SECTION 1: IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Trade name: Tigrex® Selective Herbicide
Product code (UVP): 81014345

1.2 Relevant identified uses of the substance or mixture and uses advised against

Use: Herbicide

1.3 Details of the supplier of the safety data sheet

Supplier: Bayer Cropscience Pty Ltd
ABN 87 000 226 022
Level 1, 8 Redfern Road
3123 Hawthorn East
Victoria
Australia

Telephone: (03) 9248 6888
Telefax: (03) 9248 6800

Responsible Department: 1800 804 479 Technical Information Service
Website: www.crop.bayer.com.au

1.4 Emergency telephone no.

Emergency telephone no.: 1800 033 111 IXOM Operations Pty Ltd

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification in accordance with Australian GHS Regulation

Acute toxicity: Category 4
H302 Harmful if swallowed.
Acute toxicity: Category 4
H332 Harmful if inhaled.
Skin corrosion/irritation: Category 2
H315 Causes skin irritation.
Eye Damage/Irritation: Category 2A
H319 Causes serious eye irritation.
Carcinogenicity: Category 1
H350 May cause cancer.
Reproductive toxicity: Category 1
H360 May damage fertility or the unborn child.
Specific target organ toxicity - single exposure: Category 3
H335 May cause respiratory irritation.
Aspiration hazard: Category 1
H304 May be fatal if swallowed and enters airways.
Acute aquatic toxicity: Category 1
H400 Very toxic to aquatic life.
Chronic aquatic toxicity: Category 1
H410 Very toxic to aquatic life with long lasting effects.

2.2 Label elements
Hazard label for supply/use required.

Hazardous components which must be listed on the label:

- MCPA 2-ethylhexyl ester
- Diflufenican
- Solvent Naphtha (petroleum), heavy aromatic
- N-Methyl-2-pyrrolidone

Signal word: Danger

Hazard statements

- H302 Harmful if swallowed.
- H332 Harmful if inhaled.
- H315 Causes skin irritation.
- H319 Causes serious eye irritation.
- H350 May cause cancer.
- H360 May damage fertility or the unborn child.
- H335 May cause respiratory irritation.
- H304 May be fatal if swallowed and enters airways.

Precautionary statements

- P202 Do not handle until all safety precautions have been read and understood.
- P261 Avoid breathing mist and spray.
- P264 Wash hands thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor/physician.
- P330 Rinse mouth.
- P331 Do NOT induce vomiting.
- P302 + P352 IF ON SKIN: Wash with plenty of water/soap.
- P332 + P313 If skin irritation occurs: Get medical advice/attention.
- P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- P312 Call a POISON CENTER/doctor/physician if you feel unwell.
- P305 + P351 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P337 + P313 If eye irritation persists: Get medical advice/attention.
- P308 + P313 IF exposed or concerned: Get medical advice/attention.
- P362 Take off contaminated clothing and wash before reuse.
- P405 Store locked up.
- P501 Dispose of contents/container in accordance with local regulation.

2.3 Other hazards
No other hazards known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS
SECTION 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 Safety Data Sheet to the doctor.

4.1 Description of first aid measures

General advice
Remove contaminated clothing immediately and dispose of safely.

Inhalation
When inhaled remove to fresh air and seek medical aid. Keep patient warm and at rest. Oxygen or artificial respiration if needed. If symptoms persist, call a physician.

Skin contact
Wash off thoroughly with plenty of soap and water, if available with polyethyleneglycol 400, subsequently rinse with water. If symptoms persist, call a physician.

Eye contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Get medical attention if irritation develops and persists.

