MATERIAL SAFETY DATA SHEET
Rohm and Haas Company

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

GOAL® 1.6E Herbicide

Product Code : 62757
Key : 893541-4
MSDS Date : 10/21/97

COMPANY IDENTIFICATION

ROHM AND HAAS COMPANY
100 INDEPENDENCE MALL WEST
PHILADELPHIA, PA 19106-2399

EMERGENCY TELEPHONE NUMBERS

HEALTH EMERGENCY : 215-592-3000
SPILL EMERGENCY : 215-592-3000
CHEMTREC : 800-424-9300

2. COMPOSITION/INFORMATION ON INGREDIENTS

No		CAS REG NO	WEIGHT (%)
1	Oxyfluorfen	42874-03-3	20-21
2	Xylene	1330-20-7	9-10
3	Ethylbenzene	100-41-4	1-2
4	Cyclohexanone	108-94-1	19-21
5	Related reaction products	None	49-51
6	Surfactant mixture	Undisclosed	
7	Solvent naphtha, petroleum, light arom.	64742-95-6	

See Section 8, Exposure Controls / Personal Protection

3. HAZARDS IDENTIFICATION

Primary Routes of Exposure

Inhalation
Dermal Absorption
Skin Contact
Eye Contact

Inhalation

Inhalation of solvent vapor or mist can cause the following:
- irritation of nose, throat, and lungs - headache - nausea - dizziness - drowsiness - loss of coordination - stupor - unconsciousness

Eye Contact

Direct contact with material can cause the following:
- severe irritation - possibly permanent injury

Skin Contact

The solvent(s) in this material can be absorbed through intact skin.
Material can cause the following:
- severe skin irritation

Prolonged or repeated skin contact can cause the following:
- defatting and drying of the skin which can lead to irritation and dermatitis

Ingestion

Material is possibly harmful if swallowed.

Delayed Effects

Repeated overexposure to the active ingredient in this material can cause the following:
- liver damage
Prolonged or repeated overexposure to xylene can cause the following:
- reversible liver impairment - reversible kidney impairment
Prolonged or repeated overexposure to cyclohexanone can cause the following:
- liver damage - kidney damage
Prolonged or repeated overexposure to naphtha can cause the following:
- liver damage - kidney damage

4. FIRST AID MEASURES

Inhalation

Move subject to fresh air. If breathing is difficult, give oxygen. Give artificial respiration if breathing has stopped. Get prompt medical attention.

Eye Contact

IMMEDIATELY flush eyes with a large amount of water for at least 15 minutes. Get prompt medical attention.

Skin Contact

IMMEDIATELY get under a safety shower. Wash affected skin areas thoroughly with soap and water. Remove and wash contaminated clothing thoroughly. Do not take clothing home to be laundered. Get prompt medical attention.

Ingestion

If swallowed, give 2 glasses of water to drink. Never give anything by mouth to an unconscious person. IMMEDIATELY see a physician. DO NOT induce vomiting, petroleum distillate present. Careful gastric lavage may be indicated.

Note to Physician

Exposure to xylene can affect the CNS, pulmonary, cardiovascular, and gastrointestinal systems. Liver enzymes, EKG, serum electrolytes, and a chest X-ray should be done in cases of massive exposure.

Direct toxic effects from cyclohexanone ingestion are dose related. Conditions to be alerted to in case of excessive ingestion are hepatomegaly, hepatic necrosis, renal failure, coagulation abnormalities, and seizures. Liver dysfunction is likely within a short time if the person is symptomatic (ie. nausea, vomiting). Decontamination of the gut is appropriate after significant ingestion.

In acute cases of naphtha overexposure or ingestion, patients should be evaluated for signs of respiratory distress.

5. FIRE FIGHTING MEASURES

Flash Point	40°C/104°F Setaflash Closed Cup
Auto-ignition Temperature	423°C/793°F Cyclohexanone
Lower Explosive Limit	1.0% Xylene
Upper Explosive Limit	8.1% Cyclohexanone

Unusual Hazards

Pesticide particulates can become airborne.
Combustion generates toxic fumes of the following:
- hydrogen chloride - hydrogen fluoride - nitrogen oxides

Extinguishing Agents

Use the following extinguishing media when fighting fires involving this material:
- carbon dioxide - dry chemical - water spray - polar solvent (alcohol) foam

Personal Protective Equipment

Wear self-contained breathing apparatus (pressure-demand MSHA/NIOSH approved or equivalent) and full protective gear.

