This product is subject to requirements under the following regulation: NOM-005-STPS-1998, Health and Safety Conditions in the Work Place for the Handling, Transport, and Storage of Hazardous Chemical Substances.

16. OTHER INFORMATION

PREPARED BY: CHEMICAL SAFETY ASSOCIATES, Inc.
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DATE OF PRINTING: May 20, 2010

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these, which are commonly used, include the following:

CAS #: This is the Chemical Abstract Service Number that uniquely identifies each constituent.

EXPOSURE LIMITS IN AIR:

CEILING LEVEL: The concentration that shall not be exceeded during any part of the working exposure.

DFG MAK Germ Cell Mutagen Categories: 1: Germ cell mutagens which have been shown to increase the mutant frequency in the progeny of exposed humans. **2:** Germ cell mutagens which have been shown to increase the mutant frequency in the progeny of exposed mammals. **3A:** Substances which have been shown to induce genetic damage in germ cells of human of animals, or which produce mutagenic effects in somatic cells of mammals *in vivo* and have been shown to reach the germ cells in an active form. **3B:** Substances which are suspected of being germ cell mutagens because of their genotoxic effects in mammalian somatic cell *in vivo*; in exceptional cases, substances for which there are no *in vivo* data, but which are clearly mutagenic *in vitro* and structurally related to known in vivo mutagens. **4:** Not applicable (Category 4 carcinogenic substances are those with non-genotoxic mechanisms of action. By definition, germ cell mutagens are genotoxic. Therefore, a Category 4 for germ cell mutagens cannot apply. At some time in the future, it is conceivable that a Category 4 could be established for genotoxic substances with primary targets other than DNA [e.g. purely aneugenic substances] if research results make this seem sensible.) **5:** Germ cell mutagens, the potency of which is considered to be so low that, provided the MAK value is observed, their contribution to genetic risk for humans is expected not to be significant.

DFG MAK Pregnancy Risk Group Classification: Group A: A risk of damage to the developing embryo or fetus has been unequivocally demonstrated. Exposure of pregnant women can lead to damage of the developing organism, even when MAK and BAT (Biological Tolerance Value for Working Materials) values are observed.

EXPOSURE LIMITS IN AIR (continued):

DFG MAK Pregnancy Risk Group Classification (continued): Group B: Currently available information indicates a risk of damage to the developing embryo or fetus must be considered to be probable. Damage to the developing organism cannot be excluded when pregnant women are exposed, even when MAK and BAT values are observed. **Group C:** There is no reason to fear a risk of damage to the developing embryo or fetus when MAK and BAT values are observed. **Group D:** Classification in one of the groups A-C is not yet possible because, although the data available may indicate a trend, they are not sufficient for final evaluation.

IDLH-Immediately Dangerous to Life and Health: This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury.

LOQ: Limit of Quantitation.

MAK: Federal Republic of Germany Maximum Concentration Values in the workplace.

NE: Not Established. When no exposure guidelines are established, an entry of NE is made for reference.

NIC: Notice of Intended Change.

NIOSH CEILING: The exposure that shall not be exceeded during any part of the workday. If instantaneous monitoring is not feasible, the ceiling shall be assumed as a 15-minute TWA exposure (unless otherwise specified) that shall not be exceeded at any time during a workday.

NIOSH RELs: NIOSH's Recommended Exposure Limits.

PEL-Permissible Exposure Limit: OSHA's Permissible Exposure Limits. This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL that was vacated by Court Order.

EXPOSURE LIMITS IN AIR (continued):

SKIN: Used when a there is a danger of cutaneous absorption.

STEL-Short Term Exposure Limit: Short Term Exposure Limit, usually a 15-minute time-weighted average (TWA) exposure that should not be exceeded at any time during a workday, even if the 8-hr TWA is within the TLV-TWA, PEL-TWA or REL-TWA.

TLV-Threshold Limit Value: An airborne concentration of a substance that represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour.

TWA-Time Weighted Average: Time Weighted Average exposure concentration for a conventional 8-hr (TLV, PEL) or up to a 10-hr (REL) workday and a 40-hr workweek.

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS:

This rating system was developed by the National Paint and Coating Association and has been adopted by industry to identify the degree of chemical hazards.

