NOSB NATIONAL LIST
FILE CHECKLIST

LIVESTOCK

MATERIAL NAME: **#10 Magnesium Sulfate**

✓ **NOSB Database Form**

✓ **References**

✓ **MSDS (or equivalent)**

✓ **TAP Reviews from:** **Marta Engel, Lynn Brown, and William Zimmer**

NOSB/NATIONAL LIST
COMMENT FORM
LIVESTOCK

Material Name: #10 Magnesium Sulfate

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: ~~July 3~~ Sept 5, 1995

Name of Material: Magnesium Sulfate

Reviewer Name: MARTA W. ENGEL, DVM

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

Both

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?

FOR EXTERNAL USE ONLY

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

Under additional comments I give more information on health care uses. Not well defined in file. I don't know the ~~action~~ mode of action.

Any additional comments? (attachments welcomed)

MgSO4 has 3 modes of action. Externally in hot packs it will reduce inflammation & swelling. Orally it is a laxative, but in excess can cause dehydration and IV it is a CNS depressant and muscle relaxant and in high doses can cause death.

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

Signature Marta W Engel DVM **Date** 9/11/95

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;

Not likely

(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; Not likely — naturally occuring substance. Won't be used in large enough quantities to cause any problem with imbalances.

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

Probably not.

(4) the effect of the substance on human health; Best to be used externally only. Not generally a problem

(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;

Large quantities on the soil might be imbalancing. Only a small amt used for external application not likely to cause a problem.

(6) the alternatives to using the substance in terms of practices or other available materials; and Could use herbal poultices or just hot packs to draw out infection and inflammation.

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

Yes, it is.

TAP REVIEWER COMMENT FORM for USDA/NOSB

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This file is due back to us by: July 3

Name of Material: Magnesium Sulfate

Reviewer Name: Lynn R Brown

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:

X **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)

Can also be used as a feed supplement to provide a source of magnesium and sulfur.

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

Signature Lynn R Brown **Date** 6/16/95

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;

None

(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;

Should pose no problems.

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

Little likelihood of problems.

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

Proper use with livestock will pose no threat to 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;

(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.

compatible with sustainable agriculture

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: JULY 3

Name of Material: Magnesium Sulfate

Reviewer Name: Dr. William A. Zimmer D.V.M.

Is this substance Synthetic or non-synthetic? Explain (if appropriate) Both - $K_2SO_4/MgSO_4$ combinations and pure $MgSO_4$

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

Chemical processing of $K_2SO_4/MgSO_4$ deposits + acid processing of magnesium

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?

No

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

Also useful as a soil fertilizer on sandy or low magnesium soil, generally in the form of $K_2SO_4 + MgSO_4$ (i.e. Sulpo Mag)

Any additional comments? (attachments welcomed)

Animal use: 1. Potential for use as an anionic salt for dairy cows and as a highly available source of magnesium for grass tetany in beef cattle.

2. Topical use for reducing inflamation.

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

Signature William A. Zimmer D.V.M. **Date** 6-9-95

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;

unknown for many, excessive use of sulfur will increase requirements for copper, zinc, etc.

(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;

high levels added to feed can cause transient diarrhea, sulfur ~~[illegible]~~ may persist as $SO_4^=$

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

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

natural laxative, high doses can cause diarrhea, used in enema preparations.

(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;

very soluble source of magnesium and sulfate sulfur, highly available.

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

many alternative sulfur sources for soils and animals other sources of magnesium for animals but not for soils as available to plants (soluble) no known alternatives at feasible rates for some animal systems

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

very compatible especially for sandy crop systems, non chemical anionic salt source

Identification

Common Name **Magnesium Sulfate** **Chemical Name**

Other Names

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

N. L. Category Synthetic Allowed

Chemistry

Composition $MgSO_4 \cdot 7H_2O$ **Family**

Properties Small colorless crystals, usually needle-like, with a cooling, saline, bitter taste. Freely soluble in water, slowly soluble in glycerin, and sparingly soluble in alcohol. Solutions are neutral.

How Made Exists naturally as mineral: epsomite ($MgSO_4 \cdot 7H_2O$) or kieserite ($MgSO_4 \cdot H_2O$). Some magnesium sulfate is recovered from waste brines from the potash industry and natural brines.

Magnesium sulfate is also produced synthetically by dissolving magnesium oxide, hydroxide or carbonate in sulfuric acid (synthetic) solution and evaporating it to crystallization.

Use/Action

Type of Use Livestock

Use(s) Health care. Considered to be a new animal drug by the FDA, depending on its intended use.

