MATERIAL SAFETY DATA SHEET

Date of Issue: September 10, 2007

1. IDENTIFICATION OF MATERIAL AND SUPPLIER

Product name	**Atlantis® Selective Herbicide**
Other names	None
Product code and pack sizes	4901346 (5 L)
Chemical group	Sulfonylurea + pyrazoline dicarboxylate safener
Recommended use	Agricultural herbicide
Formulation	Oil dispersion (OD)
Supplier	Bayer CropScience Pty Ltd ABN 87 000 226 022
Address	391 - 393 Tooronga Road, East Hawthorn Victoria 3123, Australia
Telephone	(03) 9248 6888
Facsimile	(03) 9248 6800
Website	www.bayercropscience.com.au
Contact	Development Manager (03) 9248 6888
Emergency Telephone Number	1800 033 111 – Orica SH&E Shared Services

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

HAZARDOUS SUBSTANCE (see Risk phrases below) - NON-DANGEROUS GOOD (road/rail).
Combustible liquid. Will damage eyes. Very toxic to aquatic plants and algae.

Hazard classification	Hazardous (National Occupational Health and Safety Commission - NOHSC)
Risk phrases	R38 – Irritating to skin R41 – Risk of serious damage to eyes. R65 – Harmful: May cause lung damage if swallowed.
Safety phrases	See Sections 4, 5, 6, 7, 8, 9, 13
ADG classification	Not "dangerous goods" for transport by road or rail according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. For transport by sea this product is a Class 9, Marine Pollutant – See Section 14.
SUSDP classification (Poison schedule)	Schedule 5 (Standard for the Uniform Scheduling of Drugs and Poisons)

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	CAS Number	Concentration (g/L)
Mesosulfuron-methyl	[208465-21-8]	30
Mefenpyr-diethyl (crop safener)	[135590-91-9]	90
Solvent naphtha (petroleum), heavy aromatic	[64742-94-5]	711
Other ingredients	(non hazardous)	209

4. FIRST AID MEASURES

If poisoning occurs, immediately contact a doctor or Poisons Information Centre (telephone 13 11 26), and follow the advice given. Show this Material Safety Data Sheet to the doctor.

Inhalation	If inhaled, remove to fresh air and keep at rest. Obtain medical advice if symptoms are experienced. If breathing stops or shows signs of failing, start artificial respiration. Call for prompt medical attention.
Skin contact	Carefully remove contaminated clothing. Wash affected areas with soap and water. Seek medical aid if at all worried.
Eye contact	Rinse eyes immediately with clean water for at least 15 minutes and obtain medical aid. Seek eye treatment from an ophthalmologist.
Ingestion	Wash out mouth with water. Do not induce vomiting. Give a glass of water. Keep patient at rest and seek medical advice as above. DO NOT attempt to give anything by mouth to a semi-conscious or unconscious person.
First Aid Facilities	Provide eyewash and safety shower facilities in the workplace.
Medical attention	*Symptoms* *Local:* Severe eye irritation, skin and respiratory tract irritation. Repeated exposure may cause skin dryness or cracking. *Systemic:* Headaches, dizziness, could be anesthetic and may have other central nervous system effects. May cause lung damage if swallowed. Treatment should be symptomatic and supportive after decontamination. Consult an ophthalmologist if eyes are affected. If a large amount (more than one mouthful) was ingested, the following measures should be considered: - Monitor kidney function, liver function and red blood cell count. Carry out gastric lavage and charcoal administration. Cathartic administration of sodium sulphate is appropriate for poisoning with mefenpyr-diethyl. As this product contains a hydrocarbon liquid, care should be taken to prevent pulmonary aspiration. Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause bronchopneumonia or pulmonary oedema. Elimination by forced alkaline diuresis is appropriate for poisoning with mesosulfuron. Anticonvulsant therapy is not indicated. There is no specific antidote and no contraindications.