Ingestion
Rinse out mouth and give water in small sips to drink. Do NOT induce vomiting. If symptoms persist, call a physician. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms
Local: The product causes irritation of eyes, skin and mucous membranes.
Systemic: Mild acidosis, Tachycardia, Irregular cardiac activity, Low blood pressure, Circulatory collapse, Cough, Shortness of breath, Vomiting, Diarrhoea, Abdominal pain, Rhabdomyolysis, Nausea, Somnolence, Coma, Fever, Convulsions

4.3 Indication of any immediate medical attention and special treatment needed

Risks
Kidney injury may occur. Ingestion may cause liver damage.
Treatment

Treat symptomatically. Systemic treatment: In the event of a mouthful or more being ingested, the following measures should be considered:
In case of ingestion gastric lavage should be considered in cases of significant ingestions only within the first 2 hours. However, the application of activated charcoal and sodium sulphate is always advisable. Watch for pulmonary edema, which may develop in serious cases of poisoning even after 24-48 hours. At first sign of pulmonary edema, the patient should be placed in an oxygen tent and treated symptomatically. Monitor: respiratory, cardiac, kidney, liver and central nervous system. Oxygen or artificial respiration if needed. Elimination by dialysis (forced alkaline diuresis). Anticonvulsant therapy with i.v. phenobarbital. There is no specific antidote. Recovery is spontaneous and without sequelae.

SECTION 5. FIRE FIGHTING MEASURES

5.1 Extinguishing media
Suitable
Water spray, Foam, Carbon dioxide (CO2), Dry powder

5.2 Special hazards arising from the substance or mixture
In the event of fire the following may be released: Carbon monoxide (CO), Nitrogen oxides (NOx), Hydrogen chloride (HCl), Hydrogen fluoride

5.3 Advice for firefighters
Special protective equipment for firefighters
Wear self-contained breathing apparatus and protective suit.

Further information
Remove product from areas of fire, or otherwise cool containers with water in order to avoid pressure being built up due to heat. Whenever possible, contain fire-fighting water by diking area with sand or earth. Do not allow run-off from fire fighting to enter drains or water courses.

Hazchem Code
\text{5}\text{1}

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Precautions
Avoid contact with spilled product or contaminated surfaces. Remove all sources of ignition. When dealing with a spillage do not eat, drink or smoke. Keep unauthorized people away. Use personal protective equipment.

6.2 Environmental precautions
Do not allow to get into surface water, drains and ground water. If the product contaminates rivers and lakes or drains inform respective authorities.
6.3 Methods and materials for containment and cleaning up
Methods for cleaning up Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal. Clean contaminated floors and objects thoroughly, observing environmental regulations.

6.4 Reference to other sections
Information regarding safe handling, see section 7.
Information regarding personal protective equipment, see section 8.
Information regarding waste disposal, see section 13.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Advice on safe handling Use only in area provided with appropriate exhaust ventilation.
Advice on protection against fire and explosion Keep away from heat and sources of ignition.
Hygiene measures When using, do not eat, drink or smoke. After each day's use, wash gloves, face shield or goggles and contaminated clothing. Wash hands immediately after work, if necessary take a shower. Remove soiled clothing immediately and clean thoroughly before using again.

7.2 Conditions for safe storage, including any incompatibilities
Requirements for storage areas and containers Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from direct sunlight.
Advice on common storage Keep away from food, drink and animal feedingstuffs.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Control parameters</th>
<th>Update</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diflufenican</td>
<td>83164-33-4</td>
<td>5.5 mg/m³ (TWA)</td>
<td></td>
<td>OES BCS*</td>
</tr>
<tr>
<td>N-Methyl-2-pyrrolidone</td>
<td>872-50-4</td>
<td>309 mg/m³/75 ppm (STEL)</td>
<td>12 2011</td>
<td>AU NOEL</td>
</tr>
<tr>
<td>N-Methyl-2-pyrrolidone</td>
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<td>103 mg/m³/25 ppm (TWA)</td>
<td>12 2011</td>
<td>AU NOEL</td>
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<tr>
<td>N-Methyl-2-pyrrolidone</td>
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<td>19 ppm (TWAEV)</td>
<td></td>
<td>OES BCS*</td>
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<tr>
<td>Naphthalene</td>
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<td>52 mg/m³/10 ppm (TWA)</td>
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<td>AU NOEL</td>
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<tr>
<td>Naphthalene</td>
<td>91-20-3</td>
<td>10 ppm (TLV)</td>
<td></td>
<td>OES BCS*</td>
</tr>
</tbody>
</table>

*OES BCS: Internal Bayer CropScience "Occupational Exposure Standard"

8.2 Exposure controls
Respiratory protection

Wear respirator with an organic vapours and gas filter mask (protection factor 10) conforming to EN140 type A or equivalent. Respiratory protection should only be used to control residual risk of short duration activities, when all reasonably practicable steps have been taken to reduce exposure at source e.g. containment and/or local extract ventilation. Always follow respirator manufacturer’s instructions regarding wearing and maintenance.

