METHOMYL 900SP

Reg. No.:12-D-5-15
TRB. No.: 16-18-D-52

110g Net

VERY DANGEROUS POISON

INHALATION OF SPRAY VERY HARMFUL - HARMFUL BY SKIN ABSORPTION

Composition	**(mass/mass)**
Methomyl.....	90%
Inert ingredients	10%

Chemical Group: Carbamate

A CONTACT AND STOMACH CARBAMATE INSECTICIDE WITH SYSTEMIC PROPERTIES FOR THE CONTROL OF A VARIETY OF INSECTS ON VARIOUS CROPS.

KEEP OUT OF REACH OF CHILDREN

CropLife ZIMBABWE

Registration held by:

MAGCHEM (PVT) LIMITED
2274 TILBURY ROAD,
WORKINGTON, HARARE,
ZIMBABWE

SUPPLIER : NOVA AGRO (HK) LTD.
(Reg. No. 1023146)
6th Floor Wyndham Place
44 Wyndham Street
CENTRAL HONG KONG

EMERGENCY TELEPHONE NUMBERS
POISONINGS:
National Poison Centre : (27) 21-9386084 (office hours)
(South Africa) (27) 21-9316129 (after hours).

1. IDENTIFICATION OF THE SUBSTANCE

Trade name : **METHOMYL 900SP**
Active ingredient : Methomyl
Chemical Name : *S*-methyl *N*-(methylcarbamoy-loxy) thioacetimidate (IUPAC)
CAS Nº. : 16752-77-5
Chemical family : Oxime carbamate
Chemical formula : $C_5H_{10}N_2O_2S$ (Mol. wt.: 162.2)
NIOSH/RTECS no. : AK2975000
UN no. : 2757

2. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous components : Methomyl
EEC No. : 240-815-0
EEC classification : T +
Risk-Phrases : R 28; R 40; R 51/53

3. HAZARD IDENTIFICATION

Toxicity class : WHO Ib; EPA I, IV.
Main hazard : Methomyl is a carbamate compound which inhibits cholinesterase. It is of very high toxicity. Contact with skin, inhalation of dust or spray, or swallowing may be fatal. Toxic to fish and bees.
Flammability : Not flammable.
Biological hazards : May be absorbed from the gastrointestinal tract, through the intact skin, and through inhalation of fine spray mist or dust.
Eye contact : Highly toxic. Mildly irritating to eyes.
Skin contact : Highly toxic. Mildly irritating to skin.
Ingestion : Highly toxic by ingestion. See point 4 for symptoms.
Inhalation : Highly toxic by inhalation. See point 4 for symptoms.
Carcinogenicity, Mutagenicity, Neurotoxicity, Reproductive toxicity: See section 11.

4. FIRST AID MEASURES AND PRECAUTIONS

Proper care should be taken during occupational use to avoid any inhalation of dust and spray particles, and to prevent accidental contamination of food products and water.

Inhalation:

Carbamate: Cholinesterase inhibitor.

Acute exposure:

When inhaled, the first effects of cholinesterase inhibition are usually respiratory and may include nasal hyperaemia and watery discharge, chest discomfort, dyspnea, and wheezing due to increased bronchial secretions and bronchoconstriction. Other systemic effects may begin within a few minutes or several hours of exposure. Symptoms may include nausea, vomiting, diarrhoea, abdominal cramps, headache, vertigo, ocular pain, ciliary muscle spasm, blurring or dimness of vision, miosis, or in some cases mydriasis, lacrimation, salivation, sweating, and confusion. Other reported central nervous system or neuromuscular effects include ataxia, slurred speech, weakness, fatigue, twitching, fasciculation, tremor, and eventually paralysis of the extremities and possibly of the respiratory muscles. In severe cases, there may also be involuntary defecation and urination, bradycardia, hypotension, pulmonary oedema, convulsions, coma, and death from respiratory failure or cardiac arrest.

