SECTION 1  IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name:  FMC Trifluralin 480 EC Selective Herbicide

Other Names:  Trifluralin, a Group D Herbicide.
Use:  A pre-emergence agricultural herbicide.
Company:  FMC Crop Protection Pty Ltd.
Address:  Unit 26, 8 Metroplex Avenue, Murarrie, Qld  4172
Telephone Number:  07 3908 9222  Fax Number:  07 3908 9221
Emergency Telephone Number:  1800 033 111 (All hours - Australia wide).

SECTION 2  HAZARDS IDENTIFICATION

Classified as Hazardous according to criteria of the Safe Work Australia. Not classified as a Dangerous Good according to the ADG Code. Combustible Liquid (C1).

Risk phrases:  R40 Limited evidence of a carcinogenic effect.
R43 May cause sensitization by skin contact.
R65 Harmful: May cause lung damage if swallowed.

Safety Phrases:  S13 Keep away from food, drink, and animal feeding stuffs.
S2 Keep out of reach of children.
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S46 If swallowed, seek medical advice immediately and show this container or label.

SECTION 3  COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

<table>
<thead>
<tr>
<th>CHEMICAL</th>
<th>CAS NUMBER</th>
<th>PROPORTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trifluralin (present as the butoxyethyl ester)</td>
<td>1582-09-8</td>
<td>480 g/L</td>
</tr>
<tr>
<td>Liquid Hydrocarbon</td>
<td>64742-95-6</td>
<td>480 g/L</td>
</tr>
<tr>
<td>Surfactants</td>
<td>-</td>
<td>&lt; 10%</td>
</tr>
</tbody>
</table>

SECTION 4  FIRST AID MEASURES

FIRST AID

Swallowed:  If swallowed do NOT induce vomiting; seek medical advice immediately and show this container or label, or contact the Poisons Information Centre phone Australia13 11 26. Make every effort to prevent vomit from entering the lungs by careful placement of the patient.

Eye:  If in eyes, hold eyelids open and wash with copious amounts of water for at least 15 minutes.

Skin:  Wash affected areas thoroughly with soap and water. Remove contaminated clothing and launder before re-use.

Inhaled:  Remove affected person to fresh air until recovered. If effects persist for more than about 30 minutes, seek medical advice. Apply CPR if there is no breathing and NO pulse.
SECTION 4 | FIRST AID MEASURES (Continued)

Advice to Doctor: The formulation contains petroleum distillate 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: Combustible liquid (C1) – flash point 103°C.
Extinguishing media: Foam, CO₂ or dry chemical. Soft stream water fog or fine water spray if no alternatives. Contain all runoff.
Hazards from combustion products: If involved in a fire or heated to high temperatures will emit toxic fumes. Firefighters to wear self-contained breathing apparatus and suitable protective clothing if risk to of exposure to vapour or smoke.
Precautions for fire-fighters and special protective equipment: Isolate fire area. Evacuate downwind. 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. Wear a PVC or rubber apron, cotton overalls buttoned to the neck and wrist and a washable hat and elbow-length PVC gloves and face shield. Large spills should be dyked or covered to prevent dispersal. Vacuum, shovel or pump spilled material into an approved container and dispose of as listed below. Keep out unprotected persons and animals.

Material and methods for containment and cleanup procedures: To decontaminate spill area, tools and equipment, wash with detergent and water and add the solution to the drums of wastes already collected and label contents. Absorb, as above, any excess liquid and add both solutions to the drums of waste already collected. Dispose of drummed wastes, including decontamination solution in accordance with the requirements of Local or State Waste Management Authorities.

Do NOT allow spilled product or wash solution to enter sewers, drains, dams, creeks or any other waterways.

SECTION 7 | HANDLING AND STORAGE

Precautions for Safe Handling: Ensure containers are kept closed until using product. When opening the container and using the prepared spray wear cotton overalls, buttoned to the neck and wrist, a washable hat, elbow length PVC gloves and face shield or goggles. After use 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.

Conditions for Safe Storage: DO NOT store near (or allow to contact) fertilizers, fungicides or pesticides. Store in the closed, original container in a dry well-ventilated area, out of direct sunlight. Do not store below 5°C. Extended storage below 5°C can result in the formation of crystals on the bottom of the container. If crystallisation does occur, store the container on its side at room temperature and rock occasionally until crystals re-dissolve. Ensure that any crystals that might have formed during storage are dissolved before adding to the spray tank. This product is a Schedule 6 Poison (S6) and must be stored, transported and sold in accordance with the relevant Health Department regulations.

SECTION 8 | EXPOSURE CONTROLS / PERSONAL PROTECTION

National Exposure Standards:
Exposure guidelines have not been established for this product by safe Work Australia.

Biological Limit Values:
No biological limit allocated.
SECTION 8 | EXPOSURE CONTROLS / PERSONAL PROTECTION (Continued)

Engineering controls:
Use in ventilated areas only. Use local exhaust at all process locations. Ventilate all transport vehicles prior to unloading. Keep containers closed when not in use.