HEALTH HAZARD: 0 (Minimal Hazard: No significant health risk, irritation of skin or eyes not anticipated. *Skin Irritation*: Essentially non-irritating. PII or Draize = "0". *Eye Irritation*: Essentially non-irritating, or minimal effects which clear in < 24 hours [e.g. mechanical irritation]. Draize = "0". *Oral Toxicity LD_{50} Rat*: < 5000 mg/kg. *Dermal Toxicity LD_{50}Rat or Rabbit*: < 2000 mg/kg. *Inhalation Toxicity 4-hrs LC_{50} Rat*: < 20 mg/L.); **1** (Slight Hazard: Minor reversible Injury may occur; slightly or mildly irritating. *Skin Irritation*: Slightly or mildly irritating. *Eye Irritation*: Slightly or mildly irritating. *Oral Toxicity LD_{50} Rat*: > 500-5000 mg/kg. *Dermal Toxicity LD_{50}Rat or Rabbit*: > 1000-2000 mg/kg. *Inhalation Toxicity LC_{50} 4-hrs Rat*: > 2-20 mg/L); **2** (Moderate Hazard: Temporary or transitory injury may occur. *Skin Irritation*: Moderately irritating; primary irritant; sensitizer. PII or Draize > 0, < 5. *Eye Irritation*: Moderately to severely irritating and/or corrosive; reversible corneal opacity; corneal involvement or irritation clearing in 8-21 days. Draize > 0, ≤ 25. *Oral Toxicity LD_{50} Rat*: > 50-500 mg/kg. *Dermal Toxicity LD_{50}Rat or Rabbit*: > 200-1000 mg/kg. *Inhalation Toxicity LC_{50} 4-hrs Rat*: > 0.5-2 mg/L.); **3** (Serious Hazard: Major injury likely unless prompt action is taken and medical treatment is given; high level of toxicity; corrosive. *Skin Irritation*: Severely irritating and/or corrosive; may destroy dermal tissue, cause skin burns, dermal necrosis. PII or Draize > 5-8 with destruction of tissue. *Eye Irritation*: Corrosive, irreversible destruction of ocular tissue; corneal involvement or irritation persisting for more than 21 days. Draize > 80 with effects irreversible in 21 days. *Oral Toxicity LD_{50} Rat*: > 1-50 mg/kg. *Dermal Toxicity LD_{50}Rat or Rabbit*: > 20-200 mg/kg. *Inhalation Toxicity LC_{50} 4-hrs Rat*: > 0.05-0.5 mg/L.); **4** (Severe Hazard: Life-threatening; major or permanent damage may result from single or repeated exposure. *Skin Irritation*: Not appropriate. Do not rate as a "4", based on skin irritation alone. *Eye Irritation*: Not appropriate. Do not rate as a "4", based on eye irritation alone. *Oral Toxicity LD_{50} Rat*: ≤ 1 mg/kg. *Dermal Toxicity LD_{50}Rat or Rabbit*: ≤ 20 mg/kg. *Inhalation Toxicity LC_{50} 4-hrs Rat*: ≤ 0.05 mg/L).