Special Procedures

Contain run-off. Remain upwind. Avoid breathing smoke. Use water spray to cool containers exposed to fire.

6. ACCIDENTAL RELEASE MEASURES

Personal Protection

Appropriate protective equipment must be worn when handling a spill of this material. See SECTION 8, Exposure Controls/Personal Protection, for recommendations. If exposed to material during clean-up operations, see SECTION 4, First Aid Measures, for actions to follow. Remove all contaminated clothing promptly. Wash all exposed skin areas with soap and water immediately after exposure. Thoroughly launder clothing before reuse. Do not take clothing home to be laundered.

Procedures

Eliminate all ignition sources. Ventilate the spill area. Avoid breathing vapor. Contain spills immediately with inert materials (e.g. sand, earth). Transfer liquids and solid diking material to separate suitable containers for recovery or disposal. See the **REGULATORY INFORMATION** Section for reporting requirements.
CAUTION: Keep spills and cleaning runoff out of municipal sewers and open bodies of water.
NOTE: Spills on porous surfaces can contaminate groundwater.

7. HANDLING AND STORAGE

Storage Conditions

The minimum recommended storage temperature for this material is 0C/32F.
Do not store this material near food, feed or drinking water. Store away from excessive heat (e.g. steampipes, radiators), from sources of ignition and from reactive materials. Avoid all ignition sources. Ground all metal containers during storage and handling.

Handling Procedures

Do not handle material near food, feed or drinking water. Ground all containers when transferring material. This material is a severe irritant. See SECTION 8, Exposure Controls/Personal Protection, prior to handling.

Other

CONTAINERS HAZARDOUS WHEN EMPTY. Since emptied containers retain product residue (vapors and/or liquid) follow all MSDS and label warnings even after container is emptied. Residual vapors in empty containers may explode on ignition. DO NOT cut, drill, grind or weld on or near container. Triple rinse (or equivalent) and puncture empty container. Dispose empty container in a sanitary landfill or by incineration as allowed by state and local authorities. Avoid inhalation of smoke if incinerated.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limit Information

No		CAS REG NO	WEIGHT (%)
1	Oxyfluorfen	42874-03-3	20-21
2	Xylene	1330-20-7	9-10
3	Ethylbenzene	100-41-4	1-2
4	Cyclohexanone	108-94-1	19-21
5	Related reaction products	None	49-51
6	Surfactant mixture	Undisclosed	
7	Solvent naphtha, petroleum, light arom.	64742-95-6	

Comp.		ROHM AND HAAS		OSHA		ACGIH	
No.	Units	TWA	STEL	TWA	STEL	TWA	STEL
1	mg/m3	0.2	1.6	None	None	None	None
2	ppm	50 Skin	75 Skin	100	150	100	150
3	ppm	50	75	100	125	100	125
4	ppm	25 Skin	75 Skin	25 Skin	None	25 Skin	None
5		None	None	None	None	None	None
6		None	None	None	None	None	None
7	ppm	50	75	None	None	None	None

Respiratory Protection

A respiratory protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. None required if airborne concentrations are maintained below the exposure limit listed in 'Exposure Limit Information'.

Up to 10 times the TWA/TLV: Wear a MSHA/NIOSH approved (or equivalent) half-mask, air-purifying respirator.
Up to 1000 ppm organic vapor: Wear a MSHA/NIOSH approved (or equivalent) full-facepiece, air-purifying respirator.
Above 1000 ppm organic vapor or Unknown: Wear a MSHA/NIOSH approved (or equivalent) self-contained breathing apparatus in the positive pressure mode,
OR,
MSHA/NIOSH approved (or equivalent) full-facepiece airline respirator in the positive pressure mode with emergency escape provisions.

Air-purifying respirators should be equipped with MSHA/NIOSH approved (or equivalent) cartridges for protection against pesticides.

