NOVA AGRO

MATERIAL SAFETY DATA SHEET (MSDS)
ATRAZINE 50SC

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1. PRODUCT AND COMPANY IDENTIFICATION

SUPPLIER: **NOVA AGRO (HK) LTD.**
6th Floor Wyndham Place
44 Wyndham Street
CENTRAL HONG KONG.
Tel No.: +852 3586 2521

EMERGENCY TELEPHONE NUMBERS
SPILLAGES:
Emergency telephone (+ 27) 83 676 1998
POISONINGS:
National Poison Centre (+27) 21-938 6084 (office hours).
UFS Pharmacology/Toxicology information centre:
(+27) 82 491 0160
Trade Name: **ATRAZINE 50SC**
Use: Herbicide.

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2. COMPOSITION/INFORMATION ON INGREDIENTS

Active ingredients:	Atrazine 500g/L
Common Names	Atrazine
Chemical Names	6-chloro-N-ethyl-N'-(1-methylethyl)-1,3,5-triazine-2,4-diamine (IUPAC)
CAS No.	1912-24-9
Chemical Family	Triazine
Chemical Formulae	C_8-H_{14}-Cl-N_5 (mol. wt. 212,7)
NIOSH/RTECS NO:	XY5600000
Risk phrases:	R48/22, R50/53
UN No:	3082

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3. HAZARD IDENTIFICATION

Toxicity class:

Atrazine	EPA III
ADI	0.005 mg/kg
NOEL	2 years rats – Atrazine- (10mg/kg diet daily);
Likely routes of exposure:	Skin contact, ingestion and inhalation.

Eye contact:	May cause irritation.
Skin contact:	Minimally toxic and practically non-irritating.
Ingestion:	Moderately toxic. No significant effects are expected to develop if only small amounts are swallowed.
Inhalation:	Minimally toxic if inhaled.

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4. FIRST AID MEASURES

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

Skin contact: If irritation occurs, remove contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Gently wipe off excess chemical. Wash skin gently and thoroughly with water and non-abrasive soap. If irritation persists, seek medical advice immediately. Persons who become sensitized may require specialized medical management with anti-inflammatory agents.

Eye contact:

Immediately flush the contaminated eyes with gently flowing lukewarm water for 20 minutes, holding the eyelid(s) open. Severe contamination may require medical attention.

Ingestion:

Have victim rinse mouth thoroughly with water. Do not induce vomiting. In serious cases, seek medical advice immediately.

Advice to physician:

No signs and symptoms of triazine poisoning are known or expected in humans. An antidote is neither known nor needed. Treat symptomatically when required. When large amounts have been ingested, gastric lavage or the administration of activated charcoal with water may be indicated.

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5. FIRE FIGHTING MEASURES

Fire and explosion hazard:

There is no fire or explosion hazard.

Extinguishing agents:

Extinguish small fires with carbon dioxide, dry powder, or alcohol-resistant foam. Water spray can be used for larger fires or cooling of unaffected stock, but avoid the accumulation of polluted run-off from the site.

Firefighting:

Remove container from fire area if possible. Contain fire control water for later disposal. Use a recommended extinguishing agent for the type of surrounding fire.

Avoid inhaling hazardous vapours. Keep upwind.

Personal protective equipment:

Fire may produce irritating or poisonous vapours (hydrogen chloride and toxic oxides of nitrogen), mists or other products of combustion. Fire-fighters and others that may be exposed should wear full protective clothing and self-contained breathing apparatus.

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6. ACCIDENTAL RELEASE MEASURES

Personal precautions:

Avoid contact with skin and eyes. Do not breathe in 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 in accordance with local regulations.

Occupational spill:

Small spills, sweep up with damp earth or sand or other suitable absorbent, such as sawdust, taking care not to raise a dust cloud. Place the material into a clean, dry container and cover for subsequent disposal.

Large spills; evacuate area. Wear appropriate protective clothing. Ventilate area, sweep up and place in an appropriate container. Wash contaminated surfaces to remove any residues. In situations where product comes in contact with water, contain contaminated water for later disposal. Do not flush spilled material into drains. Keep unnecessary people away.

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7. HANDLING AND STORAGE

Handling:

Toxic if swallowed. Avoid contact with eyes and skin. Use with adequate ventilation. Wash hands before eating, drinking, chewing gum, smoking or using the toilet. Operators should change and wash clothing daily. Remove clothing immediately if the product gets inside. Then wash skin thoroughly using a non-abrasive soap and put on clean clothing.

Storage:

Store in its original container in isolated, dry, cool (avoid temperatures above 40^0C) and well-ventilated area. Avoid cross contamination with other pesticides and fertilizers. Keep under lock and key out of reach of unauthorized persons, children and animals. Store away from incompatible substances. Not to be stored next to foodstuffs and water supplies. Local regulations should be complied with.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

It is essential to provide adequate ventilation. The measures appropriate for a particular work site 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:

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.

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 this substance.

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

Eye protection:
The use of goggles 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.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Off white viscous free flowing liquid.
Odour: Paint like smell.
Explosive properties: Non explosive.
Oxidising properties: Not oxidative.
pH: 7.1
Density: 1,123 g/ml.
Storage stability: The product has a shelf life of 2 years, provided it is stored in its unopened, undamaged original containers in well-ventilated and dry conditions away from sources of heat and spark generating equipment.
Solubility in water: Atrazine will mix with water, forming a suspension
Flash point: Not flammable.
Partition-coefficient in n-octanol / water: K_{ow} ($logP_{ow}$) = 2.58

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10. STABILITY AND REACTIVITY

Stability:
Only slightly sensitive to natural light and extreme temperatures. Relatively stable in neutral, weakly acidic and weakly alkaline media, but rapidly hydrolysed to the hydroxy derivative in strong acids and alkalis, and at 70^{o}C in neutral media.