Chronic exposure:

Prolonged or repeated exposure may cause effects as described in acute exposure.

First aid:

Remove from exposure area to fresh air immediately. If breathing has stopped, give mechanical artificial not direct mouth-to-mouth). Maintain airway and blood pressure and administer oxygen if available. Keep affected person warm and

at rest. Treat symptomatically and supportively. Administration of oxygen should be performed by qualified personnel. Get medical attention immediately.

Skin contact:

Carbamate: Cholinesterase inhibitor.

Acute exposure:

Some compounds may cause irritation. Localised sweating and fasciculations may occur at the site of contact. If sufficient amounts are absorbed through the skin, other effects of cholinesterase inhibition may occur as described in acute inhalation. Symptoms may be delayed for 2-3 hours, usually no more than 8 hours.

Chronic exposure:

Repeated or prolonged exposure may cause effects as described in acute exposure.

First aid:

Remove contaminated clothing immediately. Wash contaminated areas with soap and water followed by alcohol. Emergency personnel should wear gloves and avoid contamination. Treat respiratory difficulty with mechanical artificial respiration. Get medical attention immediately.

Eye contact:

Carbamate: Cholinesterase inhibitor.

Acute exposure:

Direct contact may cause pain, hyperaemia, lacrimation, twitching of the eyelids, miosis, and ciliary muscle spasm with loss of accommodation, blurred or dimmed vision and browache. Sometimes mydriasis may occur instead of miosis. With sufficient exposure, other symptoms of cholinesterase inhibition may occur as described in acute inhalation.

Chronic exposure:

Prolonged exposure may cause effects as described in acute exposure. Some compounds have caused toxic effects on the crystalline lens, conjunctival thickening and obstruction of nasolacrimal canals when used as miotic eye drops.

First aid:

Irrigate eyes with water or saline solution. If symptoms of poisoning occur, treat respiratory difficulty with mechanical artificial respiration and oxygen. Observe patient for at least 24-36 hours. Get medical attention immediately. Oxygen should be administered by qualified medical personnel.

Ingestion:

Carbamate: Cholinesterase inhibitor.

Acute exposure:

When ingested, the first effects may be nausea, vomiting, anorexia, abdominal cramps, and diarrhoea. With absorption from the gastrointestinal tract, the other effects of cholinesterase inhibition as described in acute inhalation may occur. Symptoms may begin within minutes or be delayed several hours.

Chronic exposure:

Repeated ingestion may cause effects as described in acute exposure.

First aid:

If person is alert and respiration is not depressed, give syrup of Ipecac followed by water (if vomiting occurs, keep head below hips to prevent aspiration). If consciousness level declines or vomiting has not occurred in 15 minutes empty stomach by gastric lavage with the aid of cuffed endotracheal tube using isotonic saline or 5 % sodium bicarbonate follow with activated charcoal. Establish and maintain airway. Treat respiratory difficulty with artificial respiration and oxygen.

Do not give morphine, aminophylline, phenothiazines, reserpine, furosemide, or ethacrynic acid. Drugs like 2 PAM are not effective in poisoning with carbamates. THEY SHOULD NOT BE USED.

Treat symptomatically and supportively. Administration of oxygen and gastric lavage must be performed by qualified medical personnel. Get medical attention immediately.

Advice to physician:

Antidote:

The following antidote has been recommended. However, the decision as to whether the severity of poisoning requires administration of any antidote and actual dose required should be made by qualified medical personnel.