Action

Combinations

Status

OFPA

N. L. Restriction Category 2

EPA, FDA, etc

Registration

Directions

Safety Guidelines

State Differences

Historical status

Internationl status

OFPA Criteria

2119(m)1:chem. inter.

2119(m)2: toxicity

2119(m)3:manufacture Low environmental impact from the brine produced material.

2119(m)4:humans

2119(m)5: biology

2119(m)6:alternatives

2119(m)7:compatible

References

AU: Grings,-E.E.; Males,-J.R.
TI: Performance, blood and ruminal characteristics of cows receiving monensin and a magnesium supplement.
SO: J-Anim-Sci. Champaign, Ill. : Amer. Soc. of Animal Sci. Feb 1988. v.66(2) p. 566-573.
CN: DNAL 49-J82

AU: Reid,-R.L.; Baker,-B.S.; Vona,-L.C.
TI: Effects of magnesium sulfate supplementation and fertilization on quality and mineral utilization of timothy hays by sheep.
SO:J-Anim-Sci. Champaign, IL: Amer. Soc. of Animal Sci. Dec 1984. v.59(6) p.1403-1410.
CN: DNAL 49-J82

MATERIAL SAFETY DATA SHEET
MAGNESIUM SULFATE

SECTION I - Product Identification

PRODUCT NAME: MAGNESIUM SULFATE
FORMULA: MGSO4.7H2O
FORMULA WT: 246.5
CAS NO.:
COMMON SYNONYMS: EPSOM SALT

Precautionary Labeling

N/A

SECTION II - Hazardous Components

N/A

SECTION III - Physical Data

BOILING POINT: N/A VAPOR PRESSURE @ 20C (MM HG): N/A
MELTING POINT: 75C VAPOR DENSITY (AIR=1): N/A
SPECIFIC GRAVITY: 1.67 EVAPORATION RATE: N/A
(H2O=1) (BUTYL ACETATE=1)
SOLUBILITY(H2O): SOLUBLE PERCENT VOLATILES BY VOLUME: N/A
APPEARANCE & ODOR: EFFORESENT CRYSTALS

SECTION IV - Fire and Explosion Hazard Data

FLASH POINT: NONFLAMMABLE
FLAMMABLE LIMITS: UPPER - N/A % LOWER - N/A %
FIRE EXTINGUISHING MEDIA
ANY SUITABLE FOR SURROUNDING MATERIALS
SPECIAL FIRE-FIGHTING PROCEDURES
WEAR SELF-CONTAINED BREATHING APPARATUS
UNUSUAL FIRE AND EXPLOSION HAZARDS
MAY EMIT TOXIC FUMES ON THERMAL DECOMPOSITION

SECTION V - Health Hazard Data

THRESHOLD LIMIT VALUE (TLV/TWA): NONE ESTABLISHED
TOXICITY: ORL-RBT LDLO: 3 G/KG
EFFECTS OF OVEREXPOSURE
CAN CAUSE EYE AND SKIN IRRITATION. DUST INHALATION MAY IRRITATE
UPPER RESPIRATORY PASSAGES. MAGNESIUM INTOXICATION.
EMERGENCY AND FIRST AID PROCEDURES
SKIN: WASH WITH SOAP/WATER, GET MEDICAL ASSISTANCE.
EYES: WASH WITH WATER, GET MEDICAL ASSISTANCE.
INHALATION: REMOVE TO FRESH AIR, GET MEDICAL ASSISTANCE.
INGESTION: GET MEDICAL ATTENTION.
GET MEDICAL ASSISTANCE FOR ALL CASES OF OVEREXPOSURE

SECTION VI - Reactivity Data

STABILITY: STABLE
CONDITIONS TO AVOID:
INCOMPATIBILES: N/A
DECOMPOSITION PRODUCTS: SOX

SECTION VII - Spill and Disposal Procedures

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE
SWEEP UP AND CONTAINERIZE

SECTION VIII - Protective Equipment

PROVIDE ADEQUATE GENERAL VENTILATION.
PROTECT EYES AND SKIN WITH SAFETY GOGGLES AND GLOVES.

SECTION IX - Storage and Handling Precautions

STORE IN COOL, DRY, AREA.

SECTION X - Transportation Data and Additional Information

MELTING POINT: BEGINS TO LOSE WATER AT 75C

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N/A = Not Applicable OR Not Available
The information published in this Material Safety Data Sheet has been compiled from our experience and data presented in various technical publications. It is the user's responsibility to determine the suitability of this information for adoption of necessary safety precautions. We reserve the right to revise Material Safety Data Sheets periodically as new information becomes available.