Personal Protective equipment (PPE):
General: When opening the container, preparing the spray wear a PVC or rubber apron, cotton overalls buttoned to the neck and wrist and a washable hat and elbow-length PVC gloves and face shield. Wash thoroughly before smoking, eating or using toilet facilities. Wash hands after use.

Respiratory Protection: Generally not required. Use of a respirator may be required in certain circumstances. If an inhalation risk exists, wear a properly fitted half-face or full-face air-purifying respirator which is approved for pesticides (Australian Standards).

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: Bright orange clear liquid.
Odour: Characteristic solvent odour.
Melting Point: Some crystallisation occurs between 0 and -7°C.
Boiling Point: 183 – 210°C (for solvent).
Solubility in Water: Emulsifies in water.
Specific Gravity: 1.1.

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: Do not store for prolonged periods in direct sunlight. Do not store below 5°C.

Incompatible materials: Strong acids, strong bases and strong oxidising agents.

Hazardous decomposition products: Hazardous decomposition products include carbon dioxide, carbon monoxide and nitrogen oxides.

Hazardous reactions: No special considerations.

SECTION 11 | TOXICOLOGICAL INFORMATION

Toxicology Information:
No specific data is available for this product as no toxicity tests have been conducted on this product. Information presented is our best judgement based on similar products and/or individual components. As with all products for which limited data is available, caution must be exercised through the use of protective equipment and handling procedures to minimise exposure.

Acute Toxicity: Trifluralin is practically nontoxic to test animals by oral, dermal, or inhalation routes of exposure. Nausea and severe gastrointestinal discomfort may occur after eating Trifluralin. Trifluralin does not cause skin irritation but may produce slight eye irritation. Skin sensitization (allergies) may occur in some individuals. Inhalation may cause irritation of the lining of the mouth, throat, or lungs.

Swallowed: The acute oral LD50 for technical Trifluralin in rats is greater than 10,000 mg/kg. Swallowing can cause nausea, vomiting and central nervous system depression caused by the solvent in this product. If patient shows sign of central nervous system depression (like those of drunkenness) there is a greater chance of the patient breathing in vomit and causing damage to the lungs. Breathing in vomit may lead to aspiration pneumonia.
SECTION 11  TOXICOLOGICAL INFORMATION (Continued)

Eye: This formulated product may be irritating to the eyes. Symptoms may include stinging and reddening of eyes and watering which may become copious. Other symptoms may also become evident. If exposure is brief, symptoms should disappear once exposure has ceased. However, lengthy exposure or delayed treatment may cause permanent damage.

Skin: The dermal LD<sub>50</sub> for technical Trifluralin in rabbits > 2000 mg/kg. This product may be irritating to the skin. Product will have a degreasing action on the skin. Repeated or prolonged exposure may lead to irritant contact dermatitis.

Inhaled: The 1-hour inhalation LC<sub>50</sub> for technical Trifluralin (rats) > 2.8 mg/L. Inhalation of mists or sprays may produce respiratory irritation. Breathing in vapours may result in headaches, dizziness and possible nausea. Breathing high concentrations can produce central nervous system depression, which can lead to loss of coordination, impaired judgement, and in circumstances of prolonged exposure, unconsciousness.

Long Term Exposure:

Chronic toxicity: Prolonged or repeated skin contact with Trifluralin may cause allergic dermatitis. No toxicity was observed in dogs fed 25 mg/kg/day for 2 years. However, another study observed decreased red blood cell counts and increases in methaemoglobin, total serum lipids, triglycerides, and cholesterol at 18.75 mg/kg/day. Trifluralin has been shown to cause liver and kidney damage in other studies of chronic oral exposure in animals.

Reproductive effects: The reproductive capacity of rats fed dietary concentrations of Trifluralin was unimpaired through four successive generations. Loss of appetite and weight loss followed by miscarriages were observed when pregnant rabbits were fed high doses. Foetal weight decreased and there was an increase in the number of foetal runts at the 500 mg/kg/day dosage. It is unlikely effects on reproduction will be produced in humans at expected exposure levels.

Teratogenic effects: No abnormalities were observed the offspring of rats fed for four generations. Studies show no evidence that Trifluralin is teratogenic.

Mutagenic effects: No evidence of mutagenicity was observed when Trifluralin was tested in live animals, and in assays using bacterial and mammalian cell cultures.

Carcinogenic effects: In a 2-year study of rats fed 325 mg/kg/day, the highest dose tested, malignant tumours developed in the kidneys, bladder, and thyroid. However, more data are needed to characterize its carcinogenicity.

Organ toxicity: Liver, kidney, and thyroid damage appear to be the main toxic effects in chronic animal studies.

