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DuPont
Material Safety Data Sheet

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"DuPont" "LANNATE" LV INSECTICIDE
M0000062 Revised 7-JUN-2005

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"Lannate" is a registered trademark of DuPont.

"DuPont" is a trademark of DuPont.

Corporate MSDS Number : DU003805

Tradenames and Synonyms

"LANNATE" LV
DPX-X1179
METHOMYL

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-800-441-7515 (outside the U.S.
302-774-1000)
Transport Emergency : CHEMTREC 1-800-424-9300(outside U.S.
703-527-3887)
Medical Emergency : 1-800-441-3637 (outside the U.S.
302-774-1000)

COMPOSITION/INFORMATION ON INGREDIENTS

Components

| Material | CAS Number | % |
|--|------------|-------|
| METHOMYL (S-METHYL-N-[(METHYLCARBAMOYL)OXY] THIOACETIMIDATE) | 16752-77-5 | 29 |
| INERT INGREDIENTS (INCLUDES PERCENTAGES OF THE FOLLOWING:) | | 71 |
| CYCLOHEXANONE | 108-94-1 | 29-45 |
| * METHANOL | 67-56-1 | <10 |

* Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

HAZARDS IDENTIFICATION

Emergency Overview

DANGER! POISON! CONTAINS METHANOL. FATAL IF SWALLOWED.
MAY CAUSE BLINDNESS IF SWALLOWED. MAY BE FATAL IF INHALED
OR ABSORBED THROUGH EYES. CAUSES IRREVERSIBLE EYE DAMAGE.

Do not get in eyes, on skin, or on clothing. Do not breathe
vapors or spray mist. Pilot should not assist in the mixing
and loading operation.

WARNING SYMPTOMS

Methomyl poisoning produces effects associated with
anticholinesterase activity which may include weakness,
blurred vision, headache, nausea, abdominal cramps,
discomfort in the chest, constriction of pupils, sweating,
slow pulse, muscle tremors. If warning symptoms appear,
refer to First Aid section on front panel of DuPont LANNATE
LV label and seek medical attention at once.

Potential Health Effects

Based on animal and human data, overexposure may produce
reversible cholinesterase inhibition.

Based on animal data, eye contact with Lannate LV may cause severe
eye irritation with discomfort, tearing, or blurring of vision.
Eye contact may result in systemic toxicity. Prolonged contact
may cause eye corrosion or ulceration.

Based on animal data, skin contact with Lannate LV may cause
irritation with itching, burning, redness, swelling or rash.

Effects that may occur due to the components include the following:

Skin, eye, inhalation or ingestion exposure to Methomyl may cause
acute cholinesterase depression (characterized by nonspecific
discomfort, such as nausea, headache, weakness, cramps, excessive
sweating, salivation and tearing, constricted pupils, blurred
vision, muscle twitching, and confusion) and hematologic effects.
Higher exposures may lead to loss of consciousness; or convulsions
and severe respiratory depression.

Inhalation, ingestion or skin contact with Methyl Alcohol may
cause temporary mild depression of the central nervous system with
dizziness, confusion, incoordination or drowsiness followed by an
asymptomatic period usually ranging from 12 to 24 hours.
Metabolic acidosis develops followed by ocular toxicity (visual
disturbance including blindness). Other effects include
non-specific effects such as headache, nausea and weakness. Gross
overexposure may cause pathological changes in the liver and
kidneys; nerve damage with numbness, weakness or muscle rigidity;
tremors; convulsions; and fatality.

(HAZARDS IDENTIFICATION - Continued)

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

| Material | IARC | NTP | OSHA | ACGIH |
|---------------|------|-----|------|-------|
| CYCLOHEXANONE | | | | A3 |

FIRST AID MEASURES

First Aid

THIS PRODUCT IS AN N-METHYL CARBAMATE INSECTICIDE.

IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person.

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then, continue rinsing eye. Call a poison control center or doctor for treatment advice.

IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

ATROPINE IS AN ANTIDOTE - SEEK MEDICAL ATTENTION AT ONCE IN ALL CASES OF SUSPECTED POISONINGS.

If warning symptoms appear (see WARNING SYMPTOMS), get medical attention. Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also call 1-800-441-3637 for emergency medical treatment information.

Notes to Physicians

TREATMENT - Atropine sulfate should be used for treatment. Administer repeated doses, 1.2 to 2.0 mg intravenously every 10 to 30 minutes until full atropinization is achieved. Maintain atropinization until the patient recovers. Artificial respiration or oxygen may be necessary. Allow no further exposure to any cholinesterase inhibitor until recovery is assured.