For cholinesterase inhibitors: Establish clear airway and tissue oxygenation by aspiration of secretions, and if necessary, by assisted pulmonary ventilation with oxygen. Improve tissue oxygenation as much as possible before administrating atropine to minimise the risk of ventricular fibrillation. Administer atropine sulphate intravenously, or intramuscularly if iv injection is not possible. In moderately severe poisoning administer atropine sulphate, 0.4-2.0 mg repeated every 15 minutes, until atropinization is achieved (tachycardia, flushing, dry mouth, mydriasis). Maintain atropinization by repeated doses for 2-12 hours, or longer, depending on the severity of

poisoning. The appearance of rales in the lung bases, miosis, salivation, nausea, bradycardia, are all indications of inadequate atropinization. Severely poisoned individuals may exhibit remarkable tolerance to atropine. Two or more times the dosages suggested above may be needed. Persons not poisoned or only slightly poisoned, however, may develop signs of atropine toxicity from such large dosages: fever, muscle fibrillations, and delirium are main signs of atropine toxicity. If these signs appear while the patient is fully atropinized, atropine administration should be discontinued, at least temporarily. Observe treated patients closely at least 24 hours to ensure that symptoms (possibly pulmonary oedema) do not recur as atropinization wears off. In very severe poisonings, metabolic disposition of toxicant may require several hours or days during which atropinization must be maintained. Markedly lower levels of urinary metabolites indicate that atropine dosage can be tapered off. As dosage is reduced, check the lung bases frequently for rales. If rales are heard or other symptoms return, re-establish atropinization promptly.

5. FIRE FIGHTING MEASURES

Extinguishing agents:

Extinguish **small fires** with carbon dioxide, dry chemical or water spray

For **larger fires**, use water spray, fog or regular foam to fight fire.

Firefighting:

Move containers from fire area if possible. Fight fire from maximum distance. Stay away from storage tank ends. Contain fire control water for later disposal. Do not scatter material, extinguish only if flow can be stopped. Use flooding amounts of water as a fog, **solid streams may be ineffective.** Cool containers with flooding amounts of water as far a distance as possible. Do not get water inside the containers. For **massive fire**, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Use water spray to absorb toxic vapours. Avoid breathing toxic vapours. Keep upwind. Consider evacuation of downwind area if material is leaking.

Fire and explosion hazard:

Not flammable. When heated to decomposition, Methomyl releases highly toxic fumes of oxides of carbon, nitrogen, and sulfur.

Personal protective equipment:

Fire-fighters and others that may be exposed should wear full protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES (SPILLAGE)

Personal precautions:

Structural firefighters' protective clothing is recommended for fire situations ONLY; it is not effective in spill situations. Wear full protective clothing when working in the vicinity of spills or leaks or when fighting fires.

Avoid contact with skin and eyes. Do not breathe in dust or fumes. For personal protection see Section 8.

Environmental precautions:

Do not allow to enter drains or water courses. When the product contaminates public waters, inform appropriate authorities immediately in accordance with local regulations.

Occupational spill:

Small spills: Isolate and ventilate the area. Keep sources of fire away. Wear rubber or neoprene gloves and overshoes and an approved respirator. Get fire-fighting equipment ready. Dispose of absorbed or dry material in disposable containers. Scrub the spilled area with concentrated detergent such as TIDE (R), ALL (R), or similar material. Re-absorb scrubbing liquid and dispose as above.

Larger spills: Isolate and ventilate the area. Keep sources of fire away. Wear rubber or neoprene gloves and overshoes and approved personal protection equipment. Get fire-fighting equipment ready. Treatment of the spilled material with alkaline substances such as sodium carbonate (soda ash), sodium bicarbonate (baking soda), calcium hydroxide (slaked or hydrated lime, lime or lime water when in dilute solutions), and calcium carbonate (crushed limestone) may be used for detoxification (EPA, 1975a).

In general it would be preferable to detoxify spilled material before absorbing for disposal whenever possible. Dispose of absorbed or dry material in disposable containers. Containers should be sealed to prevent further decontamination. After the bulk of the material has been removed, further decontaminate

spoiled surfaces with alkaline treatment as described above, or with concentrated alkaline detergent. Absorb and dispose of waste water as described above. Water spray may be used to reduce or knock down vapors. Disposal of large quantities or contamination of large areas may be regulated by various governmental agencies and reporting may be required. Consult the local Emergency Response Committee for guidance. Keep spectators away. Isolate hazard area and deny entry. Ventilate closed spaces before entering.