Hand protection

Wear CE Marked (or equivalent) nitrile rubber gloves (minimum thickness of 0,4 mm). Wash when contaminated and dispose of when contaminated inside, when perforated or when contamination on the outside cannot be removed. Wash hands frequently and always before eating, drinking, smoking or using the toilet.

Eye protection

Wear goggles (conforming to EN166, Field of Use = 5 or equivalent).

Skin and body protection

Wear standard coveralls and Category 3 Type 6 suit. Wear two layers of clothing wherever possible. Polyester/cotton or cotton overalls should be worn under chemical protection suit and should be professionally laundered frequently. If chemical protection suit is splashed, sprayed or significantly contaminated, decontaminate as far as possible, then carefully remove and dispose of as advised by manufacturer.

General protective measures

In normal use and handling conditions please refer to the label and/or leaflet. In all other cases the above mentioned recommendations would apply.

Engineering Controls

Advice on safe handling

Use only in area provided with appropriate exhaust ventilation.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Form Liquid, clear
Colour light yellow to dark brown
Odour aromatic
pH ca. 3.7 at 5 % (23 °C) (Distilled water)
Flash point 75 °C
Density ca. 1.00 g/cm³ at 20 °C
Water solubility emulsifiable
Partition coefficient: n-octanol/water
MCPA-2-ethylhexyl ester: log Pow: 2.8
Diflufenican: log Pow: 4.2
N-methyl-2-pyrrolidone: log Pow: -0.46 at 25 °C

9.2 Other information

Further safety related physical-chemical data are not known.
SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity
Thermal decomposition Stable under normal conditions.
10.2 Chemical stability Stable under recommended storage conditions.
10.3 Possibility of hazardous reactions No hazardous reactions when stored and handled according to prescribed instructions. Exothermic reaction.
10.4 Conditions to avoid Extremes of temperature and direct sunlight.
10.5 Incompatible materials Acids, Bases, Oxidizing agents, Reducing agents
10.6 Hazardous decomposition products Thermal decomposition can lead to release of:
- Hydrogen fluoride
- Hydrogen chloride (HCl)
- Nitrogen oxides (NOx)
- Carbon oxides

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
Acute oral toxicity LD50 (Rat) 1,580 mg/kg
Test conducted with a similar formulation.
Acute inhalation toxicity LC50 (Rat) > 5.11 mg/l
The value mentioned relates to the active ingredient MCPA 2-ethylhexyl ester.
LC50 (Rat) > 5.12 mg/l
The value mentioned relates to the active ingredient diflufenican.
Acute dermal toxicity LD50 (Rat) > 2,000 mg/kg
Test conducted with a similar formulation.
Skin irritation Ulght irritation (Rabbit)
Test conducted with a similar formulation.
Eye irritation Ulght irritation (Rabbit)
Test conducted with a similar formulation.
Sensitisation Sensitising (Guinea pig)
OECD Test Guideline 406, Buehler test
Test conducted with a similar formulation.
Assessment mutagenicity
MCPA-2-ethylhexyl ester was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.
Diflufenican was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.
N-methyl-2-pyrrolidone was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.
Assessment carcinogenicity
MCPA-2-ethylhexyl ester was not carcinogenic in lifetime feeding studies in rats and mice.
Diflufenican was not carcinogenic in lifetime feeding studies in rats and mice. This product contains \( \geq 1\% \) naphthalene. Naphthalene caused an increased incidence of tumours after chronic inhalation of high vapour concentrations in the following organ: Respiratory Tract. The tumours seen with naphthalene were caused through a non-genotoxic mechanism, which is not relevant at low doses.

N-methyl-2-pyrrolidone was not carcinogenic in lifetime feeding studies in rats and mice.

**Assessment toxicity to reproduction**

MCPA-2-ethylhexyl ester did not cause reproductive toxicity in a two-generation study in rats. Diflufenican did not cause reproductive toxicity in a two-generation study in rats. N-methyl-2-pyrrolidone caused reproduction toxicity in a two-generation study in rats only at dose levels also toxic to the parent animals. N-methyl-2-pyrrolidone caused a reduced pup survival, a reduced litter size and a reduced pup weight.