(FIRST AID MEASURES - Continued)

Do not use 2-PAM for exposure to "LANNATE" LV alone. However, for exposure to combinations of "LANNATE" LV and organophosphorous insecticides, 2-PAM may be used as required to supplement the atropine sulfate treatment. Do not use morphine.

For medical emergencies involving this product, call toll free 1-800-441-3637.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point : 39-43 C (102-109 F)
Method : Closed Cup
Flammable limits in Air, % by Volume
LEL : 5
UEL : 75
Autoignition : 305 C (581 F)

Combustible. Vapor forms explosive mixture with air. Heating can release vapors which can be ignited.

Fire and Explosion Hazards:

Hazardous gases produced in a fire under conditions that produce incomplete combustion may consist of SO₂, NO₂, CO₂, CH₃NCO, HCN, CO, CS₂. When combusted at higher temperatures with sufficient oxygen, the following are greatly reduced: CS₂, CO, HCN, and CH₃NCO.

Extinguishing Media

Water Spray, Foam, Dry Chemical, CO₂.

Fire Fighting Instructions

Evacuate personnel to a safe area. Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus. Wear full protective equipment. Shut off source of fuel, if possible and without risk. Use water spray. Cool tank/container with water spray. Fight fire from maximum distance, use extreme caution as heat may decompose material and rupture containers.

If area is heavily exposed to fire and if conditions permit, let fire burn itself out since water may increase the area contaminated.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Initial Containment

Remove source of heat, sparks, flame, impact, friction or electricity. Dike spill. Prevent material from entering sewers, waterways, or low areas.

Spill Clean Up

Soak up with sawdust, sand, oil dry or other absorbent material. Shovel or sweep up.

Accidental Release Measures

If product enters crevices and can not be removed, treat with a sodium hydroxide solution and allow to stand 4 hours.
NOTE: Sodium hydroxide is caustic and causes burns. Do not get in eyes, on skin or clothing.

HANDLING AND STORAGE

Handling (Personnel)

Do not breathe vapor or mist. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Wash clothing after use. Do not store or consume food, drink or tobacco in areas where they may become contaminated with this material.

USERS SHOULD: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove personal protective equipment immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Handling (Physical Aspects)

Combustible. Do not use or store near heat or open flame. Keep container closed. Use with adequate ventilation.

(HANDLING AND STORAGE - Continued)

Storage

Do not subject to temperatures below 32°F. Store product in original container only. Do not contaminate water, other pesticides, fertilizer, food or feed in storage. Not for use or storage in or around the home.

KEEP OUT OF REACH OF CHILDREN.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Human flaggers must be in enclosed cabs. Pilot should not assist in the mixing and loading operation.

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR part 170.240 (d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

The enclosed cabs must be used in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR part 170.240 (d)(4-6)]. The handler PPE requirements may be reduced or modified as specified in the WPS.

Personal Protective Equipment

Some materials that are chemically resistant to this product are listed below. If you want more options follow the instructions for Category B on the EPA chemical resistance category selection chart.

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants.
- Chemical-resistant gloves, such as barrier laminate or butyl rubber.
- Shoes plus socks.
- Protective eyewear.

For exposures in enclosed areas, a respirator with either an organic vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G), or NIOSH approved respirator with an organic vapor (OV) cartridge or canister with any R, P, or HE prefilter.

For exposures outdoors, a dust/mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C), or a NIOSH

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

approved respirator with any R, P, or HE prefilter.

Cleaners and repairers of application equipment must wear:

- Long-sleeved shirt and long pants.
- Chemical-resistant gloves.
- Chemical-resistant footwear.
- Protective eyewear.
- Respirator as outlined above.
- Chemical-resistant apron.

Discard clothing or other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil or water is:

- Coveralls.
- Chemical-resistant gloves, such as barrier laminate or butyl rubber.
- Shoes plus socks.
- Protective eyewear.

