Arysta LifeScience

MATERIAL SAFETY DATA SHEET

Please read the entire document. This Material Safety Data Sheet contains important environmental, health and toxicology information for your employees, and anyone who will use, transport, store, dispose of or handle this product. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under WHMIS. If you resell this product, this MSDS must be given to the buyer or the information contained herein must be incorporated in your MSDS.

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: MONITOR® 480
PMRA REGISTRATION NUMBER: 12434
SYNONYM(S): Methamidophos, TM-30003

COMPANY
Arysta LifeScience North America Corporation 15401 Weston Parkway, Suite 150 Cary, NC 27513

EMERGENCY TELEPHONE NUMBERS	
HEALTH EMERGENCY:	SPILL EMERGENCY:
1-866-303-6952, or 1-651-632-8946	**1-800-424-9300, or 1-703-527-3887**

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Active Ingredient(s)/ Hazardous Inert Ingredient(s)	CAS #	Exposure Limits*	% Weight	% Volume
Methamidophos	10265-92-6	**TWA**[a] OSHA PEL[b]: None ACGIH® TLV®[c]: None NIOSH REL[d]: None	NA	48

Only the identities of the active ingredient(s) and any hazardous inert ingredients are listed. Specific information on all of this product's ingredients can be obtained by the treating medical professional or spill emergency responder for the management of exposures, spills, or safety assessments.

*Source: *Guide to Occupational Exposure Values 2003*, published by ACGIH®

[a]**TWA**: Time-weighted average exposure concentration for a conventional 8-hour (TLV, PEL) or up to a 10-hour (REL) workday and a 40-hour workweek.

[b]**OSHA PEL**: U.S. Occupational Safety and Health Administration Permissible Exposure Limits.

[c]**ACGIH® TLV®**: American Conference of Governmental Industrial Hygienists Threshold Limit Values.

[d]**NIOSH REL**: U.S. National Institute for Occupational Safety and Health Recommended Exposure Limits.

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER:
- **MAY BE FATAL IF SWALLOWED**
- **MAY BE FATAL IF ABSORBED THROUGH SKIN**
- **MAY BE FATAL IF INHALED**
- **KEEP OUT OF REACH OF CHILDREN**

Acute Health Hazards: Inhalation, dermal absorption or ingestion of 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.

Chronic Health Hazards (Including Cancer): Repeated exposure to small amounts of this material may result in cholinesterase depression causing symptoms such as malaise, weakness, and anorexia that resemble other illnesses such as influenza. Exposure to a concentration that typically would not produce symptoms may produce symptoms of cholinesterase inhibition in a previously exposed person. Chronic exposures of this material did not cause cancer in rats or mice. Not listed as a human carcinogen by EPA, NTP, IARC, or OSHA.

Teratology (Birth Defects) Information: Not teratogenic.

SECTION 4: FIRST AID MEASURES

Eyes: Hold eyelids 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 eyes. 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 not breathing, call 9-1-1 or an ambulance, then give artificial respiration, preferably mouth-to-mouth. Call a poison control center or doctor for further treatment advice.

Notes to Physicians or First Aid Providers: 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. 2-PAM is also antidotal and may be used in conjunction with atropine.

SECTION 5: FIRE FIGHTING MEASURES

Flammable Limits in Air (% by volume):		
	Upper:	NDA
	Lower:	NDA
Flash Point:		214°F (101°C)
	Method Used:	Tagliabue Closed Cup (ASTM D-56)
Autoignition Temperature:		NA
LEL/UEL:		NDA
NFPA Hazard Classification:		
	Health:	4
	Fire:	2
	Reactivity:	2
	Special:	None
Extinguishing Media:		Water spray, carbon dioxide or dry chemical
Special Fire Fighting Procedures:		Keep out of smoke. Cool exposed containers with water spray. Fight fire from upwind position. Use SCBA. Contain runoff by diking to prevent entry into sewers or waterways. Equipment or materials involved in pesticide fires may become contaminated.
Hazardous Combustion Products:		On heating or burning, the active ingredient decomposes producing toxic and irritating fumes including nitrogen oxides, sulfur oxides, and phosphorous oxides.

