NOSB NATIONAL LIST
FILE CHECKLIST

CROPS

MATERIAL NAME: **#9 Magnesium chloride**

✓ **NOSB Database Form**

____ **References**

✓ **MSDS (or equivalent)**

✓ **TAP Reviews from: Brian Baker, Walter Jeffery**

NOSB/NATIONAL LIST
COMMENT FORM
CROPS

Material Name: #9 Magnesium chloride

Please use this page to write down comments, questions, and your anticipated vote(s).

COMMENTS/QUESTIONS:

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1. In my opinion, this material is:
_____ Synthetic _____ Non-synthetic.

2. This material should be placed on the proposed National List as:
_____Prohibited Natural _____Allowed Synthetic.

TAP REVIEWER COMMENT FORM for USDA/NOSB

Use this page or an equivalent to write down comments and summarize your evaluation regarding the data presented in the file of this potential National List material. Complete both sides of page. Attach additional sheets if you wish.

This file is due back to us by: Aug. 5, 1996

Name of Material: Magnesium Chloride

Reviewer Name: _____

Is this substance Synthetic or non-synthetic? Explain (if appropriate)

~~Non-synthetic~~ Both

If synthetic, how is the material made? (please answer here if our database form is blank) Extracted from brine, salt deposits or sea water or by reaction.

This material should be added to the National List as:

____ Synthetic Allowed ____ Prohibited Natural

or, ✓ Non-synthetic (This material does not belong on National List)

Are there any use restrictions or limitations that should be placed on this material on the National List? Yes

Please comment on the accuracy of the information in the file:

Any additional comments? (attachments welcomed)

Do you have a commercial interest in this material? ____ Yes; ✓ No

Signature _____ **Date** 8/8/96

USDA/TAP Reviewer
Comment Form

Name of Material: Magnesium Chloride
Reviewer Name: Brian Baker

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NATURAL

Magnesium chloride is produced from seawater and some naturally occurring brines. May also be produced synthetically by reacting magnesium oxide with hydrochloric acid.

Magnesium chloride is used as a foliar source of magnesium. It is also used as a dust suppressant. Growers have indicated that they would like to use it as a desiccant or defoliant for cotton and as an herbicide.

1. Soil application at high rates can decrease potassium and calcium uptake and induce chloride toxicity.

2. Oral (rat) LD_{50}=8,100. Mode of action: . Non-persistent. Does not concentrate.

3. Seawater extraction on the Pacific Coast of North America and the Gulf of California is performed by solar evaporation.

4. The substance is Generally Regarded as Safe for food use. NOSB has already recommended that it be allowed as a non-organic ingredient in organic food.

5. The salt index has not been calculated. See the memo on the salt index. Solubility at 20° C. is 54.6 g/100cc.

6. To correct magnesium deficiencies, magnesium carbonate (dolomite), magnesium sulfate (Epsom salt), sulfate of potash-magnesium (langbeinite). For dust suppression: water, tall oils, lignin sulfate, calcium chloride, sodium chloride. Planting wind-breaks and filter strips can also help with dust control. As a de-icer: calcium chloride and sodium chloride.

   Its efficacy as a defoliant, desiccant and herbicide is also not well documented. Non-chemical alternatives as a cotton harvest aid include water management, timing of harvest, picking more slowly, storage in trailers rather than modules and timing of ginning. Chemical alternatives registered for such use include sodium chlorate, paraquat and the organophosphates DEF and Folex. Non-synthetic chemical alternatives that growers have requested be considered include sodium chloride and calcium chloride. The NOSB has already recommended that micronutrients such as sodium tetraborate and zinc sulfate not be allowed for defoliation. Alternatives to its use as an herbicide include tillage, cover crops, hand weeding, flaming.

7. The NOSB has recommended that it be allowed as a non-organic ingredient in organic processed food. certifiers have allowed it for use as a foliar. IFOAM recommends that it be prohibited as a desiccant, defoliant and herbicide.

Recommendations:

Seawater and brine--Synthetic: No. Prohibited: No.
Other sources--Synthetic: Yes. Allowed: No.

Restrictions: Direct application to soil discouraged. To minimize biological and chemical interactions on the agroecosystem, only foliar and post-harvest uses should be permitted. Direct soil application should be discouraged for its high chloride content, with a long-term management plan to correct for documented deficiencies Use should be accompanied with a plan to correct long-term deficiencies. Use as a desiccant or herbicide should be prohibited.