**Assessment developmental toxicity**

MCPA-2-ethylhexyl ester caused developmental toxicity only at dose levels toxic to the dams. MCPA-2-ethylhexyl ester caused a delayed foetal growth. Diflufenican did not cause developmental toxicity in rats and rabbits. N-methyl-2-pyrrolidone caused developmental toxicity only at dose levels toxic to the dams. N-methyl-2-pyrrolidone caused a reduced pup survival.

**Assessment STOT Specific target organ toxicity – repeated exposure**

MCPA-2-ethylhexyl ester did not cause specific target organ toxicity in experimental animal studies. Diflufenican did not cause specific target organ toxicity in experimental animal studies. N-methyl-2-pyrrolidone caused specific target organ toxicity in experimental animal studies in the following organ(s): Testes.

**Aspiration hazard**

May be fatal if swallowed and enters airways.

**Information on likely routes of exposure**

Harmful if inhaled. May cause irritation of the mucous membranes. May cause skin irritation. Skin sensitiser. May cause eye irritation. Harmful if swallowed.

**Early onset symptoms related to exposure**

Refer to Section 4

**Delayed health effects from exposure**

Refer to Section 11

**Exposure levels and health effects**

Refer to Section 4

**Interactive effects**

Not known

**When specific chemical data is not available**

Not applicable

**Mixture of chemicals**

Refer to Section 2.1
Further information
No further toxicological information is available.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish

LC50 (Oncorhynchus mykiss (rainbow trout)) 50 - 560 mg/l
Exposure time: 96 h
The value mentioned relates to the active ingredient MCPA 2-ethylhexyl ester.

LC50 (Oncorhynchus mykiss (rainbow trout)) > 109 µg/l
Exposure time: 96 h
The value mentioned relates to the active ingredient diflufenican.

Toxicity to aquatic invertebrates

EC50 (Daphnia magna (Water flea)) > 190 mg/l
Exposure time: 48 h
The value mentioned relates to the active ingredient MCPA 2-ethylhexyl ester.

EC50 (Daphnia magna (Water flea)) > 240 µg/l
Exposure time: 48 h
The value mentioned relates to the active ingredient diflufenican.

Toxicity to aquatic plants

EC50 (Raphidocelis subcapitata (freshwater green alga)) > 392 mg/l
The value mentioned relates to the active ingredient MCPA 2-ethylhexyl ester.

EC50 (Algae) > 10 mg/l
Exposure time: 96 h
The value mentioned relates to the active ingredient diflufenican.

Toxicity to other organisms

LD50 (Colinus virginianus (Bobwhite quail)) 377 mg/kg
Exposure time: 4 d
The value mentioned relates to the active ingredient MCPA 2-ethylhexyl ester.

LD50 (Colinus virginianus (Bobwhite quail)) > 2,150 mg/kg
The value mentioned relates to the active ingredient diflufenican.

12.2 Persistence and degradability

Biodegradability

MCPA-2-ethylhexyl ester: Tightly biodegradable
Diflufenican: Not rapidly biodegradable
N-methyl-2-pyrrolidone: Tightly biodegradable

Koc

Diflufenican: Koc: 3417

12.3 Bioaccumulative potential

Bioaccumulation

MCPA-2-ethylhexyl ester: Bioconcentration factor (BCF) 1
Does not bioaccumulate.
Diflufenican: Bioconcentration factor (BCF) 1,596
Does not bioaccumulate.
N-methyl-2-pyrrolidone: Bioconcentration factor (BCF) 3.16
Does not bioaccumulate.

12.4 Mobility in soil
Mobility in soil
MCPA-2-ethylhexyl ester: Mobile in soils
Diflufenican: Slightly mobile in soils
N-methyl-2-pyrrolidone: Highly mobile in soils

12.5 Other adverse effects
Additional ecological information
No other effects to be mentioned.

SECTION 13. DISPOSAL CONSIDERATIONS

Refillable containers:
If tamper evident seals are broken prior to initial use then the integrity of the contents cannot be assured. Empty container by pumping through dry-break connection system. Do not attempt to breach the valve system or the filling point, or contaminate the container with water or other products. Ensure that the coupler, pump, meter and hoses are disconnected, triple rinsed and drained after each use. When empty, or contents no longer required, return the container to the point of purchase. This container remains the property of Bayer CropScience Pty Ltd.