FLAMMABILITY HAZARD: 0 (Minimal Hazard-Materials that will not burn in air when exposure to a temperature of 815.5°C [1500°F] for a period of 5 minutes.); **1** (Slight Hazard-Materials that must be pre-heated before ignition can occur. Material require considerable pre-heating, under all ambient temperature conditions before ignition and combustion can occur, Including: Materials that will burn in air when exposed to a temperature of 815.5°C (1500°F) for a period of 5 minutes or less; Liquids, solids and semisolids having a flash point at or above 93.3°C [200°F] (e.g. OSHA Class IIIB, or; Most ordinary combustible materials [e.g. wood, paper, etc.]; **2** (Moderate Hazard-Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not, under normal conditions, form hazardous atmospheres in air, but under high ambient temperatures or moderate heating may release vapor in sufficient quantities to produce hazardous atmospheres in air, Including: Liquids having a flash-point at or above 37.8°C [100°F]; Solid materials in the form of course dusts that may burn rapidly but that generally do not form explosive atmospheres; Solid materials in a fibrous or shredded form that may burn rapidly and create flash fire hazards (e.g. cotton, sisal, hemp; Solids and semisolids that readily give off flammable vapors.); **3** (Serious Hazard- Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures, or, unaffected by ambient temperature, are readily ignited under almost all conditions, including: Liquids having a flash point below 22.8°C [73°F] and having a boiling point at or above 38°C [100°F] and below 37.8°C [100°F] [e.g. OSHA Class IB and IC]; Materials that on account of their physical form or environmental conditions can form explosive mixtures with air and are readily dispersed in air [e.g., dusts of combustible solids, mists or droplets of flammable liquids]; Materials that burn extremely rapidly, usually by reason of self-contained oxygen [e.g. dry nitrocellulose and many organic peroxides]); **4** (Severe Hazard-Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and which will burn readily, including: Flammable gases; Flammable cryogenic materials; Any liquid or gaseous material that is liquid while under pressure and has a flash point below 22.8°C [73°F] and a boiling point below 37.8°C [100°F] [e.g. OSHA Class IA; Material that ignite spontaneously when exposed to air at a temperature of 54.4°C [130°F] or below [e.g. pyrophoric]).

PHYSICAL HAZARD: 0 (*Water Reactivity*: Materials that do not react with water. *Organic Peroxides*: Materials that are normally stable, even under fire conditions and will not react with water. *Explosives*: Substances that are Non-Explosive. Unstable *Compressed Gases*: No Rating. *Pyrophorics*: No Rating. *Oxidizers*: No "0" rating allowed. *Unstable Reactives*: Substances that will not polymerize, decompose, condense or self-react.); *Pyrophorics*: No Rating. *Oxidizers*: No "0" rating allowed. *Unstable Reactives*: Substances that will not polymerize, decompose, condense or self-react.);**1** (*Water Reactivity*: Materials that change or decompose upon exposure to moisture. *Organic Peroxides*: Materials that are normally stable, but can become unstable at high temperatures and pressures. These materials may react with water, but will not release energy. *Explosives*: Division 1.5 & 1.6 substances that are very insensitive explosives or that do not have a mass explosion hazard. *Compressed Gases*: Pressure below OSHA definition. *Pyrophorics*: No Rating. (*Oxidizers*: Packaging Group III; Solids: any material that in either concentration tested, exhibits a mean burning time less than or equal to the mean burning time of a 3:7 potassium bromate/cellulose mixture and the criteria for Packing Group I and II are not met.

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS (continued):