Discard clothing or other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

Exposure Guidelines

Applicable Exposure Limits

METHOMYL

- PEL (OSHA) : None Established
- TLV (ACGIH) : 2.5 mg/m³, 8 Hr. TWA, A4
- AEL * (DuPont) : None Established

CYCLOHEXANONE

- PEL (OSHA) : 50 ppm, 200 mg/m³, 8 Hr. TWA
- TLV (ACGIH) : 20 ppm, 8 Hr. TWA, Skin, A3
STEL 50 ppm, Skin, A3
- AEL * (DuPont) : 25 ppm, 8 & 12 Hr. TWA
STEL 50 ppm, 15 minute TWA

METHANOL

(Applicable Exposure Limits - Continued)

| | |
|----------------|--|
| PEL (OSHA) | : 200 ppm, 260 mg/m ³ , 8 Hr. TWA |
| TLV (ACGIH) | : 200 ppm, 8 Hr. TWA, Skin STEL 250 ppm |
| AEL * (DuPont) | : 200 ppm, 8 & 12 Hr. TWA, Skin |

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

| | |
|---------------------|--------------------------|
| Vapor Pressure | : 57 mm Hg @ 25 C (77 F) |
| Solubility in Water | : Soluble |
| Odor | : Aromatic |
| Form | : Liquid |
| Color | : Amber |
| Specific Gravity | : 1.021 @ 25C (77F) |

Physical Hazards

Combustible. Do not use or store near heat or open flame.
Keep container closed. Use with adequate ventilation.

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Incompatibility with Other Materials

None reasonably foreseeable.

Decomposition

Decomposes with heat.

Hazardous gases/vapors produced are toxic and/or noxious.
They may include sulfur oxides, methylisocyanate and HCN.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Lannate LV

Inhalation 4 hour LC50: 1.1 mg/L in rats
Oral LD50: 89 mg/kg in male rats
Oral LD50: 49 mg/kg in female rats
Skin absorption LD50: > 2000 mg/kg in rats

Lannate LV is a slight skin irritant and a moderate to severe eye irritant, but is not a skin sensitizer in animals.

A single ocular exposure with Lannate SV caused tremors, pupillary constriction in the treated eye, incoordination, muscle fasciculations, salivation, and lethargy. These signs were not present the day after treatment.

METHOMYL

Effects of a single inhalation exposure to Methomyl include weight loss, diarrhea, lethargy, as well as temporary decreased plasma cholinesterase activity, abnormal gait, hyperactivity and tremors. Corneal opacity was noted in one rat exposed to near-lethal concentrations.

Effects of a single dermal exposure to Methomyl include rapid respiration, miosis and nervous system effects such as tremors. Repeated exposure produced labored breathing, and nervous system effects such as miosis and depression.

A single ingestion exposure to Methomyl produced nervous system effects as described for inhalation and skin exposures. Repeated oral exposure produced signs of nervous system effects similar to acute studies. Feeding studies in rats and mice produced only mild effects having no clear toxicological significance. Long-term feeding studies via the diet produced lowered red blood counts and hematocrit, indications of nervous system effects, and histopathological changes in kidneys, spleen, liver and bone marrow.

In a 91-day oral neurotoxicity study in rats, most of the effects observed appeared to be acute in nature. There were no morphological changes in the nervous system.

Ocular exposure with Methomyl caused pupillary constriction, incoordination, tremors, convulsions, profuse salivation, lethargy, rales, and/or fasciculations were also observed in rabbits approximately 1 and 20 minutes after treatment with 10 mg of methomyl. Pupillary constriction was still evident after 1 hour. These clinical signs are typical of anticholinesterase activity. These effects were not present the day after treatment.

Tests in animals demonstrate no carcinogenic, developmental, or reproductive toxicity.

(TOXICOLOGICAL INFORMATION - Continued)

Methomyl does not produce genetic damage in animals or in bacterial and mammalian cell cultures.

CYCLOHEXANONE

Single dermal exposure to lethal doses of Cyclohexanone caused central nervous system depression, tremors, hypothermia and skin necrosis. Single exposure to Cyclohexanone by ingestion caused narcosis. Repeated and long term exposure caused decreased weight gain.

Single exposure to Cyclohexanone by inhalation caused irritation of mucous membranes, narcosis and hypothermia. Repeated exposure caused conjunctival irritation, salivation, narcosis, slight degenerative changes in the liver and kidneys, effect on sense of smell and nonspecific effects such as weight loss.

In some animals Cyclohexanone may have elicited a weak carcinogenic response. Animal data show fetotoxicity but only at exposure levels producing other toxic effects in the adult animal. Reversible depression of fertility was observed in second generation male rats exposed to 1400 ppm. Cyclohexanone produces genetic damage in bacterial and mammalian cell cultures. Animal data indicate that Cyclohexanone does not cause genetic damage in animals nor permanent genetic damage in reproductive cells of mammals (does not cause heritable genetic damage).

