

Emergency Overview

Off-white liquid

CAUTION!

KEEP OUT OF REACH OF CHILDREN

MAY CAUSED SKIN IRRITATION

MAY CAUSED EYE IRRITATION

Potential Health effects

Dermal contact, ingest and inhalation of the product are the primary routes to induce potential adverse health effects.

5. FIRST AID MEASURES

If swallowed: Rinse mouth with water. Never give anything by mouth to an unconscious person. Should be send to the hospital treatment immediately.

If in eye: Hold eyelids apart and flush eyes with plenty of water for at least 15—20 minutes. Consult a physician.

If on skin: Wash with plenty of soap and water, including hair and under fingernails. Do not apply any medicating agents except on the advice of a physician. Remove contaminated clothing and decontaminate prior to use.

If Inhaled: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.

Notes to Physician: There is no specific antidote, Treat symptomatically.

6. FIRE FIGHTING MEASURES

Fire and explosive Properties

Auto-Ignition Temperature	No available
Flash Point	No available (Fluroxypyr) >200 °C (Cleveland open cup) (Nicosulfuron) No available (Atrazine)

Extinguishing Media

Water fog, Carbon Dioxide, Dry Chemical, foam.

Fire Fighting Instructions

The product is not flammable. But if firing, fire fighters and others who may be exposed to products of combustion should wear full firefighting turn out gear and self-contained breathing apparatus. Firefighting equipment should be thoroughly decontaminated after use. Person who may have been exposed to contaminated smoke should be immediately

examined by a physician and checked for symptoms of poisoning. The symptoms should not be mistaken for heat exhaustion or smoke inhalation.

7. ACCIDENTAL RELEASE MEASURES

In Case of Spill or Leak

Stop the leak, if possible. Ventilate the space involved. Absorb, sweep up, place in container for disposal. Shut off or remove all ignition sources. Prevent waterway contamination. Construct a dike to prevent spreading. Protect works with water spray. Collect run-off water and transfer to drums or tanks for later disposal.

8. HANDLING AND STORAGE

Handling

Harmful if swallowed, inhaled, or absorbed through the skin. Causes eye irritation. Do not breathe gas or allow to get in eyes, on skin, or on clothing. Wash hands, arm and face thoroughly with soap and warm water after use and before eating or smoking. Wash all contaminated clothing with soap and hot water before reuse. Do not contaminate feed or food items. Keep out of reach of children.

Storage

Store in a cool dry and air ventilating warehouse and protected from light. Avoid contacting with food, feed stuff and seed.

9. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye/Face Protection

Goggles and full-face shield should be used when needed to prevent fungicide from face and getting into the eyes.

Skin Protection

Avoid skin contact. Use chemical-resistant gloves, and wear long sleeves and trousers to prevent dermal exposure.

Respiratory Protection

Under normal handling conditions no respiratory protection is needed. However, if needed to prevent respiratory irritation, either a respirator approved for dusts and mists, or one approved for pesticides.

10. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Off-white
Physical state:	Liquid
Odor:	Not obvious odor
pH:	5.0-8.0
Melting point	232–233 °C (Fluroxypyr)

	169–172 °C; (tech., 140–161 °C) (Nicosulfuron)
	175.8 °C (Atrazine)
Boiling point:	N/A (Fluroxypyr)
	N/A (Nicosulfuron)
	205.0 °C/101 kPa (Atrazine)
Vapor pressure:	3.784× 10 ⁻⁶ mPa (20°C) (Knudsen effusion); 5× 10 ⁻² mPa (25°C) (Fluroxypyr)
	<8 × 10 ⁻⁷ mPa (25 °C) (Nicosulfuron)
	3.85 × 10 ⁻² mPa (25 °C) (OECD 104) (Atrazine)
Solubility in water:	In water 5700 (pH 5.0), 7300 (pH 9.2) mg/l (20°C). (Fluroxypyr)
	In water 7.4 g/l (pH 7). (Nicosulfuron)
	In water 33 mg/l (pH 7, 22 °C). (Atrazine)
Solubility in organic solvents:	In acetone 51.0, methanol 34.6, ethyl acetate 10.6, isopropanol 9.2, dichloromethane 0.1, toluene 0.8, xylene 0.3 (all in g/l, 20 °C). (Fluroxypyr)
	In acetone 18, ethanol 4.5, chloroform, DMF 64, acetonitrile 23, toluene 0.370, hexane <0.02, dichloromethane 160 (all in g/kg, 25 °C). (Nicosulfuron)
	In ethyl acetate 24, acetone 31, dichloromethane 28, ethanol 15, toluene 4.0, <i>n</i> -hexane 0.11, <i>n</i> -octanol 8.7 (all in g/l, 25 °C). (Atrazine)
Partition coefficient:	K _{ow} logP = -1.24 (unstated pH) (Fluroxypyr)
	K _{ow} logP = -0.36 (pH 5), -1.8 (pH 7), -2 (pH 9) (Nicosulfuron)
	K _{ow} logP = 2.5 (25 °C) (Atrazine)

