MATERIAL SAFETY DATA SHEET

Date of Issue: December 2012
MSDS No. FMC/MET750/1

SECTION 1 IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: FMC Metribuzin 750 WG Herbicide

Other Names: Metribuzin, a Group C Herbicide.
Use: An agricultural herbicide for selective weed control.
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.

Risk phrases:	R22	Harmful if swallowed.
Safety Phrases:	S2	Keep out of reach of children.
	S13	Keep away from food, drink and animal feeding stuffs.
	S24	Avoid contact with skin.
	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:

CHEMICAL	*CAS NUMBER*	*PROPORTION*
Metribuzin	21087-64-9	750 g/kg
Other ingredients (considered non-hazardous)		10 - 30%

SECTION 4 FIRST AID MEASURES

Ingestion: 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.

The above first aid instructions are mandated by the Commonwealth Department of Health and Ageing via the National Drugs and Poisons Schedule. These instructions are suitable for ingestion of spray solution and small amounts of concentrate; however, if SUBSTANTIAL AMOUNTS of the concentrate have been swallowed (more than about 10 g) AND if medical assistance is more than 30 minutes away, the induction of vomiting should be CONSIDERED, preferably based on MEDICAL ADVICE if a physician can be contacted by phone. All care must be taken to prevent vomit from being inhaled. Do not give anything by mouth to a semi-conscious or unconscious person.

Eye: If in eyes, gently brush granules away and rinse with water. Seek medical advice if irritation develops or persists.

Skin: Gently brush granules away. Wash skin with soap and water. If irritation occurs and persists, seek medical advice. Irritation is not expected.

SECTION 4 FIRST AID MEASURES (Continued)

Inhaled: Remove affected person to fresh air until recovered. If symptoms develop or persist, seek medical advice.

Advice to Doctor: Treat symptomatically.

SECTION 5 FIRE FIGHTING MEASURES

Extinguishing media: CO_2, Foam or dry chemical. Soft stream water fog or fine water spray if no alternatives. Contain all runoff.

Hazards from combustion products: There is no risk of an explosion from this product under normal circumstances if involved in a fire. If involved in a fire, it will emit toxic fumes of oxides of carbon, nitrogen or sulfur. 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. As a minimum, wear overalls, goggles and gloves. Large spills should be dyked or covered to prevent dispersal. Vacuum, shovel or pump spilled material, without raising dust, into an approved container and dispose of as listed below. Keep out unprotected persons and animals. This product is a herbicide and spills can damage crops, pastures and desirable vegetation.

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. Harmful if swallowed. May irritate the eyes and skin. Avoid contact with eyes and skin. Do not inhale dust or spray mist. Wash hands after use. Avoid generating dusts whilst handling the product and mixing. If dust is generated it is advisable to wear a dust mask.

Conditions for Safe Storage: DO NOT store near (or allow to contact) fertilizers, fungicides or pesticides. Store in the closed original container, in a cool well ventilated area, out of direct sunlight. Store in a room or place away from children, animals, food, feed stuffs, seed and fertilizers. Not classified as a Dangerous Good. This product is a Schedule 5 Poison (S5) and must be stored, transported and sold in accordance with the relevant Health Department regulations.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

National Exposure Standards:
No exposure guidelines have been established for this product by Safe Work Australia, but exposure guidelines have been established for dust and is presented below:

Atmospheric Contaminant	Exposure Standard (TWA)	STEL (mg/m³)
Dusts	10 mg/m³	Not set

TWA = Time-Weight Average STEL = Short Term Exposure Limit

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION (Continued)

Biological Limit Values:
No biological limit allocated.

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: Harmful if swallowed. May irritate the eyes and skin. Avoid contact with eyes and skin. Do not inhale dust or spray mist. Wash hands after use.
Respiratory Protection: Generally not required. Do not inhale dust or spray mist. Avoid generating dusts whilst handling the product and mixing. If dust is generated it is advisable to wear a dust mask.

Personal Hygiene: Clean water should be available for washing in case of eye or skin contamination. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Form:	Solid
Appearance:	Off white/tan granules.
Solubility in Water:	Disperses in water. Solubility of metribuzin is low, 1.2 mg/L.
Vapour Pressure:	0.121 mPa @ 25ºC for metribuzin.
Octanol/Water Partition Coefficient:	Kow Log P is 1.75 @ 25ºC for metribuzin.
Poison Schedule:	This product is a schedule 6 (S6) poison.

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.

Incompatible materials: Keep away from strong acids, strong bases and strong oxidising agents.

Hazardous decomposition products: Hazardous decomposition products include carbon dioxide, carbon monoxide and nitrogen oxides when product is involved in a fire.

Hazardous reactions: No special considerations. Hazardous polymerisation is not possible.

SECTION 11 TOXICOLOGICAL 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.

Potential Health Effects:

ACUTE EFFECTS

Ingestion: No specific symptoms. Possible generalised symptoms include nausea and vomiting. LD_{50} = 2365 mg/kg (male rat) and 1449 mg/kg (female rat); 700 mg/kg in mice and 245 to 274 mg/kg in guinea pigs.