PHYSICAL HAZARD (continued): 1 (continued): Liquids: any material that exhibits a mean pressure rise time less than or equal to the pressure rise time of a 1:1 nitric acid (65%)/cellulose mixture and the criteria for Packing Group I and II are not met. *Unstable Reactives*: Substances that may decompose, condense or self-react, but only under conditions of high temperature and/or pressure and have little or no potential to cause significant heat generation or explosive hazard. Substances that readily undergo hazardous polymerization in the absence of inhibitors.); **2** (*Water Reactivity*: Materials that may react violently with water. *Organic Peroxides*: Materials that, in themselves, are normally unstable and will readily undergo violent chemical change, but will not detonate. These materials may also react violently with water. *Explosives*: Division 1.4 – Explosive substances where the explosive effect are largely confined to the package and no projection of fragments of appreciable size or range are expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package. *Compressed Gases*: Pressurized and meet OSHA definition but < 514.7 psi absolute at 21.1°C (70°F) [500 psig]. *Pyrophorics*: No Rating. *Oxidizers*: Packing Group II Solids: any material that, either in concentration tested, exhibits a mean burning time of less than or equal to the mean burning time of a 2:3 potassium bromate/cellulose mixture and the criteria for Packing Group I are not met. Liquids: any material that exhibits a mean pressure rise time less than or equal to the pressure rise of a 1:1 aqueous sodium chlorate solution (40%)/cellulose mixture and the criteria for Packing Group I are not met. *Unstable Reactives*: Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure, but have a low potential for significant heat generation or explosion. Substances that readily form peroxides upon exposure to air or oxygen at room temperature); **3** (*Water Reactivity*: Materials that may form explosive reactions with water. *Organic Peroxides*: Materials that are capable of detonation or explosive reaction, but require a strong initiating source, or must be heated under confinement before initiation; or materials that react explosively with water. *Explosives*: Division 1.2 – Explosive substances that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but do not have a mass explosion hazard. *Compressed Gases*: Pressure ≥ 514.7 psi absolute at 21.1°C (70°F) [500 psig].*Pyrophorics*: No Rating. *Oxidizers*: Packing Group I Solids: any material that, in either concentration tested, exhibits a mean burning time less than the mean burning time of a 3.:2 potassium bromate/cellulose mixture. *Oxidizers*: Liquids: Any material that spontaneously ignites when mixed with cellulose in a 1:1 ratio, or which exhibits a mean pressure rise time less than the pressure rise time of a 1:1 perchloric acid (50%)/cellulose mixture. *Unstable Reactives*: Substances that may polymerize, decompose, condense or self-react at ambient temperature and/or pressure and have a moderate potential to cause significant heat generation or explosion.); **4** (*Water Reactivity*: Materials that react explosively with water without requiring heat or confinement. *Organic Peroxides*: Materials that are readily capable of detonation or explosive decomposition at normal temperature and pressures. *Explosives*: Division 1.1 & 1.2-explosive substances that have a mass explosion hazard or have a projection hazard. A mass explosion is one that affects almost the entire load instantaneously. *Compressed Gases*: No Rating. *Pyrophorics*: Add to the definition of Flammability "4". *Oxidizers*: No "4" rating. *Unstable Reactives*: Substances that may polymerize, decompose, condense or self-react at ambient temperature and/or pressure and have a high potential to cause significant heat generation or explosion.).

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS:

HEALTH HAZARD: **0** (materials that, under emergency conditions, would offer no hazard beyond that of ordinary combustible materials): Gases and vapors whose LC_{50} for acute inhalation toxicity is greater than 10,000 ppm. Dusts and mists whose LC_{50} for acute inhalation toxicity is greater than 200 mg/L. Materials whose LD_{50} for acute dermal toxicity is greater than 2000 mg/kg. Materials whose LD_{50} for acute oral toxicity is greater than 2000 mg/kg. Materials that are essentially non-irritating to the respiratory tract, eyes and skin. **1** (materials that, under emergency conditions, can cause significant irritation): Gases and vapors whose LC_{50} for acute inhalation toxicity is greater than 5,000 ppm but less than or equal to 10,000 ppm. Dusts and mists whose LC_{50} for acute inhalation toxicity is greater than 10 mg/L but less than or equal to 200 mg/L. Materials whose LD_{50} for acute dermal toxicity is greater than 1000 mg/kg but less than or equal to 2000 mg/kg. Materials whose LD_{50} for acute oral toxicity is greater than 500 mg/kg but less than or equal to 2000 mg/kg. Materials that cause slight to moderate irritation to the respiratory tract, eyes and skin. **2** (materials that, under emergency conditions, can cause temporary incapacitation or residual injury): Gases and vapors whose LC_{50} for acute inhalation toxicity is greater than 3,000 ppm but less than or equal to 5,000 ppm. Dusts and mists whose LC_{50} for acute inhalation toxicity is greater than 2 mg/L but less than or equal to 10 mg/L. Materials whose LD_{50} for acute dermal toxicity is greater than 200 mg/kg but less than or equal to 1000 mg/kg. Materials whose LD_{50} for acute oral toxicity is greater than 50 mg/kg but less than or equal to 500 mg/kg. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC_{50} for acute inhalation toxicity, if its LC_{50} is less than or equal to 5000 ppm and that does not meet the criteria for either degree of hazard 3 or degree of hazard 4. Compressed liquefied gases with boiling points between -30°C (-22°F) and -55°C (-66.5°F) that cause severe tissue damage, depending on duration of exposure. Materials that are respiratory irritants. Materials that cause severe, but reversible irritation to the eyes or are lachrymators. Materials that are primary skin irritants or sensitizers. **3** (materials that, under emergency conditions, can cause serious or permanent injury): Gases and vapors whose LC_{50} for acute inhalation toxicity is greater than 1,000 ppm but less than or equal to 3,000 ppm. Dusts and mists whose LC_{50} for acute inhalation toxicity is greater than 0.5 mg/L but less than or equal to 2 mg/L. Materials whose LD_{50} for acute dermal toxicity is greater than 40 mg/kg but less than or equal to 200 mg/kg. Materials whose LD_{50} for acute oral toxicity is greater than 5 mg/kg but less than or equal to 50 mg/kg. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC_{50} for acute inhalation toxicity, if its LC_{50} is less than or equal to 3000 ppm and that does not meet the criteria for degree of hazard 4.