5. FIRE FIGHTING MEASURES

Extinguishing media	Water spray, foam, carbon dioxide, dry agent
Hazards from combustion products	Hydrogen chloride, nitrogen oxides, oxides of carbon and sulphur and other toxic compounds may be released in a fire.
Precautions for fire fighters	The product is a Class C1 Combustible liquid. Firefighters should wear full protective gear, including self-contained breathing apparatus (AS/NZS 1715/1716). If possible and without risk, remove intact containers from exposure to fire. Otherwise, spray unopened containers with water to keep cool. Contain fire-fighting water by bunding area with sand or earth to prevent it entering any bodies of water. Dispose of fire control water or other extinguishing agent and spillage safely later.
Hazchem code	Not applicable

6. ACCIDENTAL RELEASE MEASURES

Avoid contact with the spilled material or contaminated surfaces. Extinguish all possible sources of ignition. When dealing with spills do not eat, drink or smoke and wear personal protective clothing and equipment as described in Section 8 - PERSONAL PROTECTION. Prevent spilled material from entering drains or watercourses. Contain spill and absorb with earth, sand, clay, or other absorbent material. Collect and store in properly labelled, sealed drums for safe disposal. Thoroughly ventilate the area after cleanup. Deal with all spillages immediately. If contamination of drains, streams, watercourses, etc. is unavoidable, warn the local water authority.

7. HANDLING AND STORAGE

Handling

Keep out of reach of children. Will damage the eyes. Will irritate the skin. Avoid contact with eyes and skin. Do not inhale vapour. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. After handling and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, face-shield or goggles and contaminated clothing.

Storage

Store in the closed, original container in a cool, well-ventilated area. Do not store for prolonged periods in direct sunlight. Keep away from all ignition sources and protect from extreme heat and cold.

Flammability

Combustible liquid, Class C1 - flashpoint between 61° C and 150° C.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure standards

The manufacturer of the solvent recommends an Occupational Exposure Limit for solvent naphtha (petroleum), heavy aromatic:
TWA: 100 mg/m³ (15 ppm).
For the small amount of naphthalene present in the solvent the NOHSC Occupational Exposure Limits are:
TWA: 10 ppm (52 mg/m³), STEL: 15 ppm (79 mg/m³).

Definitions:
Exposure standard – Time Weighted Average (TWA) means the average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day working week.
Exposure standard – Short term exposure limit (STEL) means a 15 minute TWA exposure which should not be exceeded at any time during the working day.

Biological limit values

None allocated

Engineering controls

Control process conditions to avoid contact. Use local exhaust ventilation during manufacture. Use in a well-ventilated area only.

Personal Protective Equipment

- Face-shield or goggles
- Cotton overalls buttoned to the neck and wrist (or equivalent clothing)
- Elbow-length PVC or nitrile gloves
- If airborne concentrations are likely to exceed the exposure standards above, an AS/NZS 1715/1716 approved respirator should be worn.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Brown liquid
Odour:	Aromatic
pH:	5.9 (1% suspension)
Vapour pressure:	0.006 kPa (at 20° C) (hydrocarbon solvent)
Vapour density:	> 1.00 (hydrocarbon solvent)
Boiling point:	220 to 290° C (boiling point range of solvent)
Freezing/melting point:	Not available
Solubility:	Disperses in water.
Density:	1.04 g/mL at 20° C
Flash Point:	> 100º C (Setaflash Closed Cup)
Flammability (explosive) limits:	LEL: 0.6; UEL: 7.0 Vol. % in air (hydrocarbon solvent)
Auto-ignition temperature:	455° C
Partition coefficient (octanol/water):	Mesosulfuron-methyl: 1.9 at 25° C; Mefenpyr-diethyl: 3.83 at 21° C

10. STABILITY AND REACTIVITY

Chemical stability	Stable under normal conditions of use.
Conditions to avoid	Avoid sources of ignition and extreme heat.
Incompatible materials	Avoid strong oxidising agents.
Hazardous decomposition products	Hydrogen chloride, nitrogen oxides, oxides of carbon and sulphur and other toxic compounds may be released in a fire.
Hazardous reactions	None

11. TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

Inhalation	The active ingredient has low inhalation toxicity. No data is available for the product. Inhalation of solvent vapour may be irritating to respiratory tract, may cause headaches and dizziness, could be anaesthetic, and may have other central nervous system effects.
Skin contact	Will irritate the skin. The product had low acute dermal toxicity in the rat, and was not sensitising in the test with guinea pigs. Repeated exposure may cause skin dryness or cracking.
Eye contact	Will damage the eyes.
Ingestion	May be harmful if swallowed. Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause bronchopneumonia or pulmonary oedema.