Eye Protection

Use chemical splash goggles (ANSI Z87.1 or approved equivalent). Eye protection worn must be compatible with respiratory protection system employed.

Hand Protection

Chemical-resistant gloves should be worn whenever this material is handled.
Glove permeation data does not exist for this material. The following glove(s) should be used for splash protection only:
- Nitrile
Gloves should be removed and replaced immediately if there is any indication of degradation or chemical breakthrough.
Rinse and remove gloves immediately after use. Wash hands with soap and water.

Other Protection

Use chemically resistant apron or other impervious clothing to avoid prolonged or repeated skin contact.

Engineering Controls (Ventilation)

Use explosion proof local exhaust ventilation with a minimum capture velocity of 100 ft/min. (0.5 m/sec.) at the point of vapor evolution. Refer to the current edition of Industrial Ventilation: A Manual of Recommended Practice published by the American Conference of Governmental Industrial Hygienists for information on the design, installation, use, and maintenance of exhaust systems.

Other Protective Equipment

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Opaque
Color	Dark colored
State	Liquid
Odor Characteristic	Aromatic odor
pH	7.0
Viscosity	0.51 CPS
Specific Gravity (Water = 1)	0.992
Vapor Density (Air = 1)	21.9
Vapor Pressure	4.0 mm Hg @ 20°C/68°F
Melting Point	No Data
Boiling Point	139° to 156°C/282° to 313°F
Solubility in Water	Dispersible
Percent Volatility	45 to 80 %
Evaporation Rate (BAc = 1)	< 1

See Section 5, Fire Fighting Measures

10. STABILITY AND REACTIVITY

Instability

This material is considered stable. However, avoid contact with ignition sources (e.g. sparks, open flame, heated surfaces).

Hazardous Decomposition Products

Thermal decomposition may yield the following:
- hydrogen chloride - hydrogen fluoride

Hazardous Polymerization

Product will not undergo polymerization.

Incompatibility

Avoid contact with the following:
- acids - bases - amines - oxidizing agents - halogens - molten sulfur

11. TOXICOLOGICAL INFORMATION

Acute Data

Oral LD50 - rat: >500 mg/kg
Dermal LD50 - rabbit: >5000 mg/kg
Eye Irritation - rabbit: severe irritation
Skin Irritation - rabbit: severe irritation

Toxicity data for a compositionally similar material are listed below.

Inhalation LC50 - rat: >22.64 mg/L for 4 hr

Subchronic/Chronic Data

The following data pertains to studies conducted with the technical material, 70-75% active ingredient:
Liver necrosis was observed in mice at 20 ppm and above; the overall NOEL was 2 ppm (0.3 mg/kg) in mice.

Carcinogenicity Data

The following data pertains to studies conducted with the technical material, 70-75% active ingredient:
No evidence of carcinogenicity was observed in long-term studies with rats. A slightly higher incidence (not statistically significant) of liver tumors was seen in male mice at 200 ppm but not at 20 or 2 ppm, and not in female mice at any of these doses.

Mutagenicity Data

The following data pertains to studies conducted with the technical material, 70-75% active ingredient:
Ames mutagenicity: Positive
Mouse Lymphoma Point Mutation: Positive
In vitro rat hepatocyte Unscheduled DNA Synthesis: Negative
In vivo cytogenetic assay (rat): Negative
In vivo chromosome aberration assay (mouse bone marrow cells): Negative

Reproductive/Teratology Data

The following data pertains to studies conducted with the technical material, 70-75% active ingredient:
No evidence of teratogenicity was observed in studies with rabbits. GOAL® Technical was not teratogenic or embryo-fetotoxic in rats at doses that were not maternally toxic (15 mg/kg), however at maternally toxic doses (150 mg/kg) embryo-fetotoxicity and skeletal malformations were evident. No effects on reproductive performance in rats was evident at doses up to and including 400 ppm.

Sensitization Data

The following data pertains to studies conducted with the technical material, 70-75% active ingredient:
Sensitization - human: No allergic response observed.
Delayed Contact Hypersensitivity - guinea pig: No allergic response observed.

