

SECTION 1 IDENTIFICATION OF THE MATERIAL AND SUPPLIER**Product Name: Twilight[®] ULV Mosquito Adulticide Concentrate**

Other Names: Twilight ULV
Use: Mosquito adulticide.
Company: Pacific BioLogics.
Address: 35 Beach Street, Kippa Ring, QLD, 4020
Telephone Number: 07 3283 5077 **Fax Number:** 07 3283 5088
Emergency Telephone Number: 07 3283 5077 (8.30 am to 5.30pm EST Mon to Fri).

SECTION 2 HAZARDS IDENTIFICATION

**Classified as hazardous according to criteria of NOHSC.
Classified as a Dangerous Good according to the ADG Code**

Risk Phrases: R20 Harmful by inhalation.
R65 Harmful: May cause lung damage if swallowed.

Safety phrases: S2 Keep out of reach of children.
S23 Do not breath vapour or spray.
S24/25 Avoid contact with skin and eyes.
S36 Wear suitable protective clothing.
S39 Wear eye/face protection

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS**Ingredients:**

CHEMICAL	CAS NUMBER	PROPORTION (% w/w)
d-Phenothrin	26002-80-2	10 % w/w
Piperonyl butoxide	51-03-6	10 %w/w
Mineral oil	8042-47-5	50-80%
Aromatic hydrocarbons	64742-94-5	1-10 %w/w
Other ingredients determined to be non hazardous		balance

SECTION 4 FIRST AID MEASURES**FIRST AID**

Ingestion: If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 131126. If swallowed, do NOT induce vomiting, give a glass of water.

Eye contact: Flush with water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

Skin contact: Wash skin thoroughly with soap and water.

Inhalation: Remove to fresh air.

Advice to Doctor: Treatment should be symptomatic and supportive care. The formulation also contains liquid hydrocarbons that can cause severe pneumonitis or fatal pulmonary oedema if aspirated. Consideration should be given to gastric lavage with an endotracheal tube in place. Treatment is otherwise symptomatic and supportive.

SECTION 5 FIRE FIGHTING MEASURES

Specific Hazard: This product is a C1 combustible liquid (Flash point > 93°C). Sealed, overheated containers may present an explosion hazard. Thermal decomposition and burning may produce toxic by-products.

Extinguishing media: Foam, CO₂ or dry chemical. Use soft stream water fog if no alternatives. Contain all runoff.

Hazards from combustion products: When exposed to high temperatures, toxic fumes may be emitted such as carbon monoxide, carbon dioxide and nitrogen oxides.

Precautions for fire-fighters and special protective equipment: Isolate fire area. Evacuate downwind. Treat as an oil fire. Wear full protective clothing and self-contained breathing apparatus. Do not breathe or contact smoke, gases or vapours generated.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Emergency procedures: Isolate and post spill area. Contain and absorb spilled material with absorbent material such as sand, clay or cat litter and dispose of waste as indicated in section 13 or according to the Australian Standard 2507 - Storage and Handling of Pesticides. Wear prescribed protective clothing and equipment. Keep material out of streams and sewers. Vacuum, shovel or pump waste into an approved drum for disposal.

Material and methods for containment and cleanup procedures: To clean spill area, tools and equipment, wash with a solution of soap, water and acetic acid/vinegar. Follow this with a neutralisation step of washing the area with a bleach or caustic soda ash solution. Finally, wash with a strong soap and water solution. Absorb, as above, any excess liquid and add both solutions to the drums of waste already collected.

Dispose of waste as indicated in section 13, or according to Australian Standard 2507 - Storage & Handling of Pesticides.

SECTION 7 HANDLING AND STORAGE

Precautions for safe Handling: Ensure containers are kept intact until using product. When using product wear cotton overalls buttoned to the neck and wrist (or equivalent clothing), a washable hat, and a disposable (mist) face mask covering mouth and nose. After use wash hands soap and water. After each day's use, wash contaminated clothing.