DEFINITIONS OF TERMS (Continued)

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS (continued):

HEALTH HAZARD (continued): **3 (continued):** Compressed liquefied gases with boiling points between -30°C (-22°F) and -55°C (-66.5°F) that cause frostbite and irreversible tissue damage. Materials that are respiratory irritants. Cryogenic gases that cause frostbite and irreversible tissue damage. Materials that are corrosive to the respiratory tract. Materials that are corrosive to the eyes or cause irreversible corneal opacity. Materials that are corrosive to the skin. **4** (materials that, under emergency conditions, can be lethal): Gases and vapors whose LC_{50} for acute inhalation toxicity less than or equal to 1,000 ppm. Dusts and mists whose LC_{50} for acute inhalation toxicity is less than or equal to 0.5 mg/L. Materials whose LD_{50} for acute dermal toxicity is less than or equal to 40 mg/kg. Materials whose LD_{50} for acute oral toxicity is less than or equal to 5 mg/kg. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC_{50} for acute inhalation toxicity, if its LC_{50} is less than or equal to 1000 ppm.

FLAMMABILITY HAZARD: **0** Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand: Materials that will not burn in air when exposed to a temperature of 816°C (1500°F) for a period of 5 minutes in according with Annex D. **1** Materials that must be preheated before ignition can occur. Materials in this degree require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur: Materials that will burn in air when exposed to a temperature of 816°C (1500°F) for a period of 5 minutes in accordance with Annex D. Liquids, solids and semisolids having a flash point at or above 93.4°C (200°F) (i.e. Class IIIB liquids). Liquids with a flash point greater than 35°C (95°F) that do not sustain combustion when tested using the *Method of Testing for Sustained Combustibility*, per 49 CFR 173, Appendix H or the UN *Recommendation on the Transport of Dangerous Goods, Model Regulations* (current edition) and the related *Manual of Tests and Criteria* (current edition). Liquids with a flash point greater than 35°C (95°F) in a water-miscible solution or dispersion with a water non-combustible liquid/solid content of more than 85 percent by weight. Liquids that have no fire point when tested by ASTM D 92 Standard Test Method for Flash and Fire Points by Cleveland Open Cup, up to a boiling point of the liquid or up to a temperature at which the sample being tested shows an obvious physical change. Combustible pellets with a representative diameter of greater than 2 mm (10 mesh). Solids containing greater than 0.5 percent by weight of a flammable or combustible solvent are rated by the closed up flash point of the solvent. Most ordinary combustible materials. **2** Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not under normal conditions form hazardous atmospheres with air, but under high ambient temperatures or under moderate heating could release vapor in sufficient quantities to produce hazardous atmospheres with air: Liquids having a flash point at or above 37.8°C (100°F) and below 93.4°C (200°F) (i.e. Class II and Class IIIA liquids.) Solid materials in the form of powders or coarse dusts of representative diameter between 420 microns (40 mesh) and 2 mm (10 mesh) that burn rapidly but that generally do not form explosive mixtures in air. Solid materials in fibrous or shredded form that burn rapidly and create flash fire hazards, such as cotton, sisal and hemp. Solids and semisolids that readily give off flammable vapors. Solids containing greater than 0.5 percent by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. **3** Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures or, though unaffected by ambient temperatures, are readily ignited under almost all conditions: Liquids having a flash point below 22.8°C (73°F) and having a boiling point at or above 37.8°C (100°F) and those liquids having a flash point at or above 22.8°C (73°F) and below 37.8°C (73°F) and below 37.8°C (100°F) (i.e. Class IB and IC liquids). Materials that, on account of their physical form or environmental conditions, can form explosive mixtures with air and are readily dispersed in air. Flammable or combustible dusts with a representative diameter less than 420 microns (40 mesh). Materials that burn with extreme rapidity, usually by reason of self-contained oxygen (e.g. dry nitrocellulose and many organic peroxides). Solids containing greater than 0.5 percent by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. **4** Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air and will burn readily: Flammable gases. Flammable cryogenic materials. Any liquid or gaseous materials that is liquid while under pressure and has a flash point below 22.8°C (73°F) and a boiling point below 37.8°C (100°F) (i.e. Class IA liquids). Materials that ignite when exposed to air, Solids containing greater than 0.5 percent by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent.