7. HANDLING AND STORAGE REQUIREMENTS

Handling:

Highly toxic by inhalation or if swallowed. Avoid contact with eyes, prolonged contact with skin, and inhalation of dust and vapour. Use with adequate ventilation. Wash hands before eating, drinking, chewing gum, smoking, or using the toilet. Remove clothing immediately if the insecticide gets inside. Then wash skin thoroughly using a non-abrasive soap and put on clean clothing. 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.

Storage:

The product must be kept under lock and key. Keep out of reach of unauthorised persons, children and animals. Store in its original labeled container in shaded, well-ventilated area, away from heat, sparks and other sources of ignition. Not to be stored next to foodstuffs and water supplies. Local regulations should be complied with.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Occupational exposure limits:

ACGIH-TLV: 2.5mg/m (3) TWA; no STEL (ACGIH, 1996)

Engineering control measures:

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. If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal protective equipment including approved respiratory protection.

Personal protective equipment:

Respirator:

An approved respirator suitable for protection from dusts and mists of pesticides is adequate. Limitations of respirator use specified by the approving agency and the manufacturer must be observed.

Clothing:

Employee must wear appropriate protective (impervious) clothing and equipment to prevent repeated or prolonged skin contact with the substance.

Gloves:

Employee must wear appropriate synthetic protective gloves to prevent contact with this substance.

Eye protection:

The use of full face protection is recommended.

Emergency eye wash: 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 : Free flowing, off-white, water soluble powder.

Odour : Slight sulphurous odour.

Explosive properties: Non explosive.

Oxidising properties: Not corrosive.

pH : 6.91 ± 0.07 (1% in water at $20^{o}C$)

Relative density: Not applicable.

Storage stability: Considered stable for a period of 2 years in normal air, warehouse and light conditions.

Wettability : Instantly.

Solubility in water: 57.9g/l (*active material*)

Solubility in organic solvents:

(All solubility figures in g/L at $20^{o}C$ for active material)

methanol: 1000

isopropanol:	220
toluene:	30
acetone:	730
ethanol:	420

Partition-coefficient in *n*-octanol / water:
1.24 (*active material*)
Melting point:
78-79^{o}C

10. STABILITY AND REACTIVITY

Stability:
Stable for up to 2 years in the dry form and in aqueous solutions of pH7.0 or less, but rapidly decomposes in alkaline solutions and in moist soils. The rate of decomposition increases at higher temperatures, in the presence of sunlight, and on exposure to air.
Incompatibility:
Spray solutions containing this product should be mixed, stored or applied using stainless steel, aluminium, fibreglass or plastic-lined containers and equipment. Product is relatively stable in neutral and weakly acidic media, but rapidly hydrolysed in alkalis. The product is compatible with most other pesticides when used at normal rates, however, a compatibility test is required before using with other products. Do not physically mix concentrate directly with other herbicides or pesticide concentrates; always dilute first. Alkaline substances may reduce the activity of the product. The product should therefore not be mixed with water with a high pH value.
Thermal decomposition:
Toxic oxides of nitrogen and sulphur are released when the product decomposes on heating.

11. TOXICOLOGICAL INFORMATION

Acute oral LD_{50} **:** 28.54 mg/kg in rats.
Acute dermal LD_{50} **:** >2 856 mg/kg in rats.
Acute inhalation LC_{50} **:** LC_{50} :0.06-0.26mg/l (*Technical material*)
Acute skin irritation:
Not possible to determine irritation potential. Toxic via this route of entry.
Acute eye irritation:
No acute eye irritation/corrosion potential of the product was determined due to the toxicity the product.
Dermal sensitisation:
Considered to be a weak skin sensitiser.
Carcinogenicity:
Animal studies did not detect any carcinogenic activity. No human information available.
Teratogenicity:
Animal studies did not detect any carcinogenic activity. No human information available.
Mutagenicity:
Methomyl 900SP is not mutagenic at the concentrations tested and under the conditions of testing.

