1. IDENTIFICATION OF THE SUBSTANCE

Product Name: ENDOSULFAN WP
Common Name: Endosulfan
Chemical Name: (1,4,5,6,7,7-hexachloro-8,9,10-trinorborn-5-en-2,3-ylenebis(methylene)) sulphite (IUPAC)
CAS No.: [115-29-7]
Chemical Family: Organochlorine
Chemical Formula: C_{9}H_{6}Cl_{6}O_{3}S (Mol. wt.: 406.9)
Use: Non-systemic insecticide and acaricide with contact and stomach action.
Formulation: endosulfan: 475 g/kg Wettable Powder
UN No.: 2761 (South Africa)
2995 (Internationally)
Supplier: Universal Crop Protection (Pty) Ltd.
PO Box 801, Kempton Park, 1620, South Africa
Telephone: (011) 396 2233
Fax: (011) 396 4666
Website: www.villacrop.co.za
Emergency telephone: (011) 396 2233
083 326 9272

2. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Component: endosulfan
SYMBOLS: T, N, Xi
RISK-PHRASE(S): R 24/25, R 36, R 50/53,

3. HAZARD IDENTIFICATION

Toxicity class:
WHO II, EPA I (tech)
A highly toxic insecticide/acaricide.

Likely routes of exposure:
May be fatal if inhaled, swallowed or absorbed through skin.

Ingestion:
ADI: 0.006 mg/kg b.w.
Highly toxic. May cause damage to the nervous system, kidney, liver and testes. May be fatal.

Inhalation:
Highly toxic. May be fatal.

Eye and Skin contact:
May cause burns to the skin and eyes.

4. FIRST AID MEASURES AND PRECAUTIONS

Absorption through the skin is the greatest danger in handling all organochlorides. Signs and symptoms of poisoning are headache, dizziness, nausea, vomiting, muscular weakness, ataxia, and eventually epileptiform convulsions. Convulsions may well occur without any preceding signs or symptoms. Death may result from cardiac arrest. Chronic intoxication may produce convulsions alone, without earlier symptoms.

Inhalation:
Remove source of contamination or move victim to fresh air. **Seek medical advice immediately.**

Skin contact:
Remove contaminated clothing, shoes and leather goods. Gently wipe of excess chemical. Wash skin gently and thoroughly with water and non-abrasive soap. Seek medical advice if necessary.

Eye contact:
Flush eyes with gently flowing cold water or saline solution for 20 minutes, holding the eyelid(s) open. If irritation persists, obtain medical attention.

Ingestion:
Do not induce vomiting. If patient is conscious, give a large amount of activated charcoal powder with water. Do not give oils or milk as these will assist absorption. **Seek medical advice immediately.**

Advice to physician:
There is no specific antidote for the organochlorides. Keep patient under observation and treat symptomatically as indicated by his/her condition.

In case of ingestion, specific gastric lavage should be considered within 4 hours, avoiding thus aspiration into the lungs. Follow this by intragastric administration of 3 to 4 tablespoons of activated charcoal and 30 mg of magnesium or sodium sulphate in a 30% aqueous solution. No fats, oils or milk should be given by mouth since this will promote absorption of organochlorides by the intestinal tract. Chemical pneumonia following aspiration of the solvent in the respiratory tract should be kept in mind in the case of ingestion of a solution or of an emulsifiable concentrate.
Contraindications: morphine or derivatives, epinephrine and noradrenaline should never be given because of their depressive effects on the respiratory centre and they may sensitise the myocardium and thus provoke serious cardiac arrhythmias. Control convulsions with fast acting tranquillisers or anti-convulsants such as the benzodiazepines clonazepam or diazepam. There is no major pharmacological difference between the two, but clonazepam has more selective anticonvulsant action in comparison with diazepam. Central effects of both drugs wane rapidly as a result of redistribution to other tissues. Repeated intravenous application may therefore be required to maintain a blood level sufficiently high to control convulsions. Benzodiazepines are relatively safe and carry a much smaller risk of sedation and respiratory depression than other sedatives, e.g. barbiturates. Very high daily dosages are known to be tolerated without unwanted side effects.

