1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: MACHETE 520 EW by Homogenizing (India)  DATE: 11/20/2000

MONSANTO COMPANY, 800 N. LINDBERGH BLVD., ST. LOUIS, MO 63167

FOR CHEMICAL EMERGENCY, SPILL LEAK, FIRE, EXPOSURE, OR ACCIDENT
Call CHEMTREC - Day or Night - 1-800-424-9300 Toll free in the continental U.S., Hawaii, Puerto Rico, Canada, Alaska, or Virgin Islands. For calls originating elsewhere: 703-527-3887 (collect calls accepted)

For additional non-emergency information, call collect: 314 - 694 - 4000

2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>CAS NO.</th>
<th>% BY WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTIVE INGREDIENT:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Butachlor; *2-chloro-2',6'-diethyl-N-(butoxymethyl) acetanilide</td>
<td>23184-66-9</td>
<td>50.5</td>
</tr>
<tr>
<td>OTHER INGREDIENTS:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>+</td>
<td>49.5</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>100.0</td>
</tr>
</tbody>
</table>

* -- Hazardous chemical(s) under the criteria of the US OSHA Hazard Communication Standard (29 CFR 1910.1200).
+ -- The specific chemical identity is being withheld because it is trade secret information of Monsanto Company.

Single or Mixed Product: Mixed
See Section 8 for exposure limits.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

APPEARANCE AND ODOUR: White coloured solution with little odour.

POTENTIAL HEALTH EFFECTS

WARNING!

MAY BE A SKIN SENSITIZER
MAY CAUSE EYE IRRITATION
LIKELY ROUTES OF EXPOSURE: Skin and eyes

EYE CONTACT: Contact with MACHETE 520 EW by Homogenizing may cause substantial but temporary eye injury based on toxicity studies.

SKIN CONTACT: Slightly irritating based on reports of human exposure. Though this material has not been reported to produce an allergic response, information from animal studies indicates that repeated contact with this material may cause irritation and/or allergic skin reaction in susceptible individuals.

INHALATION: Inhalation of this material may be irritating to the respiratory tract.

INGESTION: This product is no more that slightly toxic based on toxicity studies. No significant adverse health effects are expected to develop if only small amounts (less than a mouthful) are swallowed.

CHRONIC: Chronic dietary administration of butachlor has been shown to cause tumors to laboratory animals (rats). This product is not believed to be a cancer risk to humans when handled according to label instructions. Not listed with IARC, NTP or OSHA carcinogen list. (See Section 11 for a complete discussion of toxicology data).

4. FIRST AID MEASURES

IF IN EYES: Immediately flush eyes with plenty of water for 15 minutes. Get medical attention.

IF ON SKIN: Immediately flush with plenty of water while removing contaminated clothing. As soon as soap is available, wash thoroughly with soap and water. Wash clothing before reuse. Sensitized persons should avoid further contact and reuse of clothing. Get medical attention.

IF INHALED: Remove individual to fresh air. If not breathing, give artificial respiration. Get medical attention.

IF SWALLOWED: DO NOT INDUCE VOMITING. Give large quantities of water. Get medical attention. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

5. FIRE FIGHTING MEASURES

FLASH POINT: estimated to be greater than 100 degrees C

HAZARDOUS PRODUCTS OF COMBUSTION: CO, CO2, NOx,

EXTINGUISHING MEDIA: water spray, foam, dry chemical or other Class b extinguishing media.

FIRE FIGHTING EQUIPMENT: Fire fighters and others exposed to products of combustion should wear self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

6. ACCIDENTAL RELEASE MEASURES

Observe all protection and safety precautions including use of rubber boots or rubber overshoes when cleaning up spills -
Liquid spills on floor or other impervious surfaces should be contained or diked and then absorbed with attapulgite, bentonite or other absorbent clays. Collect contaminated absorbent, place in a metal drum and dispose of in accordance with instructions provided in section 13 of this MSDS. Thoroughly scrub floor or other impervious surface with a strong industrial type detergent and rinse with water.

Liquid spills that soak in the ground should be dug up, placed in metal drums and disposed of in accordance with instructions provided under DISPOSAL, Section 13 of this MSDS.

Leaking containers should be separated from non-leaking containers and either the container or its contents transferred to a drum or other non-leaking container and disposed of in accordance with instructions provided under DISPOSAL, Section 13 of this MSDS. Any recovered spilled liquid should be similarly collected and disposed of.

7. HANDLING AND STORAGE

HANDLING:
- Avoid contact with eyes, skin, or clothing.
- Avoid breathing vapor or spray mist.
- Do not use or store near heat or open flame.
- Use with adequate ventilation.
- Keep container closed.
- Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.
- Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned, or destroyed. DO NOT CUT OR WELD ON OR NEAR THIS CONTAINER. DO NOT REUSE THIS CONTAINER.

STORAGE: Do not contaminate water, foodstuffs, seed or feed by storage or disposal. Follow the Fire Protection Law Regulation.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide natural or mechanical ventilation to control exposure levels below airborne exposure limits (see below). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

EYE PROTECTION: Wear chemical safety goggles to prevent eye contact during operations such as mixing or transfer or other activities when there is potential for eye contact.

SKIN PROTECTION: Wear appropriate protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove for given application. Wear face shield and chemical resistant clothing such as a rubber apron when splashing is likely. Wash contaminated skin promptly. Launder contaminated clothing and clean protective equipment before reuse. Wash thoroughly after handling. ATTENTION: Repeated or prolonged contact may cause allergic skin reaction in some people.

