

Routes of Exposure: Inhalation, Skin contact, Skin

Absorption, Eye contact

Immediate Effects

Eye: Do not get in eyes. Causes moderate eye irritation.

Skin: Avoid contact with skin or clothing.

Ingestion: Do not take internally. Harmful if swallowed.

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.

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 therapeutic doses. Repeat as necessary to the point of tolerance. 2-PAM is also antidotal and may be administered in conjunction with atropine.

SECTION 5. FIRE FIGHTING MEASURES

Flash Point: Not applicable

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 deg 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.

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/m ³
-----------------------	---------	---------------	---------------------

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Tan

Physical State: Granules

Odor: Sweet

pH: 4.6 (1% in distilled water)

Bulk Density: 30 - 35 lbs/cu-ft

SECTION 10. STABILITY AND REACTIVITY

Chemical Stability: This is a stable material.

Conditions to Avoid: Sustained temperatures above
100 deg F.

Moisture

Incompatibility: Strong oxidizing agents

Bases

Alkaline

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: > 5,100 mg/kg

Female Rat: LD50: > 5,000 mg/kg

Acute Dermal Toxicity

Male and Female Rat: LD50: > 5,000 mg/kg

Acute Inhalation Toxicity

Male and 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 and Female Rat: LC50: > 2 mg/l 1 h Exposure to Dust

Skin Irritation

Rabbit: Not a dermal irritant.

Eye Irritation

Rabbit: Mild eye irritation

Sensitization

Guinea pig: Not a skin sensitizer.

Sub-Chronic 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 administered 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: None

NTP: None

IARC

Trichlorfon technical 52-68-6 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 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. The NOELs for maternal and developmental toxicity were less than 500 and 1125 ppm, respectively. When rats were administered trichlorfon by oral gavage 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: Toxic to fish, birds, and other wildlife. 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 contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment washwater. Do not apply where runoff is likely to occur. Apply this product only as specified on the label.

SECTION 13. DISPOSAL CONSIDERATIONS

General Disposal Guidance

Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Disposal: Completely empty bag 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: Not regulated for Domestic Surface Transportation

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

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

Canadian Regulations

Canadian Domestic Substance List: None

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

SECTION 16. OTHER INFORMATION

NFPA

Health: 2

Flammability: 1

Reactivity: 1

Others:

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

Approval Date: 03/05/2004

This information is provided in good faith but without

express or implied warranty. Buyer assumes all responsibility for safety and use not in accordance with label instructions. The product names are registered trademarks of Bayer AG. Bayer Environmental Science

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES:
Although preparer and owner have taken reasonable care in the preparation of this document, we extend no warranties and make no representation as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each user should make a determination as to the suitability of the information for their particular purpose(s). This MSDS is the most recent received from the product manufacturer or distributor.

//