Skin: May irritate the skin. The dermal LD_{50} rabbit > 5000 mg/kg. Not a skin sensitiser.

Eye: May irritate the eyes.

Inhalation: May cause irritation to the respiratory tract if dusts are inhaled.

Acute Toxicity: Metribuzin is harmful orally. It is practically non-toxic dermally and moderately toxic via the inhalation route. Metribuzin technical has been shown not to irritate the skin or eyes of rats, rabbits, guinea pigs, or human volunteers, however the formulated product may be irritating to the eyes and skin. Effects of high acute exposure in Metribuzin poisoned rats included narcosis (stupor) and laboured breathing. Deaths occurred within 24 hours, and survivors recovered slowly without permanent effects.

SECTION 11 TOXICOLOGICAL INFORMATION (Continued)

Chronic Effects: Liver and kidney damage has been noted in laboratory animals that have been fed excessive doses of metribuzin.

Reproductive Toxicity: At dose toxic to maternal animals, metribuzin has been shown to produce developmental toxicity in a number of species.

Mutagenicity: The weight of evidence indicates that metribuzin does not present a mutagenic risk.

Carcinogenicity: Data indicates no carcinogenic effects.

SECTION 12 ECOLOGICAL INFORMATION

Environmental Toxicology: No data is available on this product. The active ingredient, metribuzin has moderate toxicity to birds. The LD_{50} in bobwhite quail = 164 mg/kg and mallard duck = 460-680 mg/kg. Metribuzin is very toxic to fish and other aquatic organisms. The 96-hour LC_{50} in rainbow trout = 74.6 mg/L and golden orfe = 141.6 mg/L, Daphnia 48-hour LC_{50} = 49.6 mg/L. Metribuzin is highly toxic to algae EC_{50} green algae = 0.021 mg/L.

Environmental Properties: *Breakdown in soil and groundwater:* Metribuzin is of moderate persistence in the soil environment. The half-life of Metribuzin varies according to soil type and climatic conditions. Soil half-lives of 30 to 120 days have been reported; a representative value may be approximately 60 days. Metribuzin is poorly bound to most soils and soluble in water, giving it a potential for leaching in many soil types. Soil mobility is affected by many site-specific variables, including the amount of soil organic matter, particle size distribution, porosity, rainfall, and application rates. Metribuzin has been detected in some rivers, wells and groundwater in the USA. The major mechanism by which Metribuzin is lost from soil is microbial degradation. Losses due to volatilization or photodegradation are not significant under field conditions. *Breakdown in water:* The half-life of Metribuzin in pond water is approximately 7 days. If present, Metribuzin would most likely be found in the water column rather than the sediment, due to its low binding affinity and high water solubility. *Breakdown in vegetation:* Metribuzin is absorbed through the leaves when plants are given surface treatment, but the primary route for uptake is through the root system. From the roots, it is translocated upward, becoming concentrated in the roots, stems, and leaves of treated plants. In non-susceptible plants it is de-aminised to more water-soluble conjugates; in susceptible plants it is not metabolized and disrupts photosynthesis in the chloroplast.

SECTION 13 DISPOSAL CONSIDERATIONS

Spills & Disposal: Isolate and post spill area. Wear prescribed protective clothing and equipment. Large spills should be dyked and 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: Shake empty bag into spray tank. Single rinse plastic bags before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals onsite. Puncture or shred and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and products not be burnt.

SECTION 14 TRANSPORT INFORMATION

Road & Rail Transport: This product is exempt from classification as a Dangerous Good in packs less than 3,000 kg or litres under the Australian Code for the Transport of Dangerous Goods by Road and Rail. For bulk shipments this product is a class 9, UN 3082. (See special provision AU01).

Marine and Air Transport: Apparent Triclopyr 600 EC Herbicide is classified as 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:-

SECTION 14 TRANSPORT INFORMATION (Continued)

If transporting by sea or air the following Dangerous Goods Classification applies:-

UN 3077, Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Contains Metribuzin). Class 9 (Miscellaneous Dangerous Goods), Packing Group III, Hazchem code 2Z. Hazard Identification Number (HIN) 90.

SECTION 15 REGULATORY INFORMATION

Classified as a hazardous substance according to criteria of the Safe Work Australia. (Xn - harmful).
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. 67630.
Product is not classified as a Dangerous Good according to the ADG Code (7th Ed) in packs less than 3000 kg. Considered a Dangerous Good for sea transport.

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: 17 December 2012. Valid for 5 years. (First issue).

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).
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.
NOHSC:	National Occupational Health and Safety Commission.
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

1. "Search Hazardous Substances". Safe Work Australia website. (2012).
2. "Approved Criteria for Classifying Hazardous Substances" 3rd Ed. NOHSC Australia. [NOHSC:1008 (2004)]. October 2004.
3. Standard for the Uniform Scheduling of Medicines and Poisons. No. 3. Medicines and Poisons Scheduling Secretariat. June 2012.

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