Material Safety Data Sheet

DYLOX 6.2 GR

MSDS Number: 102000012263
MSDS Version 2.0
Revision Date: 03/03/2005

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name	DYLOX 6.2 GR
MSDS Number	102000012263
Chemical Family	Organophosphorus Insecticide
EPA Registration No.	432-1308
Product Use	Insecticide for control of White Grubs, Mole Crickets, Sod Webworms and Cutworms.

Bayer Environmental Science
95 Chestnut Ridge Road
Montvale, NJ 07645
USA

For MEDICAL, TRANSPORTATION or other EMERGENCY call 1-800-334-7577 (24 hours/day)
For Product Information call 1-800-331-2867

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Component Name	CAS-No.	Average % by Weight
Trichlorfon	52-68-6	6.20

SECTION 3. HAZARDS IDENTIFICATION

NOTE: Please refer to Section 11 for detailed toxicological information.

Emergency Overview Caution! Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Causes eye irritation. Avoid breathing dust or spray mist. Avoid contact with skin, eyes and clothing. Cholinesterase inhibitor.

Physical State granular

Odor sweet

Appearance tan

Routes of Exposure Inhalation, Skin contact, Skin Absorption, Eye contact

Immediate Effects

Eye Moderate eye irritation Do not get in eyes.

Skin Avoid contact with skin, eyes and clothing.

Ingestion	Harmful if swallowed. Do not take internally.
Inhalation	Do not breathe dust.
Chronic or Delayed Long-Term	This product is not listed by NTP, IARC or regulated as a carcinogen by OSHA.
Medical Conditions Aggravated by Exposure	No specific medical conditions are known which may be aggravated by exposure to this product. Any disease, medication or prior exposure which reduces normal cholinesterase activity may increase susceptibility to the toxic effects of the active ingredient.

SECTION 4. FIRST AID MEASURES

General	Have the product container or label with you when calling a poison control center or doctor or going for treatment. This product causes reversible cholinesterase inhibition. Repeated overexposure may cause more severe cholinesterase inhibition with more pronounced signs and symptoms. Inhalation, dermal absorption or ingestion of this material may result in systemic in toxication due to inhibition of the enzyme cholinesterase. Symptoms of poisoning may only appear several hours later.
Eye	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.
Skin	Wash off immediately with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a poison control center or doctor for treatment advice.
Ingestion	Never give anything by mouth to an unconscious person. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Have person sip a glass of water if able to swallow. Call a poison control center or doctor immediately for treatment advice.
Inhalation	If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice. Take affected person to fresh air.
Notes to Physician **Signs and Symptoms**	The symptoms of cholinesterase inhibition include: nausea salivation lachrymation

	blurred vision
	constriction of pupils
Hazards	Cholinesterase inhibitor. Allow no further exposure to any cholinesterase inhibitor until full recovery is assured.
Treatment	2-PAM is also antidotal and may be administered in conjunction with atropine. ANTIDOTE: Administer atropine sulfate in large theapeutic doses. Repeat as necessary to the point of tolerance.

SECTION 5. FIRE FIGHTING MEASURES

Flash Point	not applicable
Suitable Extinguishing Media	water
Fire Fighting Instructions	Keep out of smoke. Fight fire from upwind position. Equipment or materials involved in pesticide fires may become contaminated. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses. In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Methods for Cleaning Up	Keep unnecessary people away, isolate hazard area and deny entry. Avoid contact with spilled product or contaminated surfaces.
Additional Advice	Rinse with water. Avoid dust formation. Place in covered container for reuse or disposal. Contaminated soil may have to be removed and disposed. Use recommended protective equipment while carefully sweeping up spilled material. Scrub contaminated area with detergent and bleach solution. Do not allow material to enter streams, sewers, or other waterways or contact vegetation. Repeat.

SECTION 7. HANDLING AND STORAGE

Handling Procedures	Handle and open container in a manner as to prevent spillage. Do not get in eyes, on skin, or on clothing.
Storing Procedures	Do not contaminate water, food, or feed by storage or disposal. Store in a cool, dry place and in such a manner as to prevent cross

	contamination with other pesticides, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area.
Work/Hygienic Procedures	Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove and wash contaminated clothing before re-use.
Min/Max Storage Temperatures	The 30 day temperature average is not to exceed 100°F.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls	Use with local exhaust ventilation.
Eye/Face Protection	Safety glasses with side-shields or goggles
Hand Protection	Suitable chemical resistant gloves
Body Protection	Long-sleeved shirt and long pants Shoes plus socks
General Protection	In case of contact, immediately flush eyes or skin with plenty of water fo clothing and shoes. Educate and train employees in safe use of the product. Follow all label instructions.

