



# MATERIAL SAFETY DATA SHEET

BAYER CORPORATION  
AGRICULTURE DIVISION  
P.O. Box 4913 Hawthorn Road  
Kansas City, MO 64120-001

## TRANSPORTATION EMERGENCY:

CALL CHEMTREC: (800) 424-9300  
DISTRICT OF COLUMBIA: (202) 483-7616

## NON-TRANSPORTATION:

BAYER EMERGENCY PHONE: (800) 414-0244  
BAYER INFORMATION PHONE: (800) 842-8020

### 1. CHEMICAL PRODUCT IDENTIFICATION:

**PRODUCT NAME:** MONITOR 4  
**PRODUCT CODE:** 11553  
**CHEMICAL FAMILY:** Organophosphorus Insecticide  
**CHEMICAL NAME:** O,S-Dimethyl phosphoramidothioate  
**SYNONYMS:** Methamidophos, TAMARON  
**FORMULA:** C<sub>2</sub> H<sub>8</sub> N O<sub>2</sub> P S

### 2. COMPOSITION/INFORMATION ON INGREDIENTS:

INGREDIENT NAME	EXPOSURE LIMITS	CONCENTRATION (%)
***** HAZARDOUS INGREDIENTS *****		
<b>MONITOR (methamidophos)</b>		40 %
10265-92-6	OSHA : Not Established ACGIH: Not Established	
<b>Ingredient 1422</b>		50-60 %
Specific chemical identity is withheld as a trade secret.		
	OSHA : Not Established ACGIH: Not Established	

### 3. HAZARDS IDENTIFICATION:

#### EMERGENCY OVERVIEW DANGER! Toxic

**Color:** Colorless to pale yellow **Form:** Liquid **Odor:** Offensive, sulfur-type  
Organophosphate Insecticide - Cholinesterase Inhibitor; May be fatal if inhaled; May be fatal if absorbed through skin; May be fatal if swallowed.

#### POTENTIAL HEALTH EFFECTS:

**ROUTE(S) OF ENTRY:** Inhalation; Skin Contact; Skin Absorption; Eye Contact

#### HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:

**ACUTE EFFECTS OF EXPOSURE:** Inhalation, dermal absorption or ingestion of this material may result in systemic intoxication due to inhibition of the enzyme cholinesterase. The sequence of development of systemic effects varies with the route of entry, and the onset of symptoms may be delayed up to 12 hours. First symptoms of poisoning may be nausea, increased salivation, lacrimation, blurred vision and constricted pupils. Other symptoms of systemic poisoning include vomiting, diarrhea, abdominal cramping, dizziness and sweating. After inhalation, respiratory symptoms like tightness of chest, wheezing, and laryngeal spasms, may be pronounced at first. If the poisoning is severe, then symptoms of convulsions, low blood pressure, cardiac irregularities, loss of reflexes and coma may occur. In extreme cases, death may occur due to a combination of factors such as respiratory arrest, paralysis of respiratory muscles or intense bronchoconstriction. Complete symptomatic recovery from sublethal poisoning usually occurs within one week once the source of exposure is completely removed. Animal studies have shown that this material is extremely toxic orally. In addition, it is readily absorbed through the mucous membranes of the eye, and can be slightly irritating to the skin.

### HAZARDS IDENTIFICATION continued:

**CHRONIC EFFECTS OF EXPOSURE:** Cholinesterase inhibition sometimes persists for 2-6 weeks; thus, repeated exposure to small amounts of this material may result in an unexpected cholinesterase depression causing symptoms such as malaise, weakness, and anorexia that resemble other illnesses such as influenza. Exposure to a concentration that would not have produced symptoms in a person that was not previously exposed may produce severe symptoms of cholinesterase inhibition in a previously exposed person.

#### CARCINOGENICITY:

**NTP:** Not listed

**IARC:** Not listed

**OSHA:** Not listed

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** No specific medical conditions are known which may be aggravated by exposure to the active ingredient in this product; however, any disease, medication or prior exposure which reduces normal cholinesterase activity may increase susceptibility to the toxic effects of the active ingredient.

### 4. FIRST AID MEASURES:

**FIRST AID FOR EYES:** Hold eyelids open and flush with copious amounts of water for 15 minutes. Seek medical attention immediately.

**FIRST AID FOR SKIN:** Remove contaminated clothing. Wash skin with soap and water. Get medical attention if irritation persists. If signs of intoxication (poisoning) occur, get medical attention immediately.

**FIRST AID FOR INHALATION:** If a person is overcome by excessive exposure to aerosols of this material, remove to fresh air or uncontaminated area. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention as soon as possible.