5. FIRE FIGHTING MEASURES

Fire/Explosion hazard: Slightly combustible. Material may support combustion at elevated temperatures.
Extinguishing agents:
Small fires: Regular foam, dry chemical, Halon or carbon dioxide. Apply water as a fine mist or fog.
Large fires: Water spray, fog or standard foam is recommended.
Firefighting: Isolate the fire area and evacuate downwind. Fight fire from maximum distance. Remove container from fire area if possible. Isolate 800 metres in all directions if tank, rail car or tank truck is involved in fire. Remove container from fire area if possible. For massive fire, use unmanned hose holder or monitor nozzles; if this is impossible, withdraw from the area and let the fire burn out. Contain fire control water for later disposal. Avoid runoff to sewer as it may cause fire/explosion. Avoid inhaling hazardous vapours. Keep upwind.
Personal protective equipment: Fire may produce irritating or poisonous vapours or gases (oxides of chlorine and sulphur) of combustion. Fire-fighters and others that may be exposed should wear full chemical protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES (SPILLAGE)

Personal precautions: Avoid contact with skin and eyes. Do not breathe in fumes. For personal protection see Section 8.
Environmental precautions: Do not allow entering drains or watercourses. When the product contaminates public waters, inform appropriate authorities immediately in accordance with local regulations.
Occupational spill: Do not touch-spilled material; stop leak if you can do it without risk. Use water spray to reduce vapours. Keep out unprotected persons and animals. For small spills: sweep up with damp earth or sand or other suitable non-combustible absorbent material, taking care not to raise a dust cloud. Place the material into a clean, dry container and cover for subsequent disposal. In situations where product comes in contact with water, contain contaminated water for later disposal. Do not flush spilled material into drains. Keep spectators away and upwind. Large spills: Should be covered to prevent dispersal. Vacuum or shovel wasted into an approved drum. To decontaminate spill area, tools and equipment, wash with a suitable solution (i.e. organic solvent, detergent bleach or caustic). Add the solution to the drums already collected. Label drums with its content and dispose it in accordance with local regulations.
Open burning or dumping of this material is prohibited.

7. HANDLING AND STORAGE REQUIREMENTS

Handling: Harmful if swallowed. Avoid inhalation and contact with eyes and skin. Use with adequate ventilation. Do not handle broken packages without protective equipment. Wash hands before eating, drinking, chewing gum, smoking, or using the toilet. Remove clothing immediately if the product gets inside. Then wash skin thoroughly using a non-abrasive soap and put on clean clothing. Seek medical advice. Do not apply directly to areas where surface water is present, or to intertidal areas below the mean high water mark. Water used to clean equipment must be disposed of correctly to avoid contamination. Worker should shower at the end of each work day. Launder all clothing before it is re-used again.
Storage: Store in its original container in dry, cool, well-ventilated area. Avoid excess heat. Not to be stored next to foodstuffs and water supplies. Keep out of reach of children and animal. Do not contaminate other pesticides and fertilizers.
8. EXPOSURE CONTROL / PERSONAL PROTECTION

It is essential to provide adequate ventilation. The measures appropriate for a particular worksite depend on how this material is used and on the extent of exposure. Ensure that control systems are properly designed and maintained. Comply with occupational safety, environmental, fire, and other applicable regulations.

PERSONAL PROTECTIVE EQUIPMENT:
Respirator:
An approved full-face respirator suitable for protection from dusts and mists of pesticides is required. Limitations of respirator use specified by the approved agency and the manufacturer must be observed.

Clothing:
Employee must wear appropriate protective (impervious) clothing; boots, hat and equipment to prevent repeated or prolonged skin contact with this substance. Do not wear leather clothing.

Gloves:
Employee must wear appropriate chemical resistant protective gloves to prevent contact with this substance.

Eye protection:
The use of chemical resistant goggles or face shield. Emergency eyewash: Where there is any possibility that an employee’s eyes may be exposed to this substance, the employer should provide an eye wash fountain or appropriate alternative within the immediate work area for emergency use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:
Light tan powder.

Odour:
Sharp acrid sulfur dioxide odour.

Ignition temperature:
No information available.

pH:
@ 20 °C (5% water).

Relative density:
Approximately g/cm³ at 20 °C.

Storage stability:
Stable for a period of 2 years under normal warehouse conditions.

Solubility in water:
No information available.

Flash point:
Not applicable.

Melting point:
Not available.

10. STABILITY AND REACTIVITY

Stability:
Stable under normal, dry storage conditions.

Incompatibility:
Avoid excessive heat and fire.

Hazardous decomposition:
Combustion or thermal decomposition will evolve toxic and irritant vapours.

11. TOXICOLOGICAL INFORMATION

Acute oral LD₅₀:
40.7 mg/kg in rats.

Acute dermal LD₅₀:
930 mg/kg in rabbits.