11. STABILITY AND REACTIVITY

Stability

Stable in acidic media. Fluroxypyr is acidic, and reacts with alkalis to form salts. DT₅₀ in water 185 d (pH 9, 20 °C). Stable at temperatures up to melting point. Stable in visible light. (Fluroxypyr)

Hydrolysis DT₅₀ 15 d (pH 5); stable at pH 7 and pH 9. (Nicosulfuron)

Relatively stable in neutral, weakly acidic and weakly alkaline media. Rapidly hydrolyzed to the hydroxy derivative in strong acids and alkalis, and at 70 °C in neutral media; DT₅₀ (pH 1) 9.5, (pH 5) 86, (pH 13) 5.0 d. (Atrazine)

Hazardous Polymerization

Does not occur.

Incompatibility

It is not compatible with strong acid, strong alkaline and strong oxide materials.

Hazardous Decomposition Products

Carbon oxides, Nitrogen oxides (NO_x), Sulfur oxides, Hydrogen chloride gas

12. TOXICOLOGICAL INFORMATION

- Acute Oral:** Acute oral LD₅₀ for rats 2405 mg/kg. (Fluroxypyr)
Acute oral LD₅₀ for male and female rats and mice >5000 mg/kg. (Nicosulfuron)
Acute oral LD₅₀ for rats 1869–3090 mg tech./kg, mice >1332–3992 mg/kg. (Atrazine)
- Acute Dermal:** Acute percutaneous LD₅₀ for rabbits >5000 mg/kg. (Fluroxypyr)
Acute percutaneous LD₅₀ for male and female rats >2000 mg/kg. (Nicosulfuron)
Acute percutaneous LD₅₀ for rats >2000 mg/kg. (Atrazine)
- Irritation:** Mild eye irritant; non-irritating to skin (rabbits). (Fluroxypyr)
Moderate eye irritant; not a skin irritant (rabbits). (Nicosulfuron)
Non-irritating to skin; minimally irritating to eyes (rabbits). (Atrazine)
- Sensitization:** No data available. (Fluroxypyr)
Not a skin sensitizer (guinea pigs). (Nicosulfuron)
Skin sensitizer in guinea pigs, but not in humans. (Atrazine)
- Long-term Studies:** NOEL (2y) for rats 80 mg/kg b.w. daily; (1.5y) for mice 320 mg/kg b.w. daily. No indication of carcinogenicity, teratogenicity or mutagenicity. (Fluroxypyr)
NOAEL (1 y) for dogs 125 mg/kg b.w. (*EPA RED*). (Nicosulfuron)
NOEL (2 y) for rats 70 ppm (3.5 mg/kg daily), for dogs 150 mg/kg diet (5.0 mg/kg daily), for mice 10 mg/kg diet (1.4 mg/kg daily), NOAEL 38.4 mg/kg b.w. daily. (Atrazine)

13. ECOLOGICAL INFORMATION

Ecotoxicological Information

- Effects on Birds:** Acute oral LD₅₀ for mallard ducks and bobwhite quail >2000 mg/kg. (Fluroxypyr)
Acute oral LD₅₀ for bobwhite quail >2000 mg/kg. Dietary LC₅₀ (5 d) for mallard ducks and bobwhite quail >5000 ppm. (Nicosulfuron)
Acute oral LD₅₀ for bobwhite quail 940, for mallard ducks and Japanese quail >2000 mg/kg. Dietary LC₅₀ (8 d) for Japanese quail >5000, mallard duck >1563 mg/kg. (Atrazine)
- Effects on Fish:** LC₅₀ (96 h) for rainbow trout and golden orfe >100 mg/l. (Fluroxypyr)
LC₅₀ (96 h) for rainbow trout 65.7 mg/l. (Nicosulfuron)
LC₅₀ (96 h) for rainbow trout 11.0, guppies 4.3 mg/l. (Atrazine)
- Effects on Daphnia:** LC₅₀ (48 h) >100 mg/l. (Fluroxypyr)