Metal drums and plastic containers:
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.
Do not reuse container for any other purpose.

SECTION 14. TRANSPORT INFORMATION

ADG

| UN number | 3082 |
| Transport hazard class(es) | 9 |
| Subsidiary Risk | None |
| Packaging group | III |
| Description of the goods | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (MCPA-2-ETHYLHEXYL ESTER SOLUTION) |
| Hazchem Code | 5 |

According to AU01, Environmentally Hazardous Substances in packagings, IBC or any other receptacle not exceeding 500 kg or 500 L are not subject to the ADG Code.

IMDG

| UN number | 3082 |
| Transport hazard class(es) | 9 |
| Subsidiary Risk | None |
| Packaging group | III |
| Marine pollutant | YES |
Description of the goods: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (MCPA-2-ETHYLEXYL ESTER SOLUTION)

IATA
- UN number: 3082
- Transport hazard class(es): 9
- Subsidiary Risk: None
- Packaging group: III
- Environm. Hazardous Mark: YES
- Description of the goods: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (MCPA-2-ETHYLEXYL ESTER SOLUTION)

SECTION 15. REGULATORY INFORMATION

Registered according to the Agricultural and Veterinary Chemicals Code Act 1994
Australian Pesticides and Veterinary Medicines Authority approval number: 31525

SUSMP classification (Poison Schedule)
Schedule 5 (Standard for the Uniform Scheduling of Medicines and Poisons)

SECTION 16. OTHER INFORMATION

Trademark information: Tigrex® is a registered trademark of the Bayer Group.

This SDS 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 SDS 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.

Abbreviations and acronyms
- ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- ATE: Acute toxicity estimate
- AU OEL: Australia. OELs. (Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment)
- CAS-Nr.: Chemical Abstracts Service number
- CEILING: Ceiling Limit Value
- Conc.: Concentration
- EC-No.: European community number
- ECx: Effective concentration to x %
EINECS  European inventory of existing commercial substances
ELINCS  European list of notified chemical substances
EN    European Standard
EU    European Union
IATA  International Air Transport Association
IBC   International Code for the Construction and Equipment of Ships Carrying Dangerous
      Chemicals in Bulk (IBC Code)
ICx   Inhibition concentration to x %
IMDG  International Maritime Dangerous Goods
LCx   Lethal concentration to x %
LDx   Lethal dose to x %
LOEC/LOEL  Lowest observed effect concentration/level
MARPOL  MARPOL: International Convention for the prevention of marine pollution from ships
N.O.S.  Not otherwise specified
NOEC/NOEL  No observed effect concentration/level
OECD  Organization for Economic Co-operation and Development
OES BCS  OES BCS: Internal Bayer CropScience “Occupational Exposure Standard”
PEAK  PEAK: Exposure Standard - Peak means a maximum or peak airborne concentration
      of a particular substance determined over the shortest analytically practicable period of
      time which does not exceed 15 minutes.
RID   Regulations concerning the International Carriage of Dangerous Goods by Rail
SK-SEN  Skin sensitiser
SKIN_DES  SKIN_DES: Skin notation: Absorption through the skin may be a significant source of
           exposure.
STEL   STEL: Exposure standard - short term exposure limit (STEL): A 15 minute TWA
       exposure which should not be exceeded at any time during a working day even if the
       eight-hour TWA average is within the TWA exposure standard. Exposures at the STEL
       should not be longer than 15 minutes and should not be repeated more than four times
       per day. There should be at least 60 minutes between successive exposures at the
       STEL.
TWA   TWA: Exposure standard - time-weighted average (TWA): The average airborne
       concentration of a particular substance when calculated over a normal eight-hour
       working day, for a five-day working week.
TWA   Time weighted average
UN    United Nations
WHO   World health organisation

Changes since the last version are highlighted in the margin. This version replaces all previous
versions.

END OF SDS