Effective Date: July 1, 2006

Material Safety Data Sheet

FOR EMERGENCY CALL CHEMTREC – (800) 424-9300

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Monoammonium Phosphate (MAP)

CAS Number: 7722-76-1

Product Uses

Agricultural Industry: Fertilizer
Industrial Applications: Flame retardant
ABC fire extinguishers

Chemical Name: Ammonium phosphate, monobasic

Chemical Family: Ammonium phosphates

Synonyms and Common Trade Names:
Ammonium biphosphate
Ammonium dihydrogen phosphate
Monobasic ammonium phosphate
Primary ammonium phosphate
MAP

Company Identification

Manufacturer: CF Industries, Inc.
Address: 4 Parkway North, Suite 400
Deerfield, Illinois 60015-2590
Telephone: 847-405-2400

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2. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	Weight Percentage	CAS Number
Monoammonium phosphate	47-78	7722-76-1
Iron ammonium phosphates	7-12	Not applicable
Aluminum ammonium phosphates	2-13	Not applicable
Ammonium sulfate	3-5	7783-20-2
Magnesium ammonium phosphates	4-10	Not applicable
Calcium sulfate	0.5-5.0	7778-18-9
Water	2-4	7732-18-5
Miscellaneous metal, ammonium and other compounds	<1 each	Not applicable

3. HAZARDS IDENTIFICATION

Emergency Overview

Notice! When heated to decomposition, may emit toxic products such as fluorides and phosphorous oxides.

Brown to gray granules that are odorless.

Potential Health Effects

Eyes: Contact may cause mild eye irritation including stinging, watering, and redness.

Skin: Contact may cause mild irritation including redness and a burning sensation. No harmful effects from skin absorption have been reported.

Inhalation: No information available. Studies by other exposure routes suggest a low degree of hazard by skin irritation.

Ingestion: Low to moderate degree of toxicity by ingestion.

Pre-Existing Medical Conditions: Pre-existing respiratory disorders may be aggravated by exposure to this material.

Signs and Symptoms: Effects of overexposure may include irritation of the nose

Late Toxicities:

Cancer: No data available.

Target Organs: No data available.

Developmental and Reproductive System Effects: No data available.

Other Comments: Prolonged or repeated overexposure to fluoride compounds may cause fluorosis. Fluorosis is characterized by skeletal changes, consisting of osteosclerosis (hardening or abnormal density of bone) and osteomalacia (softening of bones) and by mottled discoloration of the enamel of teeth (if exposure occurs during enamel formation.) Symptoms may include bone and joint pain and limited range of motion.
This material contains iron compound(s). Effects of overexposure to dusts can include irritation of the eyes and respiratory tract, pneumoconiosis (dust congested lungs), pneumonitis (lung inflammation), coughing, vomiting, diarrhea, abdominal pain and jaundice.

4. FIRST AID

Eyes: Hold eyelids open and flush eyes immediately with water for at least 15 minutes. Seek medical attention if necessary.

Skin: Wash affected areas with soap and water. Remove contaminated clothing and shoes. Seek medical attention if irritation develops. Wash clothing before reuse.

Inhalation: Remove victim from source and allow to rest in well ventilated area. If breathing is difficult, obtain immediate medical attention.

Ingestion: If person is conscious, immediately give water or milk (about 4 oz. for adults; too much may cause vomiting). Do not induce vomiting. Seek medical attention immediately. If person is unconscious, do not give anything by mouth.

Notes to Physician: If person has been exposed to concentrated decomposition products, treat symptomatically and watch for delayed symptoms of pulmonary edema. Intubation or tracheostomy may be necessary following severe exposure.

5. FIRE FIGHTING MEASURES

Flammability:	Monoammonium phosphate is not flammable or combustible.
Flash Point (test method):	Not applicable.
Flammable Limits:	Not applicable.
Explosive Limits:	Not applicable.
Autoignition Temperature:	Not applicable.
Extinguishing Media:	Not applicable.

NFPA Fire Rating:

Flammability	0
Health Hazard	1
Reactivity	0
Specific Hazard	Not applicable

KEY: Least=0 Slight=1 Moderate=2 High=3 Extreme=4

Special Firefighting Procedures: For fires beyond the incipient stage, emergency responders in the immediate hazard area should wear bunker gear. When the potential chemical hazard is unknown, in enclosed or confined spaces, or when explicitly required by DOT, a self-contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8). Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Move undamaged containers from immediate hazard area if it can be done with minimal risk. Water spray may be useful in minimizing or dispersing vapors. Cool equipment exposed to fire with water, if it can be done with minimal risk. Toxic gases (ammonia and, possibly, small amounts of phosphorus oxides and nitrogen oxides) can be emitted in fires.

Unusual Fire and Explosive Hazards: Closed containers exposed to extreme heat can rupture due to pressure buildup.

Hazardous Combustion Products: Phosphorus oxides and nitrogen oxides

6. ACCIDENTAL RELEASE MEASURES

Recover any reusable product, taking care not to generate excess dust. Dispose of in accordance with federal, state and local environmental regulations.

Neutralizing Chemicals: Not applicable.

7. HANDLING AND STORAGE

Handling: The use of respiratory protection is advised when concentrations exceed any established exposure limits (see Section 8).

Storage: Store in a cool, dry, ventilated area. Isolate from incompatible substances, particularly alkaline materials, as ammonia gas will be released.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ventilation: Use process enclosure, general dilution ventilation, or local exhaust systems, where necessary, to maintain airborne dust concentrations below the OSHA standards or in accordance with applicable regulations.

Preventative Measures / Specific Personal Protective Equipment

Eyes: Safety glasses with side shields are recommended. Maintain eye wash fountain in work area.