11. TOXICOLOGICAL INFORMATION - continued

ANIMAL TOXICITY DATA – PRODUCT

Acute:

Oral toxicity	LD_{50} rat: > 2000 mg/kg
Dermal toxicity	LD_{50} rat: > 5000 mg/kg
Inhalation toxicity	No data
Skin irritation	Irritating to skin - rabbit
Eye irritation	Severe eye irritation - rabbit
Sensitisation	Non-sensitizing - guinea pig

Chronic:

Mesosulfuron-methyl and mefenpyr-diethyl showed no mutagenicity, reproductive toxicity or carcinogenicity in animal studies. Prolonged or repeated skin contact with the hydrocarbon liquid in this product may result in irritation and dermatitis. This product contains naphthalene. The International Agency for Research on Cancer evaluated naphthalene and concluded that there was sufficient evidence for carcinogenicity in experimental animals, but inadequate evidence for cancer in exposed humans. Accordingly, IARC classified naphthalene as a possible human carcinogen (Group 2B).

12. ECOLOGICAL INFORMATION

Atlantis is highly toxic to the aquatic plant, *Lemna gibba* and moderately toxic to freshwater green algae, rainbow trout and *Daphnia*. It has low toxicity to bees, birds, and earthworms.
DO NOT contaminate streams, rivers or waterways with the chemical or used containers.

Ecotoxicity

Atlantis:
LC_{50}: 3.2 mg/L (96 h) rainbow trout
EC_{50}: 3.4 mg/L (48 h) *Daphnia magna*
Algal toxicity:
EC_{50} (72 h) for *Pseudokirchneriella subcapitata* 2.0 mg/L
Mesosulfuron-methyl:
LC_{50}: > 100 mg/L (96 h) rainbow trout
EC_{50}: > 100 mg/L (48 h) *Daphnia magna*
Algal toxicity:
EC_{50} (72 h) for *Pseudokirchneriella subcapitata* 0.18 mg/L
Bird toxicity:
Acute oral LD_{50}: > 2000 mg/kg bobwhite quail and mallard duck
Aquatic plant toxicity:
EC_{50} (7 days) for Duckweed (*Lemna gibba*): 0.6 µg/L

Environmental fate, persistence, degradability and mobility

Mesosulfuron-methyl is readily to slightly degradable in water. It is fairly degradable in soil with a low potential for accumulation or persistence in the environment. Mesosulfuron-methyl and its metabolites do not have significant leaching potential in soil.
DT_{50} in field studies: 44 to 76 days (mesosulfuron-methyl)

13. DISPOSAL CONSIDERATIONS

Triple or preferably pressure rinse containers before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt. Dispose of waste product through a reputable waste contractor.

14. TRANSPORT INFORMATION

UN number	Not applicable (road/rail)
Proper shipping name	Not applicable (road/rail)
Class and Subsidiary Risk	Not applicable (road/rail)
Packing Group	Not applicable (road/rail)
EPG	Not applicable (road/rail)
Hazchem code	Not applicable (road/rail)
Marine Pollutant	Yes. If Atlantis is shipped by sea, it is classified as a Class 9, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains mesosulfuron-methyl), Packing Group III, UN 3082, Hazchem 3Z, Marine Pollutant.

15. REGULATORY INFORMATION

Registered according to the Agricultural and Veterinary Chemicals Act 1988
Australian Pesticides and Veterinary Medicines Authority approval number: 54252
See also Section 2.

16. OTHER INFORMATION

Trademark information	Atlantis® is a registered trademark of Bayer.
Preparation information	Replaces March 29, 2004. Reasons for revision: Description of formulation type changed, headings changed in accordance with NOHSC guidelines, product code, marine pollutant and removal of Naphthalene (in hydrocarbon liquid) from composition/ingredients.

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.

Our responsibility for products sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is also available on request.

END OF MSDS