Exposure Limits

Trichlorfon	52-68-6	ACGIH	TWA		1 mg/m3
		Form of Exposure		Inhalable fraction.	

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	tan
Physical State	granular
Odor	sweet
pH	4.6 (1% in distilled water)
Bulk Density	30 - 35 lbs/cu-ft

SECTION 10. STABILITY AND REACTIVITY

Chemical Stability	Stable
Conditions to Avoid	Exposure to moisture. Sustained temperatures above 100°F.
Incompatibility	strong oxidizing agents bases alkaline
Hazardous Decomposition Products	Phosphorus pentoxide (P_2O_5) Chloral Dimethyl hydrogen phosphite Carbon monoxide
Hazardous Reactions	Will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

Only acute studies have been performed on this product as formulated. The non-acute information pertains to the active ingredient, trichlorfon.

Acute Oral Toxicity	male rat: LD50: > 5,100 mg/kg female rat: LD50: > 5,000 mg/kg
Acute Dermal Toxicity	male/female rat: LD50: > 5,000 mg/kg
Acute Inhalation Toxicity	male/female rat: LC50: 4-hr exposure to dust: > 2 mg/l (extrapolated based on EPA's assessment of the inhalation hazard of DYLOX 5% Granular Bait) male/female rat: LC50: > 2 mg/l Exposure time: 1 h Exposure to Dust
Skin Irritation	rabbit: No skin irritation
Eye Irritation	rabbit: Mild eye irritation
Sensitization	guinea pig: Non-sensitizing
Subchronic Toxicity	In a 3-week inhalation study, rats were exposed to trichlorfon at aerosol concentrations of 12.7, 35.4 or 103.5 mg/m3 for 6 hours/day, 5 days/week. Cholinesterase inhibition occurred in animals at concentrations of 35.4 mg/m3 and greater. The no-observed-effect-level (NOEL) was 12.7 mg/m3. In a 3 week dermal toxicity study, rabbits were treated with trichlorfon at levels of 100, 300 or 1000 mg/kg for 6 hours/day, 5 days/week. The only effect observed was erythrocyte cholinesterase inhibition. Under the conditions of this study, the

NOEL was 100 mg/kg.

Chronic Toxicity

Trichlorfon was adminstered by oral gavage to Rhesus monkeys at doses of 0.2, 1.0 or 5.0 mg/kg, 6 days/week for 10 years. Effects observed included reduced body weight gain, cholinesterase inhibition and anemia (reductions in hematocrit, hemoglobin and erythrocyte counts). The NOEL for cholinesterase inhibition was 0.2 mg/kg. Excluding cholinesterase inhibition, the overall NOEL was 1.0 mg/kg. In chronic feeding using rats, trichlorfon was administered for 2 years at dietary concentrations ranging from 100 to 2500 ppm. Effects observed at the high dose of these studies included decreased body weight gain and feed consumptions, cholinesterase inhibition, anemia, hypercholesterolemia, nonglandular gastritis, duodenal hyperplasia, increased liver and kidney weights, and histopathological changes in the lung and kidney. The dose of 2500 ppm was a dose considered to exceed the maximum tolerated dose (MTD). The overall NOEL from these studies was 100 ppm.

Assessment Carcinogenicity

Trichlorfon was investigated for carcinogenicity in chronic feeding studies using rats and mice at maximum levels of 2500 and 2700 ppm, respectively. There was no evidence of carcinogenic potential observed in either species.

ACGIH		
Trichlorfon	52-68-6	Group A4
NTP		
None.		
IARC		
Trichlorfon	52-68-6	Overall evaluation: 3
OSHA		
None.		

Reproductive & Developmental Toxicity

REPRODUCTION: In a reproduction study on rats, trichlorfon was administered at dietary concentrations of 150, 500 or 1750 ppm. At the maternally toxic concentration of 1750 ppm, reproductive effects observed in the offspring included decreased body weight gain and dilated renal pelves. Effects observed in parental animals included reduced body weights, cholinesterase inhibition, kidney effects, and increased organ weights for liver, lung and kidney. The NOELs for parental and reproductive effects were 150 and 500 ppm, respectively.

DEVELOPMENTAL TOXICITY: In a developmental toxicity study using rats, trichlorfon was administered at dietary concentrations of 500, 1125 or 2500 ppm. Maternal toxicity was observed at all levels testd. At 2500 ppm, there was an increased incidence of developmental toxicity as indicated by delayed ossification involving elements of the skull, ribs, vertebrae and pelvis, and by an increased incidence of wavy, curved and/or bulbous ribs. The NOELs for maternal and developmental toxicity were less than 500 and 1125 ppm, respectively. When rats were administered trichlorfon by oral gavge at doses of 10, 30 or 100 mg/kg, there was no indication of maternal or developmental toxicity. In a developmental toxicity study using rabbits, trichlorfon was administered by oral gavage at doses of 10, 35 or 110 mg/kg. There was an

increased incidence of resorptions, lagging ossifications and decreased fetal weights at the maternally toxic level of 110 mg/kg. The NOELs for maternal and developmental toxicity were 10 and 35 mg/kg, respectively.

Neurotoxicity

In an acute oral study, hens revealed no evidence of neurotoxicity when treated with the active ingredient at dose levels up to and including 185 mg/kg (highest dose tested). In a 3 month study in which hens received the active ingredient daily at oral doses of 3, 9 or 18 mg/kg, there was no evidence of delayed neurotoxicity. In an acute neurotoxicity screening study using rats, technical grade trichlorfon was administered as a single oral dose at doses of 10, 50, or 200 mg/kg. Compound-related deaths occurred at the high-dose for both sexes. All but one of the high-dose females died on the day of treatment. All clinical signs and neurobehavioral effects observed were ascribed to acute cholinergic toxicity, occurring at dose levels that produced substantial inhibition of cholinesterase activity. There were no compound-related microscopic lesions in skeletal muscle or neural tissues of high-dose males or mid-dose females and the one surviving high-dose female. Excluding cholinergic responses, the NOEL for neurotoxicity was 200 mg/kg for males and 50 mg/kg for females. In a 13 week neurotoxicity study, technical grade trichlorfon was administered to rats at dietary concentrations of 100, 500 and 2500 ppm. Effects observed at the high-dose included decreased body weights, decreased feed consumptions, perianal stains, urine stains, slightly uncoordinated righting response, reduced levels of activity, and cholinesterase inhibition (erythrocyte, plasma and brain). Microscopic examinations revealed minimal degeneration of myelin in the dorsal and ventral root fibers in cervical and lumbar regions of the spinal cord without degeneration of the axon. All clinical signs and neurobehavioral effects are ascribed to cholinergic neurotoxicity, occurring at exposure levels that produced substantial inhibition of cholinesterase activity. The minimal micropathologic findings at the high dose are not ascribed to the inhibition of cholinesterase activity. The NOEl for neurotoxicity was 500 ppm based on cholinergic effects and neuropathology. The overall NOEL was 100 ppm based on cholinesterase inhibition.

Mutagenicity

Numerous mutagenicity studies have been conducted on trichlorfon, some of which are positive.

SECTION 12. ECOLOGICAL INFORMATION

Environmental Precautions

Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. This pesticide is toxic to fish, birds, and other wildlife. Apply this product only as specified on the label. Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water. Do not apply where runoff is likely to occur.

SECTION 13. DISPOSAL CONSIDERATIONS

General Disposal Guidance	Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Pesticide Disposal:
Container Disposal	Empty remaining contents. If burned, stay out of smoke. Then dispose of empty container in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning.

SECTION 14. TRANSPORT INFORMATION

DOT CLASSIFICATION:
Not regulated for Domestic Surface Transportation

IMDG CLASSIFICATION:
NON-BULK-A Max. Capacity of 450L(119 gallons)or less, or 400Kg(882 pounds) or less
Not Regulated for Ocean Transport

BULK-A Max. Capacity Greater than 450L(119 gallons) or Greater than 400Kg(882 pounds)
Environmentally Hazardous Substances, Solid, N.O.S.(Trichlorfon)// 9 // UN3077 // PG III // Marine Pollutant

FREIGHT CLASSIFICATION:
Insecticides or Fungicides, N.O.I.; other than poison

SECTION 15. REGULATORY INFORMATION

EPA Registration No. 432-1308

US Federal Regulations

TSCA list

None.

US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

None.

SARA Title III - Section 302 - Notification and Information

None.

SARA Title III - Section 313 - Toxic Chemical Release Reporting

Trichlorfon	52-68-6	1.0%

US States Regulatory Reporting

CA Prop65

This product does not contain any substances known to the State of California to cause cancer.

This product does not contain any substances known to the State of California to cause reproductive harm.

US State Right-To-Know Ingredients

Trichlorfon	52-68-6	CA, CT, IL, NJ, PA

Canadian Regulations

Canadian Domestic Substance List

Trichlorfon	52-68-6	

Environmental

CERCLA

Trichlorfon	52-68-6	100 lbs

Clean Water Section 307 Priority Pollutants

None.

Safe Drinking Water Act Maximum Contaminant Levels

None.

International Regulations

European Inventory of Existing Commercial Substances (EINECS)

Trichlorfon	52-68-6

SECTION 16. OTHER INFORMATION

NFPA

Health - 2 Flammability - 1 Reactivity - 1 Others - none

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Reason to Revise: Revised Transporation information; renumbering due to systems changes.

Revision Date: 03/03/2005