TAP REVIEWER COMMENT FORM for USDA/NOSB

Use this page or an equivalent to write down comments and summarize your evaluation regarding the data presented in the file of this potential National List material. Complete both sides of page. Attach additional sheets if you wish.

This file is due back to us by: Aug. 5, 1996

Name of Material: Magnesium Chloride

Reviewer Name: WALTER JEFFERY RECEIVED JUL 2 9 1996

Is this substance Synthetic or non-synthetic? Explain (if appropriate) Synthetic

If synthetic, how is the material made? (please answer here if our database form is blank)

This material should be added to the National List as:

____ Synthetic Allowed ____ Prohibited Natural

or, ____ Non-synthetic (This material does not belong on National List)

Are there any use restrictions or limitations that should be placed on this material on the National List?

Please comment on the accuracy of the information in the file:

Any additional comments? (attachments welcomed)

Do you have a commercial interest in this material? ____ Yes; ___ No

Signature Walter Jeffery **Date** 7/23/96

Please address the 7 criteria in the Organic Foods Production Act:
(comment in those areas you feel are applicable)

(1) the potential of such substances for detrimental chemical interactions with other materials used in organic farming systems;

(2) the toxicity and mode of action of the substance and of its breakdown products or any contaminants, and their persistence and areas of concentration in the environment;

(3) the probability of environmental contamination during manufacture, use, misuse or disposal of such substance;

(4) the effect of the substance on human health;

(5) the effects of the substance on biological and chemical interactions in the agroecosystem, including the physiological effects of the substance on soil organisms (including the salt index and solubility of the soil), crops and livestock;
High Salt index - too much could cause My Toxicity

(6) the alternatives to using the substance in terms of practices or other available materials; and

(7) its compatibility with a system of sustainable agriculture.

NOSB Materials Database

Identification

Common Name Magnesium chloride **Chemical Name**

Other Names

Code #: CAS **Code #: Other**

N. L. Category **MSDS** ◉ yes ○ no

Chemistry

Family

Composition $MgCl_2.6H_2O$

Properties Colorless, odorless flakes or crystals. Very deliquescent. Very soluble in water and freely soluble in alcohol.

How Made Magnesium oxide, coarbonate or hydroxide is dissolved in hydrochloric acid and cooled to recover the magnesium cloride. It is manufactured as a by-product of the potash industry, from natural brines, from seawater, and in the presence of an organic reducing agent. Recovery from brines and from potash manufacture is achieved by concentration the liquor by solar evaporation and then fractional crystallization of other salts.

Use/Action

Type of Use Crops

Specific Use(s)

Action

Combinations

Status

OFPA

N. L. Restriction

EPA, FDA, etc

Directions

Safety Guidelines

Historical status

Internationl status

NOSB Materials Database

OFPA Criteria

2119(m)1: chemical interactions

2119(m)2: toxicity & persistence

2119(m)3: manufacture & disposal consequences

2119(m)4: effect on human health

2119(m)5: agroecosystem biology

2119(m)6: alternatives to substance

2119(m)7: Is it compatible?

References

Kirk-Othmer Encyclopedia of Chemical Technology, 3rd. edition, 1982. John Wiley & Sons.

1 - PRODUCT IDENTIFICATION

PRODUCT NAME: MAGNESIUM CHLORIDE, 6-HYDRATE, CRYSTAL
FORMULA: MGCL2 6H2O
FORMULA WT:203.30
CAS NO.: 7791-18-6
NIOSH/RTECS NO.: OM2975000
PRODUCT CODES: 2448,2444,5183
EFFECTIVE: 11/05/86
REVISION #02
PRECAUTIONARY LABELLING
BAKER SAF-T-DATA(TM) SYSTEM
HEALTH - 1 SLIGHT
FLAMMABILITY - 0 NONE
REACTIVITY - 1 SLIGHT
CONTACT - 1 SLIGHT
HAZARD RATINGS ARE 0 TO 4 (0 = NO HAZARD; 4 = EXTREME HAZARD).
LABORATORY PROTECTIVE EQUIPMENT
SAFETY GLASSES; LAB COAT
PRECAUTIONARY LABEL STATEMENTS
CAUTION
MAY CAUSE IRRITATION
MAY BE HARMFUL IF SWALLOWED
DURING USE AVOID CONTACT WITH EYES, SKIN, CLOTHING. WASH THOROUGHLY AFTER HANDLING. WHEN NOT IN USE KEEP IN TIGHTLY CLOSED CONTAINER.
SAF-T-DATA(TM) STORAGE COLOR CODE: ORANGE (GENERAL STORAGE)