Skin: The use of gloves impermeable to the specific material handled (including cotton, leather, etc.) is advised to prevent excessive skin contact.

Respiratory: Protection is not required where adequate ventilation conditions exist. Use dust mask or other appropriate respiratory protection when engineering controls are not feasible or during operations that generate airborne concentrations exceeding the relevant standards. In closed areas, wear appropriate respiratory equipment, when necessary, to protect against ammonia fumes.

A respiratory protection program that meets OSHA's 29 CFR 1910.134 requirements must be followed whenever workplace conditions warrant a respirator's use.

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Exposure Guidelines*

Although standards for monoammonium phosphate (MAP) have not been established, the following nuisance dust standards are applicable. The following standards for ammonia are also applicable since MAP gradually emits ammonia when exposed to air or when in contact with high pH or alkaline materials.

ACGIH TLV:	Particulates Not Otherwise Specified: 10 mg/m3 TWA Ammonia: 25 ppm (17 mg/m3) TWA 35 ppm (24 mg/m3) STEL
OSHA PEL:	Particulates Not Otherwise Specified: 5 mg/m3 TWA (respirable) 15 mg/m3 TWA (total) Ammonia: 50 ppm (35 mg/m3) TWA

* TLV = Threshold Limit Values
PEL = Permissible Exposure Limits
TWA = 8-hour Time-weighted Average
STEL = 15-minute Short Term Exposure Limit

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Tan to brown granules
Odor:	Odorless or slight ammonia odor
Odor Threshold Level:	Not available.
Physical State:	Solid
pH:	4.2 (0.2 molar aqueous solution)
Vapor Pressure:	<100Pa at 20°C
Vapor Density (Air = 1):	Not applicable.
Boiling point (760 mm Hg):	Not applicable.
Melting point:	Decomposes at 374°F (190°C)
Solubility in water (per 100 g water):	328 g/L at 68°F (20°C)
Specific gravity (H20 = 1):	1.803 (heavier than water)
Evaporation rate (Butyl acetate = 1):	Not applicable.
Percentage volatile by volume (%):	Stable in air
Molecular weight:	115.03
Molecular formula:	$NH_4H_2PO_4$

10. STABILITY AND REACTIVITY

Stability (thermal, light, etc.): Stable under ordinary conditions of use and storage.

Incompatibility (Materials to avoid): Contact with high pH or alkaline materials (e.g., sodium hypochlorite) may cause monoammonium phosphate to emit ammonia.

Hazardous Decomposition Products: When heated to decomposition, MAP emits ammonia, nitrogen oxides, phosphorous oxides and phosphoric acid.

Hazardous Polymerization: Will not occur.

Conditions to Avoid: Avoid contact with alkaline materials.

11. TOXICOLOGICAL INFORMATION

Monoammonium Phosphate

Oral LD50: > 2,000 mg/kg (rats)

Dermal LD50: > 5,000 mg/kg (rats)

Inhalation LC50: No data available.

Sensitization Capability: No data available.

Synergistic Chemicals: No data available.

Genetic Toxicity: No data available.

Subchronic Toxicity: No data available.

Chronic Toxicity: No data available.

Iron Compounds

Chronic Toxicity: Chronic exposure to high concentrations of iron have been associated with hemosiderosis, hemochromatosis and in severe cases, liver cirrhosis. Typical occupational exposures to iron compounds are not expected to cause these effects. Chronic inhalation can produce “mottling” of the lungs (siderosis). This is considered a benign pneumoconiosis and does not normally lead to fibrosis or cause significant physiologic impairment.

12. ECOLOGICAL INFORMATION

Monoammonium phosphate may be harmful to aquatic life at relatively high concentrations, however, it has low acute toxicity to fish. Large-scale release may lead to eutrophication of waterways. Notify local health and wildlife officials and operators of any nearby water intakes upon contamination of surface water.

Ecotoxicity Information:

Fish 96 hour LC50, OECD Guideline 203 (rainbow trout): > 86 mg/L
Non-toxic to aquatic organisms as defined by USEPA.

Environmental Fate Information:

Monoammonium phosphate is considered biodegradable and is taken up as a nutrient by vegetation.

13. DISPOSAL CONSIDERATIONS

Monoammonium phosphate is not considered a hazardous waste under Federal Hazardous Waste Regulations 40 CFR 261. Consult local, state and/or provincial environmental regulatory authorities for acceptable disposal procedures and locations. Follow standard disposal procedures.

14. TRANSPORT INFORMATION

Monoammonium phosphate is not listed as a hazardous material by the U.S. Department of Transportation (DOT), Transport Canada (TC), the International Maritime Organization (IMO) or the United Nations (UN).

Proper Shipping Name: Chemicals, N.O.S. (non-regulated)

Other DOT Requirements: None.

Other TDG Requirements: None.

15. REGULATORY INFORMATION

OSHA (Occupational Safety and Health Administration): This material is considered to be hazardous as defined by the OSHA Hazard Communication Standard.

SARA TITLE III (Superfund Amendment and Reauthorization Act of 1986): No federal requirements. User should contact local and state regulatory agencies for information on additional or more stringent reporting requirements.

Sections 311/312: This product has been reviewed according to the USEPA "Hazard Categories" promulgated under Sections 311 and 312 of SARA Title III and is considered, under applicable definitions, to meet the following categories:

Acute: no Chronic: no Fire: no Reactivity: no

DOT (Department of Transportation): Please refer to Section 14 (Transport Information) for guidance concerning transportation.

This material has not been identified as a carcinogen by NTP, IARC or OSHA.

16. DOCUMENTARY INFORMATION AND DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

Issue Date: July 1, 2006
Previous Issue Date: July 1, 2003

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