**FIRST AID FOR INGESTION:** If ingestion is suspected, call a physician or poison control center. Drink one or two glasses of water and induce vomiting by touching back of throat with finger, or, if available, by administering syrup of ipecac. If syrup of ipecac is available, administer 1 tablespoonful (15 mL) of syrup of ipecac followed by 1 to 2 glasses of water. If vomiting does not occur within 20 minutes, repeat the dose once. Do not induce vomiting or give anything by mouth to an unconscious person.

**NOTE TO PHYSICIAN:** This product contains the organophosphorus insecticide, methamidophos, a cholinesterase inhibitor. Cholinesterase inhibition results in stimulation of the central nervous system, the parasympathetic nervous system and the somatic motor nerves. If symptoms of organophosphate poisoning are present, the administration of atropine sulfate is indicated. Administer atropine sulfate in large, therapeutic doses. In mild cases, start treatment by giving 1-2 mg of atropine intravenously every 15 minutes until signs of atropinization appear (dry mouth, flushing, and dilated pupils if pupils were originally pinpoint). In severe cases, start treatment by giving 2-4 mg intravenously every 5-10 minutes until fully atropinized. Dosages for children should be appropriately reduced. 2-PAM is also antidotal and may be used in conjunction with atropine. Do not give morphine. Watch for pulmonary edema which may develop in serious cases of poisoning even after 24 hours. At first sign of pulmonary edema, place patient in oxygen tent and treat symptomatically. In case of poisoning, it is also requested that Bayer Corp., Agriculture Division, Kansas City, MO, be notified: Telephone: 1-800-414-0244

**5. FIRE FIGHTING MEASURES:**

**FLASH POINT:** 214 °F (101 °C) Tagliabue Closed Cup (ASTM D-56)

**FLAMMABLE LIMITS:**

**UPPER EXPLOSIVE LIMIT (UEL)(%):** Not established

**LOWER EXPLOSIVE LIMIT (LEL)(%):** Not established

**EXTINGUISHING MEDIA:** Water; Carbon Dioxide; Dry Chemical

**SPECIAL FIRE FIGHTING PROCEDURES:** Keep out of smoke. Cool exposed containers with water spray. Fight fire from upwind position. Use self-contained breathing equipment. Contain runoff by diking to prevent entry into sewers or waterways. Equipment or materials involved in pesticide fires may become contaminated.

**6. ACCIDENTAL RELEASE MEASURES:**

**SPILL OR LEAK PROCEDURES:** Isolate area and keep unauthorized people away. Do not walk through spilled material. Avoid breathing vapors and skin contact. Remove sources of ignition if combustible or flammable vapors may be present and ventilate area. Wear proper protective equipment. Dike contaminated area with absorbent granules, soil, sand, etc. If large spill, material should be recovered. Small spills can be absorbed with absorbent granules, spill control pads, or any absorbent material. Carefully sweep up absorbed spilled material. Place in covered container for reuse or disposal. Scrub contaminated area with detergent and bleach solution and/or detergent and lye in water solution. Repeat. Rinse with water. Use dry absorbent material such as clay granules to absorb and collect wash solution for proper disposal. Contaminated soil may have to be removed and disposed. Do not allow material to enter streams, sewers, or other waterways or contact vegetation.

**7. HANDLING AND STORAGE:**

**STORAGE TEMPERATURE:** Not Noted

**SHELF LIFE:** Not Noted

**SPECIAL SENSITIVITY:** Not Noted

**HANDLING/STORAGE PRECAUTIONS:** Store in a cool, dry area. Store away from excessive heat and open flame. Store in an area designated specifically for pesticides. Do not store near any material intended for use or consumption by humans or animals.

**8. PERSONAL PROTECTION:**

**EYE PROTECTION REQUIREMENTS:** Goggles or faceshield should be used when needed to prevent liquid splashes from getting into the eyes.

**SKIN PROTECTION REQUIREMENTS:** Avoid skin contact. Wear long sleeves and trousers. Use chemical-resistant gloves to prevent dermal exposure.

**VENTILATION REQUIREMENTS:** Control exposure levels through the use of general and local exhaust ventilation.

**RESPIRATOR REQUIREMENTS:** If needed, based on the conditions of use, wear a NIOSH-approved organic vapor respirator with particulate pre-filter.

**MEDICAL SURVEILLANCE:** Plasma and/or red blood cell cholinesterase activity can be used to detect excessive absorption of MONITOR. It is preferable to establish a pre-exposure baseline value for best comparisons. Contact Bayer Corp., Agriculture Division, for additional information. If significant cholinesterase depression occurs, no further exposure should be allowed until cholinesterase values return to normal.