Incompatibility:
Spray solutions containing this product should be mixed, stored or applied using stainless steel, aluminium, fibreglass or plastic-lined containers. The product is compatible with most other pesticides and fertilisers 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. The product may flocculate in the presence of paraquat.

Thermal decomposition:
Hydrogen chloride and toxic oxides of nitrogen are released when the product decomposes on heating.

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11. TOXICOLOGICAL INFORMATION

Calculated for formulation: 1492 mg/kg
Atrazine Technical: > 2000 mg/kg

Acute dermal LD_{50}:
Calculated for formulation: >3000 mg/kg
Atrazine Technical: > 2000 mg/kg

Acute inhalation LC_{50}:
LC_{50} (4h) for rats (male and female): >5.8 mg/λ of air.
Acute skin irritation:
The substance is expected to be non-irritating to skin.
Acute eye irritation:
Product is expected to be a mild eye irritant.
Dermal sensitisation:
May cause dermal sensitisation.
Carcinogenicity:
There is inadequate evidence in humans for the carcinogenicity of atrazine. There is limited evidence in experimental animals for the carcinogenicity of atrazine**.**
Teratogenicity:
Not teratogenic. At doses below 10 mg/kg/day for rats and 1mg/kg/day for rabbits, no evidence of material toxicity was noted.
Mutagenicity:
Atrazine was not mutagenic in 4 Salmonella tester strains (ta98, ta100, ta1535, and ta1538) at up to 100 ug/plate in presence of arochlor-induced S9.

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12. ECOLOGICAL INFORMATION

ECOTOXICOLOGY:
Birds: Very low toxicity.
Fish: Harmful to fish.
Atrazine: 96-h LC_{50}: 45,95mg/l (rainbow trout).
Daphnia: Toxic to Daphnia.
Atrazine: LC_{50} (48 hr): 5,29mg/l
Algae: Very toxic to algae.
Atrazine: EC_{50} (96-h) 0,116 mg/l (*Selenastrum capricornutum*)
Bees: Relatively non-toxic.
Soil/Environment: Strongly adsorbed to soil. Microbial degradation is the major cause of loss from soil. Half-life in soil is between 35 and 50 days, but may be longer under cold or dry conditions. The half-life under groundwater conditions is 105 to 200 days.

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13. DISPOSAL CONSIDERATIONS

Pesticide disposal:
Contaminated absorbents, used containers, surplus product, etc., should be burnt in an incinerator, preferably designed for pesticide disposal. Hydrolysis under alkaline conditions (10% w/v sodium hydroxide) is a suitable method to dispose of small quantities of triazines. Heating speeds up the process. After hydrolysis, dilute and dispose of via the sewage system. Atrazine is relatively stable and characterised by high mobility in some soils and should not be buried in dumpsites, landfills, etc. Comply with any local legislation applying to waste disposal.
Package product wastes:
Emptied containers retain vapour and product residues. Observe all labeled safeguards until container is cleaned, reconditioned, or destroyed. Combustible containers should be disposed of in pesticide incinerators. Non-combustible containers must first be triple-rinsed with water. Containers that are in good condition may be returned to the manufacturer, or to a drum

reconditioner for reuse with the same type of pesticide product. Containers that are not to be reused should be punctured and transported to a scrap metal facility for recycling or disposal.

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14. TRANSPORT INFORMATION

UN NUMBER	3082
ADR/RID	
Class:	9
Proper shipping name:	Environmentally hazardous substance, liquid, n.o.s. (Atrazine 50%)
Classification Code:	M7
Packaging Group:	III
Label:	9
Hazard ID NR:	90
IMDG/IMO	
Proper shipping name:	Environmentally hazardous substance, liquid, n.o.s. (Atrazine 50%)
Class:	9
Label:	9 Marine pollutant
Packaging group:	III
AIR/IATA	
Proper shipping name:	Environmentally hazardous substance, liquid, n.o.s. (Atrazine 50%)
Class:	9
Packaging group:	III
Passenger aircraft	Y911(max 30kg); 911 (No limit)
Cargo aircraft:	911 (No limit)
Tremcard number	90GM7-III

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15. REGULATORY INFORMATION

Symbol:	Xn; N
Indication of danger:	Harmful; Environmentally hazardous.
Risk phrases:	
R40	Limited evidence of carcinogenic effect.
R48/22	Harmful: danger of serious damage to health by prolonged exposure if swallowed.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Safety phrases:	
S2	Keep out of reach of children
S13	Keep away from food, drink and animal feedstuffs**.**
S20/21	When using do not eat, drink or smoke.
S22	Do not breathe dust.
S 37	Wear suitable gloves.
S46	If swallowed, seek medical advice immediately and show him the container or label.

S60	This material and its container must be disposed of as hazardous waste.
S 61	Avoid release to the environment. Refer to special instructions / Safety data sheet.

National Legislation: In accordance with the South African national Road Traffic Act, 1996 (Act 93 of 1996), the Fire Brigade Act, 1987 (Act 99 of 1987) and the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993). It also conforms to basic EU requirements.

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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 recipient's sole responsibility to ensure the transfer of all relevant information from this MSDS to their own MSDS.

REFERENCES

- The Pesticide Manual; Eleventh Thirteenth; Editor Clive Tomlin; Crop Protection Publications, 2003.
- ADR-VOL I, January 2005.
- Dangerous Goods Regulations; IATA; International Air Transport Association, 47TH Edition, Effective 1 January 2006.
- IMDG code, Vol. 2, 2005.
- ECB-ESIS (European chemical Substances Information System).