SECTION 12  ECOLOGICAL INFORMATION

Environmental Toxicology: No data is available on this product. The active ingredient, Trifluralin is practically nontoxic to birds. The LD<sub>50</sub> in bobwhite quail, female mallards and pheasants > 2000 mg/kg. Trifluralin is very highly toxic to fish and other aquatic organisms. The 96-hour LC<sub>50</sub> in rainbow trout is 0.02 to 0.06 mg/L, and 0.05 to 0.07 mg/L in bluegill sunfish. The 96-hour LC<sub>50</sub> in channel catfish = 1.4 to 3.4 mg/L. Variables such as temperature, pH, life stage, or size may affect the toxicity of the compound. Trifluralin is highly toxic to Daphnia with a 48-hour LC<sub>50</sub> of 0.5 to 0.6 mg/L. Trifluralin shows a moderate tendency to accumulate in aquatic organisms. Although extremely high application rates (100 mg/kg) of Trifluralin has been shown to be toxic to earthworms, label application rates will result in soil residues of approximately 1 mg/kg Trifluralin, a level that had no adverse effects on earthworms. Nontoxic to bees.

Environmental Properties: No data is available on this product. The active ingredient, trifluralin, is biodegradable. It does not accumulate in the soil or water or cause long term problems. Trifluralin has moderate to high persistence in the soil environment, depending on conditions. Trifluralin is subject to degradation by soil microorganisms and UV light or may volatilize if left exposed to the air. Half-lives of Trifluralin in the soil vary from 45 to 60 days to 6 to 8 months. After 6 months to 1 year, 80 to 90% of its activity will be gone. Trifluralin is strongly adsorbed to soils and nearly insoluble in water. It will probably be found adsorbed to soil sediments and particulates in the water column. Trifluralin inhibits the growth of roots and shoots when it is absorbed by newly germinated plants.
SECTION 12 | ECOLOGICAL INFORMATION

Trifluralin residues in crop plants will occur only in root tissues which are in direct contact with contaminated soil. Trifluralin is not translocated into the leaves, seeds, or fruit of most plants. On most crops, Trifluralin applied to the leaves has no effect, but on certain crops, such as tobacco and summer squash, leaf distortion may occur.

SECTION 13 | DISPOSAL CONSIDERATIONS

Spills & Disposal: Isolate and post spill area. Wear prescribed protective clothing and equipment. Large spills should be dyked or covered to prevent dispersal. Keep out animals and unprotected persons. Keep material out of streams and sewers. Vacuum, shovel or pump waste into an approved drum. To decontaminate spill area, tools and equipment, wash with detergent and water and add the solution to the drums of wastes already collected and label contents. Dispose of drummed wastes, including decontamination solution in accordance with the requirements of Local or State Waste Management Authorities.

Disposal of empty containers: Triple or preferably pressure rinse containers before disposal. Add rinsings to tank mix. Do not dispose of undiluted chemicals on-site. If not recycling, break, crush, or puncture and deliver empty packaging for appropriate disposal to an approved waste management facility. If an approved waste management facility is not available, bury the empty packaging 500 mm below the surface in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots, in compliance with relevant Local, State or Territory government regulations. DO NOT burn, cut or weld empty containers. DO NOT burn product.

SECTION 14 | TRANSPORT INFORMATION

It is good practice not to transport agricultural chemical products with food, food related materials and animal feedstuffs.

Storage & Transport: FMC Trifluralin 480 EC Selective Herbicide is not classified as Dangerous Goods under the Australian Code for the Transport of Dangerous Goods by Road and Rail in containers less than 3000 litres as per ADG7, SP No. AU01. For bulk shipments as Class 9, use UN 3082, Hazchem code 2Z.

Marine and Air Transport: This product is a Marine Pollutant according to International Maritime Dangerous Goods (IMDG) Code and the International Air Transport Association (IATA). If transporting by sea or air the following Dangerous Goods Classification applies:
- UN 3052;
- Class 9 (Miscellaneous Dangerous Goods);
- Packing Group III;
- Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Contains 48% Trifluralin).
- Not to be loaded with explosives (Class1), oxidising agents (Class 5.1), organic peroxidies (Class 5.2), however specific exemptions may apply.

SECTION 15 | REGULATORY INFORMATION

Classified as a hazardous substance according to criteria of the Safe Work Australia. (Xn - harmful, Xi - irritant).

Under the Standard for Uniform Scheduling of Medicines and Poisons (SUSMP), this product is a schedule 6 poison.

This product is registered under the Agricultural and Veterinary Chemicals Code Act 1994. Product Registration No. 67633.

Product is not classified as a Dangerous Good according to the ADG Code (7th Ed).

Requirements concerning special training:
Check State or Territory regulations that require people who use pesticides in their job or business to have training in the application of the materials.
SECTION 16  OTHER INFORMATION

Issue Date: 31 October 2012. Valid for 5 years. (First issue).

Key to abbreviations and acronyms used in this MSDS:
ASCC: Australian Safety & Compensation Council (formally known as the National Occupational Health & Safety Commission (NOHSC)).
Carcinogen: An agent which is responsible for the formation of a cancer.
Genotoxic: Capable of causing damage to genetic material, such as DNA.
Lacrimation: The production, secretion, and shedding of tears.
Lavage: A general term referring to cleaning or rinsing.
Pneumonitis: A general term that refers to inflammation of lung tissue.
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.
Safe Work Australia: Formally known as Australian Safety & Compensation Council (ASCC) which was formally known as the National Occupational Health & Safety Commission (NOHSC).

References

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