**ADDITIONAL PROTECTIVE MEASURES:** Clean water 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. Launder clothing separately after use. Wash thoroughly after handling.

**9. PHYSICAL AND CHEMICAL PROPERTIES:**

**PHYSICAL FORM:** Liquid

**COLOR:** Colorless to pale yellow

**ODOR:** Offensive, sulfur-type

**ODOR THRESHOLD:** Not established

**MOLECULAR WEIGHT:** 141.1 (for MONITOR) (methamidophos)

**pH:** Not established

**BOILING POINT:** Not established

**MELTING/FREEZING POINT:** ca. 15 °F

**SOLUBILITY IN WATER:** Soluble

**SPECIFIC GRAVITY:** 1.19 at 20 °C

**BULK DENSITY:** Not Noted

**% VOLATILE BY VOLUME:** Not established

**VAPOR PRESSURE:** 1.7 x 10<sup>-5</sup> mm Hg @ 20 °C (for MONITOR) (methamidophos)

**VAPOR DENSITY:** Not applicable (Air = 1)

**10. STABILITY AND REACTIVITY:**

**STABILITY:** This is a stable material.

**HAZARDOUS POLYMERIZATION:** Will not occur.

**INCOMPATIBILITIES:** Strong oxidizing agents

**INSTABILITY CONDITIONS:** Not Noted

**DECOMPOSITION PRODUCTS:** CH<sub>3</sub>SH, CO, SO<sub>2</sub>, P<sub>2</sub>O<sub>5</sub>, NH<sub>3</sub>, vaporized MONITOR

**11. TOXICOLOGICAL INFORMATION:**

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

**ACUTE TOXICITY:**

**ORAL LD50:** Male Rat: 17 mg/kg -- Female Rat: 21 mg/kg

**DERMAL LD50:** Male Rabbit: 987 mg/kg -- Female Rabbit: 516 mg/kg

**INHALATION LC50:** 4 hr. exposure to liquid aerosol: Male Rat: 0.198 mg/l (analytical) -- Female Rat: 0.184 mg/l (analytical). 1 hr. exposure to liquid aerosol: Male Rat: 0.779 mg/l (analytical) -- Female Rat: 0.650 mg/l (analytical).

**EYE EFFECTS:** This product is highly toxic and can be readily absorbed through the mucous membranes of the eye.

**SKIN EFFECTS:** Rabbit: Slight dermal irritant.

**SENSITIZATION:** Guinea Pig: Not a dermal sensitizer.

**SUBCHRONIC TOXICITY:**

A 3-month feeding study, rats and dogs tolerated treatment without ill effects when dosed with dietary concentrations of 2 ppm and 1.5 ppm, respectively. In a study where rabbits were treated dermally for 6 hours per day, 5 days per week for 3 weeks, a level of 0.5 mg/kg body weight produced no toxicological findings.

**CHRONIC TOXICITY:**

In chronic feeding studies with the technical material, NOELs (no-effect levels) of 5 ppm for mice and 2 ppm for rats and dogs, were obtained.

**CARCINOGENICITY:**

The technical material was tested for carcinogenicity in feeding studies using rats and mice. Dietary levels up to and including 25 ppm for mice and 54 ppm for rats were employed on these studies. These studies revealed no evidence of carcinogenicity for the technical material.

**MUTAGENICITY:**

In vitro and in vivo mutagenesis data exist on the technical material, all of which were negative.

**TOXICOLOGICAL INFORMATION continued:**

**DEVELOPMENTAL TOXICITY:**

In a developmental toxicity study, rats were administered the technical material by oral gavage during gestation at analytical doses of 0.05, 0.14 or 5.49 mg/kg/day. The NOEL for both maternal and developmental toxicity was 0.14 mg/kg/day. In a developmental toxicity study, rabbits were administered the technical material by oral gavage during gestation at analytical doses of 0.2, 0.65 or 2.47 mg/kg/day. The NOELs for maternal and developmental toxicity were 0.2 and greater than 2.47 mg/kg/day, respectively.

**REPRODUCTION:**

A reproduction study in which rats were fed the technical material in their diet revealed no detrimental effects on reproduction at levels up to and including 10 ppm. Preliminary data are available on an ongoing reproduction study. Rats were administered the technical material at dietary concentrations of 1, 10 or 30 ppm for two-generations. During lactation, pups exhibited cholinesterase inhibition and decreased body weights beginning at levels of 10 and 30 ppm, respectively. These effects occurred in conjunction with maternal toxicity.