Conditions for safe Storage: This product is classified as a C1 (Combustible Liquid) for the purpose of storage and handling, in accordance with the requirements of AS 1940. Refer to state regulations for storage and transport requirements. Store in the closed, original container in a well ventilated area, out of direct sunlight. Store in a room or place away from children, animals, food & feed stuffs.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION
National Exposure Standards:

No exposure standard has been established by NOHSC Australia. However, the following standards have been established:

Atmospheric Contaminant	Exposure Standard
Aromatic hydrocarbons	OSHA: PEL ^a 5 mg/m ³ ; ACGIH: TLV ^b 5 mg/m ³ oil mist in 8 hours
Mineral Oil	TWA ^c = 100 ppm (supplier OEL)
a = PEL permissible Exposure Limit	b = TVL - Threshold limit Value
	c = TWA - Time-weight Average

Biological Limit Values:

No biological limits have been established for this product.

SECTION 8 | EXPOSURE CONTROLS / PERSONAL PROTECTION (Continued)**Engineering controls:**

Use in ventilated areas. Ventilate all transport vehicles prior to unloading.

Personal Protective equipment (PPE):

Work Clothing: Wear long-sleeved uniform of coveralls and chemical resistant gloves.

Eye Protection: Wear chemical protective goggles or face shield to avoid eye contact.

Respiratory Protection: For a disposable (mist) face mask covering mouth and nose.

Gloves: Wear chemical protective gloves when handling this product. Inspect regularly for leaks. Thoroughly wash the outside of gloves with soap and water prior to removal.

Personal Hygiene: Clean water should be available for washing in case of eye or skin contamination. Wash skin before eating, drinking or smoking. Shower at the end of the workday.

SECTION 9 | PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear with a yellow-tint colour.
Odour:	Mild solvent odour.
Boiling point:	Not established.
Freezing point:	Not established.
Specific Gravity:	0.89 g/mL.
Solubility in Water:	Active concentrate coated on sand granule, disperses in water.
pH:	Not established.
Flammability:	Combustible liquid
Flash point:	> 93°C.
Corrosive hazard:	Non corrosive.
Poisons Schedule:	S5.

SECTION 10 | STABILITY AND REACTIVITY

Chemical Stability: Product is considered stable in ambient conditions for a period of at least 2 years after manufacture.

Conditions to avoid: Avoid all sources of heat and ignition.

Incompatible materials: No compatible with strong acidic or alkaline materials.

Hazardous decomposition products: When the product is heated to high temperatures, the product will decompose and emit toxic fumes, such as carbon monoxide, carbon dioxide and nitrogen oxides.

Hazardous reactions: No particular reactions to avoid.

SECTION 11 | TOXICOLOGICAL INFORMATION***Potential Health Effects:***

This formulation contains aromatic hydrocarbons. Inhalation of aromatic hydrocarbon vapours may cause central nervous system depression, dizziness, disturbances in vision and respiratory irritation. May be irritating to the eyes. Contact with the skin may be irritating. Dermal sensitisation may occur. May have a degreasing action on the skin. Repeated or prolonged skin contact.

Swallowed: This product has low acute toxicity if swallowed. Acute Oral LD₅₀ (rat) > 5000 mg/kg. Vomiting may pose an aspiration pneumonia hazard.

Eye Contact: Irritating to eyes but should clear in 48 hours. May cause tearing and blurred vision.

Skin Contact: This product has low toxicity by the dermal route. Acute Dermal LD₅₀ (rabbit) > 2000 mg/kg. Not a dermal irritant or sensitiser.

SECTION 11 TOXICOLOGICAL INFORMATION (Continued)

Inhaled: Acute Inhalation LC₅₀ = 3.76 mg/L/4 hours. Note precautions concerning the aromatic hydrocarbon content of this product. Excessive inhalation may cause nasal and respiratory irritation.

Chronic: No data available on this formulation. At high doses of Piperonyl Butoxide (PBO) given to mice, it was observed that marginally higher incidences of benign liver tumours were observed following lifetime exposure. The doses at which tumours were observed for PBO greatly exceeded potential human exposure from labelled uses. Doses at which these effects were observed greatly exceed anticipated human dietary intake, and it is highly unlikely that this product will result in carcinogenic effects.

Kidney and liver damage is possible from over-exposure to aromatic hydrocarbons over long periods. Additionally, some reversible haematopoietic depression has been observed in animals with extended exposure to aromatic hydrocarbons.

SECTION 12 ECOLOGICAL INFORMATION

Environmental Properties: No data is available on this product. d-phenothrin is rapidly degraded in sunlight (DT_{1/2} less than 1 day). PBO is rapidly degraded in soils under aerobic conditions both in the presence and absence of sunlight.

Environmental Toxicology: No data is available on this product. The active ingredient, d-phenothrin, has to low toxicity to birds with an eight-day dietary LC₅₀ > 5000 mg/kg (Mallard duck) and an LD₅₀ > 2510 mg/kg (Bobwhite quail). Moderate toxicity to fish with 96 hour LC₅₀ 17-200 µg/L (various fish species). PBO is moderately toxic to fish species and highly toxic to invertebrate species.

Dangerous to bees - DO NOT spray any plants in flower while bees are foraging. Dangerous to fish and aquatic invertebrates. Do NOT allow spilled product or wash solution to enter sewers, drains, dams, creeks or any other waterways.

SECTION 13 DISPOSAL CONSIDERATIONS

Spills & Disposal: Isolate and post spill area. Keep out unprotected persons and animals. Wear prescribed protective clothing and equipment. Large spills should be dyked or covered to prevent dispersal. Vacuum or shovel spilled material into an approved container. Dispose of drummed wastes, including decontamination solution, in accordance with the requirements of Local or State Waste Management Authorities.

Disposal: Break, crush, puncture and bury empty containers in a local authority landfill. If not available bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, vegetation and roots. Empty containers and product should not be burnt.

SECTION 14 TRANSPORT INFORMATION

Storage & Transport: This product is classified as a Dangerous Good class 9 Miscellaneous Dangerous Goods, UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. Marine Pollutant (d-phenothrin). Hazchem 3WE.

Store and transport in the closed, original container in a well ventilated area, out of direct sunlight. Store in a room or place away from children, animals, food, feed stuffs, seeds and fertilisers.

SECTION 15 REGULATORY INFORMATION

Classified as a hazardous substance according to criteria of NOHSC Australia. (Xn).
Under the Standard for Uniform Scheduling of Drugs and Poisons (SUSDP), this product is a schedule 5 poison.

This product is registered under the Agricultural and Veterinary Chemicals Code Act 1994. Product Registration No. 61070.

Product is classified as a Dangerous Good according to International Maritime Dangerous Goods (IMDG) Code and the International Air Transport Association (IATA).

SECTION 16 OTHER INFORMATION

Issue Date: 13 December 2006 (updated with Hazchem code)

Key to abbreviations and acronyms used in this MSDS:

ADG Code Australian Dangerous Goods Code (for the transport of dangerous goods by Road and Rail).

Carcinogen An agent which is responsible for the formation of a cancer.

Genotoxic Capable of causing damage to genetic material, such as DNA.

Hazchem Hazchem code is an emergency action code which gives information to emergency services.

NOHSC National Occupational Health and Safety Commission.

PBO Piperonyl Butoxide.

PPE Personal protective equipment.

Teratogen An agent capable of causing abnormalities in a developing foetus.

TWA The Time Weighted Average airborne concentration over an eight-hour working day, for a five day working week over an entire working life.

References

1. "Search Hazardous Substances". Dept. of Employment and Workplace Relations. Office of the Australian Safety and Compensation Council website. (2006).
2. "Approved Criteria for Classifying Hazardous Substances" 3rd Ed. NOHSC Australia. [NOHSC:1008 (2004)]. October 2004.

This MSDS summarises our best knowledge of the health and safety hazard information of the product and how to safely handle and use the product in the workplace. Each user should read this MSDS and consider the information in the context of how the product will be handled and used in the workplace including in conjunction with other products.

If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact this company.

End of MSDS