METHANOL

Eye contact with Methyl Alcohol caused clouding of the eye (corneal opacity).

Repeated skin contact with higher concentrations of Methyl Alcohol caused some mortality.

Single exposure by ingestion caused narcosis, liver effects, and hypothermia. Repeated exposure caused pathological changes of the eyes and acidosis.

Repeated exposure by inhalation caused irritation of the eyes, and blindness.

No animal data are available to define the carcinogenicity of Methyl Alcohol. Exposure of pregnant rats shows the following developmental effects: reduced birth weight, bone abnormalities, and behavioral abnormalities. Exposure of pregnant mice shows the following developmental effects: reduced birth weight, resorption, and bone abnormalities. No adequate animal data are available to define the reproductive effects of Methyl Alcohol. Tests have shown that Methyl Alcohol does not cause genetic damage in bacterial or mammalian cell cultures, or in animals. Methyl Alcohol has not been tested for its ability to cause permanent genetic damage in reproductive cells of mammals (not tested for heritable genetic damage).

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

METHOMYL

96 hour LC50 - Bluegill sunfish: 0.72 mg/L.

MATC, fathead minnows : 104 ug/L

48 hour LC50 - Daphnia magna: 0.0076 - 0.0317 ppm.

CYCLOHEXANONE

96 hour LC50 - Fathead minnows: 527 mg/L.

METHANOL

96 hour LC50 - Fathead minnows: 28,100 mg/L.

AVIAN TOXICITY:

METHOMYL

Acute Oral LD50 - Bobwhite Quail: 24.2 mg/kg.

Acute Oral LD50 - Mallard Duck: 15.9 mg/kg.

Acute Dietary LC50 - Bobwhite Quail: 1000 ppm.

Acute Dietary LC50 - Mallard Duck: 2883 ppm.

Oral LD50 - Pheasant: 15.4 mg/kg

Dietary LC50 - Pheasant: 1975 ppm

DISPOSAL CONSIDERATIONS

Waste Disposal

Do not contaminate water, food, or feed by disposal. Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by us according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish, aquatic invertebrates, and mammals. Do not apply directly to water or to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and runoff may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment washwater or rinsate.

This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds while bees are actively visiting the treatment area.

(DISPOSAL CONSIDERATIONS - Continued)

Container Disposal

For Metal Containers (non aerosol): Triple rinse (or equivalent) the container. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by the State and local authorities.

For Plastic Containers: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

TRANSPORTATION INFORMATION

Shipping Information

DOT/IMO
Proper Shipping Name : CARBAMATE PESTICIDE, LIQUID,
TOXIC, FLAMMABLE
(methomyl in cyclohexanone)
Hazard Class : 6.1
Subsidiary Hazard Class : 3
UN No. : UN 2991
Packing Group : II
Special Information : Marine Pollutant (water or bulk);
Flash Point: 39°C (102.2°F)
Reportable Quantity : Methomyl (if 100 lbs. or more in a
single package)

REGULATORY INFORMATION

U.S. Federal Regulations

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

Acute : Yes
Chronic : No
Fire : Yes
Reactivity : No
Pressure : No

ADDITIONAL REGULATORY INFORMATION

Section 302 Extremely Hazardous Substance:
Methomyl - Threshold Planning Quantity (TPQ)
(500/10,000 lbs.)

SARA/CERCLA Reportable Quantity:
Methomyl (100 lbs.)
Methanol (5,000 lbs.)

(REGULATORY INFORMATION - Continued)

Cyclohexanone (5,000 lbs.)

REGULATORY CONTROLS:

This product is registered under EPA/FIFRA regulations. It is a violation of Federal Laws to use this product in any manner inconsistent with its labeling. Read and follow all label directions. This product is excluded from listing requirements under EPA/TSCA.

EPA Reg. No. 352-384

OTHER INFORMATION

NFPA, NPCA-HMIS

NFPA Rating
Health : 2
Flammability : 2
Reactivity : 0

NPCA-HMIS Rating
Health : 3
Flammability : 2
Reactivity : 0

Personal Protection rating to be supplied by user depending on use conditions.

Additional Information

RESTRICTED USE PESTICIDE
Due to High Acute Toxicity to Humans

For retail sale and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification. Direct supervision for this product requires the certified applicator to review federal and supplemental label instructions with all personnel prior to application, mixing, loading, or repair or cleaning of application equipment.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : DuPont Crop Protection
Wilmington DE 19898
Telephone : 1-888-638-7668

(Continued)

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS