DYLOX 80 Turf and Ornamental Insecticide

MSDS Version 2.0

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name	DYLOX 80 Turf and Ornamental Insecticide
Chemical Name	
Common Name	
MSDS Number	R000008488
Chemical Family	
Chemical Formulation	
EPA Registration No.	432-1289

Bayer Environmental Science
2 T.W. Alexander Drive
Reseach Triangle PK, NC 27709
USA

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

Product Use Description Insecticide for control of insects on landscape flowers, shrubs and trees and landscape and recreational turf.

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Component Name	CAS No.	Concentration % by Weight	
		Minimum	Maximum
Trichlorfon technical	52-68-6	78.0000	82.0000
Hydrated Amorphous Silica	7631-86-9	11.4000	16.6000

SECTION 3. HAZARDS IDENTIFICATION

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

Emergency Overview	Warning! May be fatal if inhaled. May be fatal if swallowed. Causes substantial but temporary eye injury. Harmful if absorbed through the skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.
Physical State	Powder
Odor	Slight chlorine
Appearance	White
Routes of Exposure	Inhalation, Skin contact, Skin Absorption, Eye contact
Immediate Effects	
Eye	Do not get in eyes. Causes substantial but temporary eye injury. Moderate eye irritant.
Skin	Do not get on skin or clothing. Harmful if absorbed through skin. Mildly irritating. Mildly toxic.
Ingestion	Do not take internally. May be fatal if swallowed.
Inhalation	Do not breathe dust. May be fatal if inhaled.
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. Inhalation, dermal absorption or ingestion of this material may result in systemic intoxication due to inhibition of the enzyme cholinesterase. Symptoms of poisoning may only appear several hours later. This product causes reversible cholinesterase inhibition. Repeated overexposure may cause more severe cholinesterase inhibition with more pronounced signs and symptoms.
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 — 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.

Ingestion — Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Inhalation — Move person to fresh air. 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.

Notes to physician

Signs and Symptoms — The symptoms of cholinesterase inhibition include:

nausea

salivation

lachrymation

blurred vision

constriction of pupils

Hazards — This product is a cholinesterase inhibitor. Allow no further exposure to any cholinesterase inhibitor until full recovery is assured.

Treatment — ANTIDOTE: Administer atropine sulfate in large theapeutic doses. Repeat as necessary to the point of tolerance. 2-PAM is also antidotal and may be administered in conjunction with atropine. Compound inhibits cholinesterase resulting in stimulation of the central nervous system, the parasympathetic nervous system, and the somatic motor nerves. Do not give morphine. Watch for pulmonary edema, which may develop in serious cases of poisoning even after 24-48 hours. At first sign of pulmonary edema, the patient should be placed in an oxygen tent and treated symptomatically.

SECTION 5. FIRE FIGHTING MEASURES

Flash Point — Not applicable

Fire and Explosion Hazards — The product is under certain conditions capable of dust explosion. May form explosive dust-air mixture. Avoid dust formation and electrical charging (sparking) because dust explosion might occur.

Suitable Extinguishing Media	Water
Fire Fighting Instructions	Keep out of smoke. Cool exposed containers with water spray. Fight fire from upwind position. Use self-contained breathing equipment. Contain runoff to prevent entry into sewers or waterways. Equipment or materials involved in pesticide fires may become contaminated.

SECTION 6. ACCIDENTAL RELEASE MEASURES

General and Disposal	Keep unnecessary people away, isolate hazard area and deny entry. Do not walk through spilled material. Avoid contact with spilled product or contaminated surfaces.
Land Spill or Leaks	Avoid generating dust (a fine water spray mist, plastic film cover, or floor sweeping compound may be used if necessary). Use recommended protective equipment while carefully sweeping up spilled material. Place in covered container for reuse or disposal. Scrub contaminated area with detergent and bleach solution. Repeat. Rinse with water. Contaminated soil may have to be removed and disposed. Do not allow material to enter streams, sewers or other waterways or contact vegetation.

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 Control exposure levels through the use of general and local exhaust ventilation.

Eye/Face Protection Goggles or Safety glasses

Hand Protection Chemical resistant gloves

Body Protection Long-sleeved shirt and long pants. Shoes plus socks.

Respiratory Protection When respirators are required, select NIOSH/MSHA approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industrial recommendations.

General Protection Clean water and soap should be available for washing in case of eye or skin contamination.

Educate and train employees in safe use of the product. Follow all label instructions.

Exposure Limits

Trichlorfon technical	52-68-6	ACGIH NIC	TWA		1 mg/m3
Hydrated Amorphous Silica	7631-86-9	NIOSH	REL		6 mg/m3
		US CA OEL	TWA PEL		5 mg/m3
		Form of Exposure		Respirable fraction.	
		US CA OEL	TWA PEL		5 mg/m3
		Form of Exposure		Respirable fraction.	
		US CA OEL	TWA PEL		10 mg/m3
		Form of Exposure		Total dust.	
		US CA OEL	TWA PEL		5 mg/m3
		Form of Exposure		Respirable fraction.	
		US CA OEL	TWA PEL		10 mg/m3
		Form of Exposure		Total dust.	
		US CA OEL	TWA PEL		10 mg/m3
		Form of Exposure		Total dust.	
		ACGIH	TWA		10 mg/m3
		Remarks		The value is for particulate matter containing no asbestos and <1% crystalline silica.	
		ACGIH	TWA		3 mg/m3
		Remarks		The value is for particulate matter containing no asbestos and <1% crystalline silica.	

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	White
Physical State	Powder
Odor	Slight chlorine
pH	4.1 (1% in distilled water)
Bulk Density	34 - 55 lbs/cu-ft

SECTION 10. STABILITY AND REACTIVITY

Chemical Stability	This is a stable material.
Conditions to Avoid	Sustained temperatures above 100°F. Moisture
Incompatibility	Strong oxidizing agents Bases
Hazardous Products of Decomposition	Carbon monoxide Phosphorus pentoxide (P2O5) Chloral Dimethyl hydrogen phosphite
Hazardous Polymerization (Conditions to avoid)	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: 933 mg/kg Female Rat: LD50: 395 mg/kg
Acute Dermal Toxicity	Male and Female Rat: LD50: > 2,000 mg/kg
Acute Inhalation Toxicity	Male and Female Rat: LC50: 4-hr exposure to liquid aerosol: > 1.27 mg/l (analytical)
Skin Irritation	Rabbit: Slight dermal irritant.

Eye Irritation Rabbit: Moderate eye irritant.

Sensitization Guinea pig: Dermal sensitization studies have not been conducted on this product as formulated, however, the active ingredient is a positive dermal sensitizer.

Sub-Chronic Toxicity In a 21 day inhalation toxicity study, rats were exposed to the active ingredient for 6 hours/day, 5 days/week for 3 weeks to aerosol concentrations of 12.7, 35.4 or 103.5 mg/cubic meter. Plasma, erythrocyte and brain cholinesterase activities were inhibited at concentrations of 35.4 mg/cubic meter and greater. The no-observed-effect-concentration (NOEC) was 12.7 mg/cubic meter. In a 21 day study on rabbits, the active ingredient was applied dermally for 6 hours/day, 5 days/week for 3 weeks at dose levels of 100, 300 or 1000 mg/kg. Based on the inhibition of erythrocyte cholinesterase activity, the no-observed-effect-level (NOEL) was 100 mg/kg. The active ingredient was administered orally to rhesus monkeys at daily doses of 0.1 and 0.2 mg/kg for 26 weeks. The NOEL was 0.2 mg/kg.

Chronic Toxicity The active ingredient was administered orally to Rhesus Monkeys at doses of 0.2, 1.0 or 5.0 mg/kg, 6 days/week for 10 years. Animals receiving the high dose exhibited anemia indicated by reductions in hematocrit, hemaglobin and erythrocyte count. Reduced body weight gains occurred at 5.0 mg/kg. Plasma, erythrocyte and brain cholinesterase activities were inhibited at 1.0 and 5.0 mg/kg. The cholinesterase NOEL was 0.2 mg/kg. The NOEL for general toxicity was 1.0 mg/kg. In chronic studies using rats, the active ingredient was given via the diet for 2 years at concentrations ranging from 100 to 2500 ppm. Effects observed at the high dose included decreased body weight gains, hypercholesterolemia, kidney effects, liver effects and depression of plasma, erythrocyte and brain cholinesterase activities. The overall NOEL for these studies was 100 ppm.

Assessment Carcinogenicity

In chronic studies in which the active ingredient was administered to rats and mice at levels up to 2500 ppm and 2700 ppm (highest level tested respectively), no evidence of carcinogenic potential was observed.

ACGIH

None

NTP

None

IARC

Trichlorfon technical	52-68-6	3
Hydrated Amorphous Silica	7631-86-9	3

OSHA

None

Reproductive & Developmental Toxicity REPRODUCTION: In a reproduction study using rats, the active ingredient was administered at dietary concentrations of 150, 500 or 1750 ppm. The reproductive NOEL was 500 ppm based on decreased pup body weight gain during lactation and dilated renal pelves in pups of the high dose. The parental NOEL was 150 ppm based on cholinesterase inhibition and kidney effects.

DEVELOPMENTAL TOXICITY: In a teratology study using rats, the active ingredient was administered in the diet on gestation days 6-15 at concentrations of 500, 1125 or 2500 ppm. Maternal toxicity was observed at all levels tested. 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. When rats were exposed to the active ingredient at oral doses of 10, 30 or 100 mg/kg on gestation days 6-15, there was no indication of maternal toxicity, developmental toxicity or teratogenic effects. Rabbits were treated orally with the active ingredient on gestation days 6-18 at doses of 10, 35 or 110 mg/kg. The high dose resulted in extensive maternal mortality. At the mid-dose there was 1 maternal death due to treatment. The NOEL for maternally toxic effects was 10 mg/kg. The NOEL for developmental toxicity was 35 mg/kg. Teratogenic effects were not observed at any of the levels tested.

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 of 3, 9 or 18 mg/kg, there was no evidence of delayed neurotoxicity. 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 consumption, 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 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.

SECTION 12. ECOLOGICAL INFORMATION

Environmental Precautions

This product is toxic to fish and wildlife. Highly toxic to aquatic invertebrates. Apply this product only as specified on the label. Do not apply when weather conditions favor runoff or drift. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not apply where runoff is likely to occur. Runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment washwater.

SECTION 13. DISPOSAL CONSIDERATIONS

General Disposal Guidance	Pesticide 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 use 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.
Container Disposal	Do not reuse containers. Completely empty container into application equipment. Then dispose of empty container in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.
RCRA Classification	Not Regulated under this Statute

SECTION 14. TRANSPORT INFORMATION

DOT CLASSIFICATION:
Organophosphorus pesticides, solid, toxic// 6.1 // UN2783 // PG III*

IMDG CLASSIFICATION:
Organophosphorus pesticides, solid, toxic(Trichlorfon) // 6.1 // UN2783 // PG III Marine Pollutant

* Add "RQ(Trichlorfon)" when package contains 100 LBS or more Trichlorfon and shipping within the U.S.

FREIGHT CLASSIFICATION:
Insecticides or Fungicides, N.O.I.; poison, other than gases that are poisonous by inhalation

SECTION 15. REGULATORY INFORMATION

EPA Registration No. 432-1289

US Federal Regulations

TSCA list

Hydrated Amorphous Silica	7631-86-9	

TSCA 12b export notification

None

SARA Title III - section 302 - notification and information

None

SARA Title III - section 313 - toxic chemical release reporting

Trichlorfon technical	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 technical	52-68-6	CA, CT, IL, NJ, PA
Hydrated Amorphous Silica	7631-86-9	CA, MN, PA

Canadian Regulations

Canadian Domestic Substance List

Hydrated Amorphous Silica	7631-86-9

Environmental

CERCLA

Trichlorfon technical	52-68-6	100 lbs

Clean Water Section 307 Priority Pollutants

None

Safe Drinking Water Act Maximum Contaminant Levels

None

International Regulations

EU Classification

None

European Inventory of Existing Commercial Substances (EINECS)

Trichlorfon technical	52-68-6
Hydrated Amorphous Silica	7631-86-9

SECTION 16. OTHER INFORMATION

	Health	Flammability	Reactivity	Others
NFPA	2	1	1	

MSDS REVISION INDICATOR: New Format; Update sections as needed.

Approval Date: 03/05/2004

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