12. ECOLOGICAL INFORMATION

Environmental Toxicity

Bobwhite quail, Acute oral LD50: > 2150 mg/kg
Bobwhite quail, 8 Day Oral LC50: > 5000 mg/kg
Mallard duck, 8 Day Oral LC50: > 5000 mg/kg
Bluegill sunfish (Lepomis macrochirus), 96 Hour LC50: 0.2 mg/l
Rainbow trout (Salmo gairdneri), 96 Hour LC50: 0.41 mg/l
Channel catfish (Ictalurus punctatus), 96 Hour LC50: 0.4 mg/l
Grass shrimp, 96 Hour LC50: 32 ug/l
Eastern oyster, 96 Hour EC50: 69 ug/l
Fiddler crab (Uca pugilator), 96 Hour LC50: > 1000 mg/l
Freshwater clam, 96 Hour LC50: 9.6 mg/l
Honeybee, 96 Hour LC50: > 10000 ppm

The above Environmental Toxicity data are from studies conducted on the technical material, 70-75% active ingredient.

13. DISPOSAL CONSIDERATIONS

Procedure

Incinerate liquid and contaminated solids in accordance with local, state, and federal regulations. (See 40 CFR 268)

14. TRANSPORT INFORMATION

US DOT Hazard Class ..... NONREGULATED

This classification is used when shipping in non-bulk packages for domestic surface transportation only. Exceptions in CFR 49 Parts 171-177 may apply. Consult CFR 49 Parts 171-177 to determine appropriate classification when shipping in bulk packages or when shipping by air or ocean.

15. REGULATORY INFORMATION

Workplace Classification

This product is considered hazardous under the OSHA Hazard Communication Standard (29CFR 1910.1200).

This product is subject to regulation under the Canadian Pest Control Products Act (P.C.P. Act). Therefore, this product is excluded from the supplier labeling and material safety data sheet requirements as specified in Section 12 of the Hazardous Products Act.

SARA TITLE 3: Section 311/312 Categorizations (40CFR 370)

This product is a hazardous chemical under 29CFR 1910.1200, and is categorized as an immediate and delayed health, and flammability physical hazard.

SARA TITLE 3: Section 313 Information (40CFR 372)

This product contains a chemical which is listed in Section 313 at or above de minimis concentrations. The following listed chemicals are present: (Quantity present is found elsewhere on this MSDS.)
- Xylene (mixed isomers) (1330-20-7)
- Ethylbenzene (100-41-4)
- Oxyfluorfen (42874-03-3)

CERCLA Information (40CFR 302.4)

This material is regulated under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Superfund Amendments and Reauthorization Act (SARA) Title III Section 304. This material is or contains chemical(s) listed in 40 CFR Table 302.4 or nondesignated RCRA ICR substance(s). (Nondesignated ICR substances apply to materials that will not be reused.) The Reportable Quantity(s) (RQ) are listed below. Releases in excess of its reportable quantity must be reported to the National Response Center (1-800-424-8802) and to the appropriate state and local emergency response organizations.
Xylene (1330-20-7) 100lbs.
Cyclohexanone (108-94-1) 5000 lbs.
Ethylbenzene (100-41-4) 1000lbs.

Waste Classification

When a decision is made to discard this material as supplied, it is classified as a RCRA hazardous waste with the characteristic of ignitability, hazardous waste number: D001

United States

This product is subject to regulation under the US Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and is therefore exempt from U.S. Toxic Substances Control Act (TSCA) Inventory listing requirements.

16. OTHER INFORMATION

Rohm and Haas Hazard Rating		Scale
Toxicity	3	4=EXTREME
Fire	2	3=HIGH
Reactivity	0	2=MODERATE
Special	-	1=SLIGHT
		0=INSIGNIFICANT

Ratings are based on Rohm and Haas guidelines, and are intended for internal use.

ABBREVIATIONS:

ACGIH = American Conference of Governmental Industrial Hygienists
OSHA = Occupational Safety and Health Administration
TLV = Threshold Limit Value
PEL = Permissible Exposure Limit
TWA = Time Weighted Average
STEL = Short-Term Exposure Limit
BAc = Butyl acetate
| Bar denotes a revision from previous MSDS in this area.