Acute inhalation LC₅₀ (4 h):
Not applicable.

Acute skin irritation:
Minimally irritating to the skin.

Acute eye irritation:
Minimally irritating to the eyes.

Dermal sensitisation:
No sensitizing potential in guinea pigs.

Carcinogenicity:
No evidence of carcinogenicity of endosulfan technical, but this formulation contains more than 0.1 % silica. Evidence of carcinogenicity to experimental animals has been detected.

Teratogenicity:
Decrease in litters’ weight was observed at high doses (fetotoxic).

Mutagenicity:
Non-mutagenic.

12. ECOLOGICAL INFORMATION

Degradability: (Technical material)
Strongly adsorbed to soil. Microbial degradation is the major cause of loss from soil. The micro-organisms degrade this material primarily to an alcohol metabolite, small amounts of the corresponding ether and isomerisation to the alpha-isomer. Due to high estimated soil adsorption and the isomers of the product, minimal volatilisation and leaching to ground water is expected. This material is persistent in water but will slowly hydrolyse - especially under alkaline conditions - and may also oxidise. Biodegradation and volatilisation may also occur. When released to an aquatic eco-system, the dominant loss mechanism is adsorption to the system.

Mobility:
The product has low mobility and is not likely to leach.
UNIVERSAL ENDOSULFAN WP

Accumulation:
The product shows a tendency to bio-accumulate and may pose a long-term threat to wildlife.

ECOTOXICOLOGY: (Technical material)

Birds: Slightly toxic to birds.
LD₅₀: pheasants: 620 to 1000 mg/kg.

Fish: Highly toxic to fish.
LC₅₀: golden orfe: 0.002 mg/l.

Daphnia: May pose a hazard to Daphnia. Acute toxicity to Daphnia magna: 48-hour EC₅₀ is 75 to 750 μg/l.

Bees: Relatively non-toxic to bees. Not toxic to bees under field conditions at an application rate of 560 g endosulfan /ha.

Earthworms: NOEC = 0.1 mg/kg dry weight.

Soil micro-organisms: No data available.

In practical use, endosulfan should not be harmless to wildlife.

13. DISPOSAL CONSIDERATION

Pesticide disposal
Open dumping or burning of this pesticide is prohibited. Waste resulting from the use of this product that cannot be reused or reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable local procedures.

Package product wastes:
Emptied containers retain vapour and product residues. Observe all labelled safeguards until container is cleaned, reconditioned, or destroyed. Combustible containers should be disposed of in pesticide incinerators or buried in an approved landfill. Non-combustible containers must be punctured and transported to a facility for recycling or disposal in approved landfill site. Comply with any local legislation applying to disposal.

14. TRANSPORT INFORMATION

UN No.: 2761 (South Africa)
2995 (Internationally)
AIR/IATA: 6.1
IMG/IMO: 6.1
ICAO/IATA: 6.1
PACKING GROUP: I / II / III
ROAD/RAIL: Primary: 6.1 Organochlorine pesticide, Toxic

15. REGULATORY INFORMATION

Symbol: T, N, X, I
Indication of danger: Harmful, Irritant

Risk phrases:
R 24/25 Toxic in contact with skin and if swallowed.
R 36 May cause eye irritation.
R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Safety phrases:
S 01/02 Keep under lock and key and out of reach of children.
S 28 After contact with skin wash immediately with plenty of water.
S 36/37 Wear suitable protective clothing and gloves.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 61 Avoid release to the environment. Refer to special instructions / Safety data sheets.

16. PACKING AND LABELLING

Packed in 20 & 25 kg paper bags with plastic liner and in 5 kg plastic containers and labelled according to the South African regulations and guidelines.

17. OTHER INFORMATION

All information and instructions provided in this Material Safety Data Sheet (MSDS) are based on the current state of scientific and technical knowledge at the date indicated on the present MSDS and are presented in good faith and believed to be correct. This information applies to the PRODUCT AS SUCH. In case of new formulations or mixes, it is necessary to ascertain that a new danger will not appear.

It is the responsibility of persons in receipt of this MSDS to ensure that the information contained herein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with the product. If the recipient subsequently produces formulation(s) containing this product, it is the recipients sole responsibility to ensure the transfer of all relevant information from this MSDS to their own MSDS.
18. REFERENCES

- Applicable own physical and chemical, toxicity and ecotoxicity research studies.

END OF DOCUMENT

Compiled: August 1998
Reviewed: June 2007