2 - HAZARDOUS COMPONENTS

COMPONENT% CAS NO.
NOT APPLICABLE

3 - PHYSICAL DATA

BOILING POINT: N/AVAPOR PRESSURE(MM HG): N/A
MELTING POINT: 118 C (244 F) VAPOR DENSITY(AIR=1): N/A
SPECIFIC GRAVITY: 1.56 EVAPORATION RATE: N/A
(H2O=1) (BUTYL ACETATE=1)

SOLUBILITY(H2O): APPRECIABLE (MORE THAN 10 %) % VOLATILES BY VOLUME: 0
APPEARANCE & ODOR: WHITE DELIQUESCENT CRYSTALS.

4 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (CLOSED CUP N/A
FLAMMABLE LIMITS: UPPER - N/A % LOWER - N/A %
FIRE EXTINGUISHING MEDIA
USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.

CONDITIONS EXIST. IF AIRBORNE CONCENTRATION IS
HIGH, USE AN APPROPRIATE RESPIRATOR OR DUST MASK.
EYE/SKIN PROTECTION: SAFETY GLASSES WITH SIDESHIELDS, RUBBER GLOVES ARE
RECOMMENDED.

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9 - STORAGE AND HANDLING PRECAUTIONS

SAF-T-DATA(TM) STORAGE COLOR CODE: ORANGE (GENERAL STORAGE)
SPECIAL PRECAUTIONS
KEEP CONTAINER TIGHTLY CLOSED. SUITABLE FOR ANY GENERAL CHEMICAL STORAGE
AREA.

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10 - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

DOMESTIC (D.O.T.)
PROPER SHIPPING NAME CHEMICALS, N.O.S. (NON-REGULATED)
INTERNATIONAL (I.M.O.)
PROPER SHIPPING NAME CHEMICALS, N.O.S. (NON-REGULATED)
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SPECIAL FIRE-FIGHTING PROCEDURES
FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN POSITIVE PRESSURE MODE.
TOXIC GASES PRODUCED
CHLORINE, HYDROGEN CHLORIDE

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5 - HEALTH HAZARD DATA

TOXICITY: LD50 (ORAL-RAT)(MG/KG) - 8100
LD50 (ORAL-MOUSE)(MG/KG) - 7600
LD50 (IPR-MOUSE)(MG/KG)- 775
CARCINOGENICITY: NTP: NO IARC: NO Z LIST: NO OSHA REG: NO
EFFECTS OF OVEREXPOSURE
DUST MAY BE IRRITATING TO EYES, NOSE, THROAT, OR LUNGS.
INGESTION MAY CAUSE GASTROINTESTINAL PAIN.
TARGET ORGANS
EYES, SKIN
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE
NONE IDENTIFIED
ROUTES OF ENTRY
EYE CONTACT, SKIN CONTACT, INGESTION, INHALATION
EMERGENCY AND FIRST AID PROCEDURES
INGESTION: IF SWALLOWED AND THE PERSON IS CONSCIOUS, IMMEDIATELY GIVE LARGE AMOUNTS OF WATER. GET MEDICAL ATTENTION.
INHALATION: IF A PERSON BREATHES IN LARGE AMOUNTS, MOVE THE EXPOSED PERSON TO FRESH AIR. GET MEDICAL ATTENTION.
EYE CONTACT: IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION.
SKIN CONTACT: IMMEDIATELY WASH WITH PLENTY OF SOAP AND WATER FOR AT LEAST 15 MINUTES.

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6 - REACTIVITY DATA

STABILITY: STABLEHAZARDOUS POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: MOISTURE
INCOMPATIBLES: MOST COMMON METALS, STRONG OXIDIZING AGENTS
DECOMPOSITION PRODUCTS: HYDROGEN CHLORIDE, CHLORINE

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7 - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE
WEAR SUITABLE PROTECTIVE CLOTHING. CAREFULLY SWEEP UP AND REMOVE.
DISPOSAL PROCEDURE
DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL ENVIRONMENTAL REGULATIONS.

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8 - PROTECTIVE EQUIPMENT

VENTILATION: USE ADEQUATE GENERAL OR LOCAL EXHAUST VENTILATION TO KEEP FUME OR DUST LEVELS AS LOW AS POSSIBLE.
RESPIRATORY PROTECTION: NONE REQUIRED WHERE ADEQUATE VENTILATION