INSTABILITY HAZARD: **0** Materials that in themselves are normally stable, even under fire conditions: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) below 0.01 W/mL. Materials that do not exhibit an exotherm at temperatures less than or equal to 500°C (932°F) when tested by differential scanning calorimetry. **1** Materials that in themselves are normally stable, but that can become unstable at elevated temperatures and pressures: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 0.01 W/mL and below 10 W/mL. **2** Materials that readily undergo violent chemical change at elevated temperatures and pressures: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 10 W/mL and below 100W/mL.

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS (continued):

INSTABILITY HAZARD (continued): **3** Materials that in themselves are capable of detonation or explosive decomposition or explosive reaction, but that require a strong initiating source or that must be heated under confinement before initiation: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 100 W/mL and below 1000 W/mL. Materials that are sensitive to thermal or mechanical shock at elevated temperatures and pressures. **4** Materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) of 1000 W/mL or greater. Materials that are sensitive to localized thermal or mechanical shock at normal temperatures and pressures.

FLAMMABILITY LIMITS IN AIR:

Much of the information related to fire and explosion is derived from the **N**ational **F**ire **P**rotection **A**ssociation (**NFPA**). Flash Point - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. Autoignition Temperature: The minimum temperature required to initiate combustion in air with no other source of ignition. LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

TOXICOLOGICAL INFORMATION:

Human and Animal Toxicology: Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD_{50}** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC_{50}** - Lethal Concentration (gases) which kills 50% of the exposed animals; **ppm** concentration expressed in parts of material per million parts of air or water; **mg/m^3** concentration expressed in weight of substance per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TDo**, **LDLo**, and **LDo**, or **TC**, **TCo**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause lethal or toxic effects. **Cancer Information:** The sources are: **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used.

Other Information: **BEI** - ACGIH Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV.

ECOLOGICAL INFORMATION:

EC is the effect concentration in water. **BCF** = Bioconcentration Factor, which is used to determine if a substance will concentrate in lifeforms which consume contaminated plant or animal matter. **TL_m** = median threshold limit; Coefficient of Oil/Water Distribution is represented by **log K_{ow}** or **log K_{oc}** and is used to assess a substance's behavior in the environment.

REGULATORY INFORMATION:

U.S. and CANADA:

This section explains the impact of various laws and regulations on the material. **ACGIH:** American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits. **EPA** is the U.S. Environmental Protection Agency. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. **O**ccupational **S**afety and **H**ealth **A**dministration (**OSHA**). **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively. Superfund Amendments and Reauthorization Act **(SARA)**; the Canadian Domestic/Non-Domestic Substances List **(DSL/NDSL)**; the U.S. Toxic Substance Control Act **(TSCA)**; Marine Pollutant status according to the **DOT**; the Comprehensive Environmental Response, Compensation, and Liability Act **(CERCLA or Superfund)**; and various state regulations. This section also includes information on the precautionary warnings which appear on the material's package label. **OSHA** - U.S. Occupational Safety and Health Administration.

EUROPEAN: **EU** is the European Union (formerly known as the **EEC,** European Economic Community). **EINECS:** This the European Inventory of Now-Existing Chemical Substances. The **ARD** is the European Agreement Concerning the International Carriage of Dangerous Goods by Road and the **RID** are the International Regulations Concerning the Carriage of Dangerous Goods by Rail. **AUSTRALIAN: AICS** is the Australian Inventory of Chemical Substances. **NOHSC:** National Occupational Health & Safety Code.