**NEUROTOXICITY:**

In both acute and sub-chronic neurotoxicity studies, the technical material gave no evidence of a neurotoxic potential when levels of 3 mg/kg (sub-chronic; gavage) 200 mg/kg (acute; dermal application), and 50 mg/kg (acute; oral application) were tested.

**12. ECOLOGICAL INFORMATION:**

This product is extremely toxic to birds and other wildlife. Bayer will provide a summary of specific data upon written request. As with any pesticide, this product should be used according to label directions and should be kept out of streams, lakes and other aquatic habitats of concern. IN EVENT OF A SPILL EMERGENCY, CALL 1-800-414-0244.

**13. DISPOSAL CONSIDERATIONS**

**WASTE DISPOSAL METHOD:** Follow container label directions for disposal of wastes generated during use in compliance with the FIFRA product label. In other situations, burn in a RCRA hazardous waste incinerator approved for pesticide destruction. Do not reuse container.

**14. TRANSPORTATION INFORMATION:**

**TECHNICAL SHIPPING NAME:** Methamidophos 40%  
**FREIGHT CLASS BULK:** Insecticides, NOI - NMFC 102100  
**FREIGHT CLASS PACKAGE:** Insecticides, NOI - NMFC 102100  
**PRODUCT LABEL:** Not Noted

**DOT (DOMESTIC SURFACE)**

**PROPER SHIPPING NAME:** Organophosphorus Pesticides, Liquid, Toxic\*  
**HAZARD CLASS OR DIVISION:** 6.1  
**UN/NA NUMBER:** UN3018  
**PACKAGING GROUP:** PG II  
**DOT PRODUCT RQ lbs (kgs):** None  
**HAZARD LABEL(s):** Toxic  
**HAZARD PLACARD(s):** Toxic

\* Becomes a Marine Pollutant if shipped in bulk or non-bulk by water.

**IMO / IMDG CODE (OCEAN)**

**PROPER SHIPPING NAME:** Organophosphorus Pesticides, Liquid, Toxic  
**HAZARD CLASS DIVISION NUMBER:** 6.1  
**UN NUMBER:** UN3018  
**ADDITIONAL IMO INFORMATION:** Marine Pollutant  
**PACKAGING GROUP:** II

**TRANSPORTATION INFORMATION continued:**

**HAZARD LABEL(s):** Toxic; Marine Pollutant (Marking)  
**HAZARD PLACARD(s):** Toxic; Marine Pollutant

**ICAO / IATA (AIR)**

**PROPER SHIPPING NAME:** Organophosphorus Pesticides, Liquid, Toxic  
**HAZARD CLASS DIVISION NUMBER:** 6.1  
**UN NUMBER:** UN3018  
**SUBSIDIARY RISK:** None  
**PACKING GROUP:** II  
**HAZARD LABEL(s):** Toxic  
**RADIOACTIVE?:** Non-Radioactive

**15. REGULATORY INFORMATION:**

**OSHA STATUS:** This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.  
**TSCA STATUS:** This product is exempt from TSCA Regulation under FIFRA Section 3 (2)(B)(ii) when used as a pesticide.  
**CERCLA REPORTABLE QUANTITY:** No components listed

**SARA TITLE III:**

**SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES:**  
 Methamidophos (CAS # 10265-92-6) (RQ: 1 lb.)  
**SECTION 311/312 HAZARD CATEGORIES:** Immediate Health Hazard; Delayed Health Hazard  
**SECTION 313 TOXIC CHEMICALS:** No components listed  
**RCRA STATUS:** If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)

**16. OTHER INFORMATION:**

**NFPA 704M RATINGS:**  
 Health: 4      Flammability: 1      Reactivity: 2      Other: 0  
 0=Insignificant    1=Slight    2=Moderate    3=High    4=Extreme

Bayer's method of hazard communication is comprised of Product Labels and Material Safety Data Sheets. NFPA ratings are provided by Bayer as a customer service.

**REASON FOR ISSUE:** Revise Section 4 (Note to Physician); Section 8 (Respirator Requirements); Section 11 (Developmental and Reproductive Toxicity); Section 14 (Transportation Information); Revise to ANSI format

**PREPARED BY:** V. C. Standart  
**APPROVED BY:** D. C. Eberhart  
**TITLE:** Product Safety Manager  
**APPROVAL DATE:** 06/16/97  
**SUPERSEDES DATE:** 05/19/94  
**MSDS NUMBER:** 08418

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