- LC₅₀ (48 h) 90 mg/l. (Nicosulfuron)
 EC₅₀ (48 h) ≥29. (Atrazine)
- Effects on Algae: EC₅₀ (96 h) for green algae >100 mg/l. (Fluroxypyr)
 NOEC (96 h) for green algae 100 mg/l. (Nicosulfuron)
 EC₅₀ (72 h) for *Scenedesmus subspicatus* 0.043 mg/l, EC₅₀(96 h) for
Pseudokirchneriella subcapitata 0.01 mg/l. (Atrazine)
- Effects on Bees: Not toxic to bees. LD₅₀ (contact, 48 h) >25 µg/bee. (Fluroxypyr)
 LD₅₀ (contact) >76 µg/bee; dietary LC₅₀ (48 h) >1000 ppm. NOEC 500
 ppm. (Nicosulfuron)
 LD₅₀ (oral) >97 µg/bee; (contact) >100 µg/bee. (Atrazine)

Chemical Fate Information

Animals: Hydrolyzed to the parent acid, fluroxypyr, which is extensively metabolized and rapidly excreted, mainly unchanged, in the urine. (Fluroxypyr)

In goats, following a dose of 60 ppm, <0.1 ppm was found in tissues and milk; therefore, nicosulfuron and its metabolites do not bioaccumulate. Hydrolysis of the sulfonylurea bridge and hydroxylation were the main metabolic pathways. (Nicosulfuron)

In mammals, following oral administration, atrazine is rapidly and completely metabolized, primarily by oxidative dealkylation of the amino groups, and by reaction of the chlorine atom with endogenous thiols. Diamino chlorotriazine is the main primary metabolite, which readily conjugates with glutathione. More than 50% of the dose is eliminated in the urine and around 33% in the faeces within 24 hours. (Atrazine)

Plants: In plants, fluroxypyr is not metabolized, but biotransformation to conjugates occurs. (Fluroxypyr)

Degraded rapidly in maize, DT₅₀ 1.5–4.5 d. Residues <0.02 ppm in all crops. Hydrolysis of the sulfonylurea bridge to form the pyridine sulfonamide and pyrimidine amine, and hydroxylation on the pyrimidine ring, were the main metabolic pathways. (Nicosulfuron)

In tolerant plants, atrazine is readily metabolized to hydroxy atrazine and amino acid conjugates, with further decomposition of hydroxy atrazine by degradation of the side-chains and hydrolysis of the resulting amino acids on the ring, together with evolution of CO₂. In sensitive plants, unaltered atrazine accumulates, leading to chlorosis and death. (Atrazine)

Soli/Environment: In soil, fluroxypyr is rapidly degraded by micro-organisms in aerobic conditions to 4-amino-3,5-dichloro-6-fluoropyridin-2-ol, 4-amino-3,5-dichloro-6-fluoro-2-methoxypyridine, and CO₂. DT₅₀ in laboratory soil studies 5–9 d (c.

23 °C). Lysimeter and field studies demonstrate there is no evidence of any significant leaching; (Fluroxypyr)

Soil DT₅₀ (aerobic) 26 d (pH 6.1, 5.1% o.m., 25 °C). In four sandy loams, K_d (25 °C) 0.16 (pH 6.6, 1.1% o.m.) to 1.73 (pH 5.4, 4.3% o.m.). Photolysis DT₅₀ (soil) 60–67 d; (water) 14–19 d (pH 5), 200–250 d (pH 7), 180–200 d (pH 9). Values from separate studies were: Soil DT₅₀ 24–43 d (20 °C); DT₉₀ 80–143 d (20 °C). K_d 0.05–0.7. In water, DT₅₀ 15 d (pH 5, 20 °C). (Nicosulfuron)

Main metabolites under all conditions are desethylatrazine and hydroxy atrazine. Field DT₅₀ 16–1174d (median 38.5 d), the longer values being from cold or dry conditions. In water/sediment system DT₅₀ 14–20 d in the water and DT₅₀ 35–80 in the whole system. DT₅₀ under groundwater conditions 105–>200 d, depending on test system. K_d 0.2–18 ml/g, K_{oc} 39–173 ml/g; desalkylated metabolites had values similar to those of atrazine (K_d 0.2–8.6 ml/g) whereas hydroxy atrazine (K_d 1.6–390) was much more strongly adsorbed. (Atrazine)

14. DISPOSAL CONSIDERATIONS

Waste Disposal

Pesticide wastes are acutely hazardous. Do not reuse product containers. Dispose product containers, waste containers, residues according local health and environmental regulations.

15. TRANSPORT INFORMATION

UN Number: UN 3082

Dangerous Goods Class: 9

Packing Group: III

16. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

17. OTHER INFORMATION

The information contained herein relates only to the specific material identified. We believe that such information is accurate and reliable as of the date of this material safety data sheet, but no representation, guarantee or warranty, express or implied, is made as to the reliability or completeness of the information. Urge persons receiving this information to make their own determination as to the information's suitability and completeness for their particular application.

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