SECTION 6: ACCIDENTAL RELEASE MEASURES

EMERGENCY PHONE NUMBERS
Exposure Calls (PROSAR): 1-866-303-6952 or 1-651-632-8946 (International)
Spill Calls (CHEMTREC): 1-800-424-9300 or 1-703-527-3887

Isolate area and keep unauthorized people away. Do not walk through spilled material. Avoid breathing vapors and skin contact. Remove sources of ignition to prevent combustion and ventilate area. Wear proper protective equipment. Clean up spill immediately. 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 materials. 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 materials to enter streams, sewers, or other waterways or contact vegetation.

SECTION 7: HANDLING AND STORAGE

It is a violation of federal law to use this product in a manner inconsistent with its labeling. Read and observe all precautions on product label. Handle and open container with care. Avoid eye and skin contact with this material. Wash contaminated clothes thoroughly before reuse. Use with adequate ventilation. Wash thoroughly with soap and water after handling. Store in a cool dry area; away from excessive heat and open flame; and in an area designated specifically for pesticides. Do not store near any material intended for use or consumption by humans or animals.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection: Goggles should be used to prevent the material from getting into the eyes.

Respiratory/Ventilation Requirements: If needed, based on the conditions of use, wear a NIOSH-approved organic vapor respirator with particulate pre-filter. Control exposure levels through the use of general and local exhaust ventilation. Use this material only in well-ventilated areas.

Skin Protection: Avoid skin contact. Wear long sleeves and trousers. Use chemical-resistant gloves, boots or shoe covers, and apron to prevent dermal exposure.

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. If significant cholinesterase depression occurs, no further exposure should be allowed until cholinesterase values return to normal.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Colorless to pale yellow
Odor:	Offensive, sulfur-type
Physical State:	Liquid
pH:	NDA
Boiling Point:	Decomposes
Melting Point:	NDA
Freezing Point	15°F (-9°C)
Vapor Pressure:	1.7 $x10^{-5}$ mm/Hg @ 20°C (for methamidophos)
Vapor Density:	NDA
Specific Gravity:	1.19 at 20°C
Evaporation Rate:	NDA
Solubility in Water:	Soluble
Percent Solids by Weight:	NA
Percent Volatile:	NDA
Volatile Organic Compounds (VOC):	NDA
Molecular Weight:	NDA
Viscosity:	NDA

SECTION 10: STABILITY AND REACTIVITY

Chemical Stability:	This is a stable material
Hazardous Polymerization:	Will not occur
Flash Point:	214°F (101°C)
Flammable Point:	NDA
Auto Ignition:	NDA
Incompatibility With Other Materials:	Strong oxidizing agents
Hazardous Decomposition Products:	CH_3SH, CO, SO_2, P_20_5, NH_3, vaporized MONITOR

SECTION 11: TOXICOLOGICAL INFORMATION

Acute:

Eye Irritation: May cause temporary eye irritation. This product is highly toxic and can be readily absorbed through the mucous membranes of the eye.

Skin Irritation: Not an irritant in laboratory testing. This product is highly toxic and can be readily absorbed through the skin.

Skin Sensitization: Component ingredients were not dermal sensitizers when tested separately.

Dermal Toxicity (based on technical material): LD_{50} (male rabbits) = 162 mg/kg
LD_{50} (female rabbits) = 108 mg/kg

Oral Toxicity (based on technical material): LD_{50} (male rat) = 16 mg/kg
LD_{50} (female rat) = 13 mg/kg

Inhalation Toxicity: LC_{50} (1 hr) = 241-377 mg/m^3 LC_{50} (4 hrs) = 63-77 mg/m^3

Subchronic toxicity: Rats administered methamidophos for 3 months by inhalation (6 h/d, 5 d/wk) resulted in blood and brain cholinesterase inhibition at 6 ppm and tremors at 133 ppm. In studies of rats or dogs fed diets containing methamidophos for 3 months, blood and brain cholinesterase inhibition occurred at 0.13 mg/kg-d (in dogs) and 0.3 mg/kg-d (in rats). Loss of body weight and other clinical signs were observed in rats given 3 mg/kg-d or higher; no other adverse effects were observed below 3 mg/kg-d in both rats and dogs. In a 3-week dermal study, decreased brain cholinesterase was observed at 15 mg/kg-d, but not at 1 mg/kg-d; no other treatment-related effects were observed.