RESPIRATORY PROTECTION: Avoid breathing mist or vapor. Use approved respiratory protection equipment (full facepiece recommended) when airborne exposure limits are exceeded (see below). If used, full facepiece replaces need for chemical goggles. Consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by the manufacturer.
AIRBORNE EXPOSURE LIMITS:

<table>
<thead>
<tr>
<th>PRODUCT/COMPONENT</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
<th>JAIH*</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACHETE 520 EW by Homogenizing</td>
<td>None established</td>
<td>None established</td>
<td>None established</td>
</tr>
<tr>
<td>Butachlor</td>
<td>None established</td>
<td>None established</td>
<td>None established</td>
</tr>
</tbody>
</table>

* - Japan Association of Industrial Health

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: White coloured liquid
Odour: low odour
Specific Gravity: 1.037
Solubility in Water: Emulsifies in water.

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

10. STABILITY AND REACTIVITY

STABILITY: Product is stable under normal conditions of storage and handling. Store in a cool, well ventilated place away from foodstuffs, reducing agents and acids.

MATERIALS TO AVOID: None known

HAZARDOUS DECOMPOSITION PRODUCTS: None known

HAZARDOUS POLYMERIZATION: Will not occur

11. TOXICOLOGICAL INFORMATION

This material has not been tested by Monsanto. Tests on a very similar material that are representative of this material are provided below:

- Oral - Slightly Toxic (rat LD50 - >5,000 mg/kg); US FIFRA Cat. IV
- Dermal - Practically Nontoxic (rat LD50 - >5,000 mg/kg); US FIFRA Cat. IV
- Inhalation - Practically Nontoxic (rat 4 hr LC50 - 3.19 mg/l, US FIFRA Cat IV
- Eye Irritation - Moderately Irritating (rabbit); US FIFRA Cat. III
- Skin Irritation - Slightly Irritating (rabbit, 4-hr exp.); PII = 1.4/8.0, US FIFRA Cat. IV
- Dermal Sensitization (guinea pig) - Positive

COMPONENTS:
Data from laboratory studies conducted by Monsanto and from the available literature on the components of MACHETE 520 EW by Homogenizing.

BUTACHLOR:
In repeat dosing studies (56- to 90-days), dogs fed high doses of butachlor exhibited liver toxicity, while rodents fed butachlor exhibited body weight depression, organ weight effects, liver and kidney toxicity, and bladder changes. Liver
toxicity and pancreas changes also appeared after dosing dogs with butachlor for 1 year.

Following repeated skin exposure (3-weeks) to butachlor, skin irritation was the primary effect observed in rabbits. Skin allergy was observed in guinea pigs following repeated skin exposure. Eye, nose and respiratory irritation, and changes in body weight, some organ weights, clinical parameters, and nasal and urinary bladder tissues were observed following repeated inhalation (4-weeks) by rats. Rats fed butachlor in several long-term (2-years) studies showed some organ weight and clinical chemistry changes, body weight depression, kidney, liver, bladder and eye toxicity. In one study only, tumors of the stomach, nose and thyroid were observed at or above Maximum Tolerated Dose (MTD). Butachlor did not produce tumors at similar treatment levels in a similar study with a different strain of rat. Mice fed butachlor (2-years) had no increase in tumors though body weight, organ weight and clinical parameter changes, anemia and effects on kidney, eyes, gallbladder and lung were seen.

Additional studies conducted to investigate the mechanisms of tumor formation in one particular strain of rats revealed that a non-genotoxic, threshold-based mechanism is involved in the induction of tumors in stomach, nose and thyroid. These mechanisms are operative only in rats fed butachlor at extremely high dose levels in experimental conditions.

No birth defects were noted in rats or rabbits given butachlor orally during pregnancy, even at amounts which produced toxic effects on the mothers. No effects were seen on the ability of male or female rats to reproduce when fed butachlor for 2 successive generations.

Butachlor is not mutagenic or genotoxic.

12. ECOLOGICAL INFORMATION

Monsanto has not conducted ecotoxicity studies with this material. However, toxicity data for a similar formulation are summarized below.

Aquatic Invertebrates:  \textit{Daphnia magna} 48-hr EC\textsubscript{50}:  2.8 mg/L; Moderately Toxic
Warmwater fish: Bluegill sunfish 96-hr LC\textsubscript{50}:  0.88 mg/L; Highly Toxic
Coldwater fish: Rainbow trout 96-hr LC\textsubscript{50}:  0.49 mg/L; Highly Toxic

Laboratory tests indicate that butachlor is practically nontoxic to honey bees and avian species. Butachlor may be quite toxic to some algal species (EC\textsubscript{50} < 0.1 mg/L), but recovery of algal populations is observed when butachlor concentrations decline. Environmental fate studies indicate that butachlor dissipates readily from aquatic systems with a half-life of approximately 4 days.

13. DISPOSAL CONSIDERATIONS

Excess pesticide and rinsate should be disposed of according to label instructions.

Triple rinse emptied bulk container. Then offer for recycling or reconditioning, or dispose of as approved by local authorities. **DO NOT CUT OR WELD ON OR NEAR THIS CONTAINER.**

14. TRANSPORT INFORMATION

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.
This product is not hazardous under the applicable UN, ICAO/IATA, or IMDG regulations.

15. REGULATORY INFORMATION

FIRE PROTECTION LAW: Not applicable
AG CHEMICAL REGULATION LAW: Herbicide

16. OTHER INFORMATION

REASON FOR REVISION: New
Supersedes MSDS dated: New

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of federal law to use a pesticide product in any manner not prescribed on the EPA-approved label.

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