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGY:
Birds: ***Data as for active ingredient.***
LD_{50} (Acute oral):15.9 mg/kg (mallard ducks)
15.4 mg/kg (pheasants)
Fish:
Toxic to fish.
LC_{50} (96h): 6.84 mg/l (Common carp)
Daphnia magna:
Very toxic to water-fleas.
EC_{50} (48h): 0,032 mg/l
Green alga:
E_bC_{50} : 0,49 mg/l
E_rC_{50} : 14,140 (*Scenedesmus subspicatus)*
Bees:
Toxic to honeybees. LD_{50}(48h): 0,3627µg/bee.
Published data as for active ingredient:
Degradability:
The product degrades rapidly in the soil, degradation taking place primarily through microbial activity, with CO_2 as the principal end product. A small degree of hydrolysis may take place in moist soils. The product is not expected to volatilize. Half-life in groundwater is less than 0.2 days.

Mobility:
The product dissolves readily in water and is mobile in soil.
K_{oc} = 72

Accumulation:
The product shows little or no tendency to bioaccumulate.
K_{ow} = 1.24

13. DISPOSAL CONSIDERATION

Pesticide disposal:
Contaminated absorbents, used containers, surplus product, etc., should be burnt at 1000°C in an incinerator, preferably designed for pesticide disposal, or buried in designated landfill. Before disposal of the resultant waste, the material must be analyzed to ensure that the active ingredient has been degraded to a safe level. Treated waste must be buried in approved landfill. Never pour untreated waste or surplus products into public sewers or where there is any danger of run-off or seepage into water systems. Comply with local legislation applying to waste disposal.

Package product wastes:
Emptied containers retain vapour and product residues. Observe all labelled safeguards until container is destroyed. Combustible containers should be disposed of in pesticide incinerators. Metal containers must be crushed and transported to a scrap metal facility for disposal or burial in a designated landfill.

14. TRANSPORT INFORMATION

UN NUMBER: 2757

ADR/RID

Proper Shipping Name:	Carbamate pesticide, solid, toxic, (Methomyl 90%)
Substance ID no.	2757
Hazard ID no.	66
Label:	6.1
Item no.:	73[0]

IMDG/IMO

Packaging group:	II
Label of class:	6.1 **MARINE POLLUTANT**
Proper Shipping Name:	Carbamate pesticide, solid, toxic, (Methomyl 90%)

AIR/IATA

Proper Shipping Name:	Carbamate pesticide, solid, toxic, (Methomyl 90%)
Class	6.1
Hazard Label	Toxic
Packaging Group	II
Passenger Aircraft	Y613 (max 1kg) 613 (max 25kg)
Cargo Aircraft	615 (max 100kg)
UK classification:	Not available.
Tremcard ref. number	S11

15. REGULATORY INFORMATION

Symbol	**:** T +
Indication of danger	**:** Very toxic.
Risk phrases:	
R 28	**:** Very toxic if swallowed.
R 40	**:** Possible risk of irreversible effects.
R 51/53	**:**Toxic to aquatic organisms, may cause long-term adverse effects in the environment.
Safety phrases:	
S ½	**:** Keep locked up and out of reach of children.
S36/37	**:** Wear suitable protective clothing and gloves.
S45	**:** In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

National legislation: In accordance with 91/155/EEC Directive and with French standard T 01-102 and the South African Occupational Health and Safety Act, 1993 (act. No. 85 of 1993)

16. 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 formulations(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.

REFERENCES

- *The Pesticide Manual*; 13th Edition; Editor Clive Tomlin; Crop Protection Publications, 2004.
- *Pestline*; Material Safety Data Sheets for Pesticides and Related Chemicals; Volume II; Occupational Health Services Inc., 1991.
- Florida Agricultural Information Retrieval System: University of Florida.