Chronic/Carcinogenicity: In chronic feeding studies of rats with technical grade methamidophos, non-cancer NOELs included cholinesterase inhibition (2 ppm or about 0.1 mg/kg-d) and body weight reductions at higher concentrations (54 ppm). No body weight reductions or other adverse effects were seen in mice at the highest dose tested (32 ppm or 3.6 mg/kg-d). Methamidophos did not cause cancer in rats or mice in long-term feeding studies.

Mutagenicity: Methamidophos was not mutagenic in bacteria but induced gene mutations and clastogenicity in cultured mammalian cells at high concentrations. Methamidophos did not cause chromosome aberrations in vivo, and it did not induce unscheduled DNA synthesis in mammalian cells in vitro. Methamidophos is not a known human mutagen.

Developmental Toxicity: Two developmental toxicity studies of methamidophos in rabbits indicated no effects on fetal development at any dose (highest dose was 2.5 mg/kg-d); reductions in maternal body weights were observed at 0.2 mg/kg-d in one study, but no such reductions were seen at any dose in the other study. Two developmental studies in the rat have also been conducted. Maternal and fetal NOELs were the same for the two studies, 0.14 and 1.0 mg/kg-d, respectively.

Reproduction: In a reproduction study using rats, methamidophos was administered for two generations at dietary concentrations of 1, 10 or 30 ppm. 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. The NOEL for maternal and neonatal toxicity was 1 ppm (about 0.07 mg/kg-d). The NOEL for reproduction toxicity was 30 ppm.

Neurotoxicity: In acute neurotox screening studies, reductions in serum and brain cholinesterase were observed a 0.7 mg/kg, but not at 0.3 mg/kg. In subchronic neurotoxicity studies, rats fed diets containing methamidophos for 13 weeks exhibited reduced motor and locomotor activity and cholinesterase inhibition at 12 ppm (0.8 mg/kg-d); no adverse effects were observed at 1.0 ppm (0.07 mg/kg-d). Methamidophos did not cause indications of delayed neurotoxicity in hens following 3 months of exposure at the highest dose tested (3 mg/kg), but reductions in cholinesterase and related enzymes were observed in the 1.0 and 3.0 mg/kg dose groups.

SECTION 12: ECOLOGICAL INFORMATION

This product is extremely toxic to fish and wildlife. 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.

Environmental Fate and Distribution (data provided is for active ingredient):

Avian Toxicity:

Mallard duck:	LC_{50} (5-day dietary) = 1,302 ppm
Bobwhite quail:	Acute LD_{50} = 10 mg/kg

Aquatic Organism Toxicity:

Rainbow trout:	96-hr LC_{50} = 25 ppm (static)
Bluegill:	96-hr LC_{50} = 34 ppm (static)
Sheephead minnow:	96-hr LC_{50} = 5.6 mg/L

Other Non-Target Organism Toxicity:

Daphnia magna:	48-hr LC_{50} = 26 ppb (static)
Earthworm:	14-day LC_{50} = 34 mg ai/kg dry soil

SECTION 13: DISPOSAL CONSIDERATIONS

End users must dispose of any unused product as per the label recommendations. Disposal should be in accordance with local, state or national legislation. Do not re-use container.

SECTION 14: TRANSPORT INFORMATION

D.O.T. Shipping Name:	Organophosphorus Pesticides, Liquid, Toxic
Technical Shipping Name:	Methamidophos
Packing Group:	II
D.O.T. Hazard Class:	6.1
U.N/N.A. Number:	UN3018
Product RQ (lbs):	200 lbs
D.O.T. Label:	6.1
D.O.T. Placard:	6.1
Marine Pollutant:	Yes
IMO:	
Label:	6.1, marine pollutant
Placard:	6.1, marine pollutant
ARD/RID:	
Class:	6.1

SECTION 15: REGULATORY INFORMATION

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

SECTION 16: OTHER INFORMATION

Reason for issue:	Change to Section 5 and Section 10 (Flashpoint) and Section 14
Prepared by:	James J. Reilly, Jr.
Issue date:	04/17/06
Supersedes date:	03/05/06
MSDS number:	00197

The information in this MSDS is based on data available to us as of the issue date given herein, and believed to be correct. Contact Arysta LifeScience North America Corporation at (919) 678-4900 to determine if additional data and information have become available since the issue date.

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