NOSB NATIONAL LIST
FILE CHECKLIST

PROCESSING

MATERIAL NAME: Magnesium silicate

CATEGORY: Synthetic Allowed

Complete?:

✓ NOSB Database Form

✓ References

✓ MSDS (or equivalent)

✓ FASP (FDA)

✓ Date file mailed out: 1/8/95

✓ TAP Reviews from: Bob Durst

Steve Taylor

Supplemental Information:

MISSING INFORMATION: another TAP review from Rich T.
NOSB/NATIONAL LIST
COMMENT FORM/BALLOT

Use this page to write down comments and questions regarding the data presented in the file of this National List material. Also record your planned opinion/vote to save time at the meeting on the National List.

Name of Material: Magnesium silicate

Type of Use: ___ Crops; ___ Livestock; ✓ Processing

TAP Review by:
1. Steve Taylor
2. Bob Quest
3. 

Comments/Questions:

My Opinion/Vote is:

Signature ___________________________ Date _____________
USDA/TAP REVIEWER
COMMENT FORM

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. Attach additional sheets if you wish.

This file is due back to us within 30 days of: Jan 7

Name of Material: Magnesium Silicate
Reviewer Name: Steve Taylor

Is this substance Natural or Synthetic? Explain (if appropriate)
Synthetic

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

This material should be added to the National List as:

   ___ Synthetic Allowed      ___ Prohibited Natural

   or,   x   This material does not belong on the National
         List because:
         Synthetic, alternatives available.

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

Any additional comments or references?

Signature           Date            3-5-95
Steve Taylor
Material: Magnesium silicate

Reviewer: Bob Durst

Is this substance Natural or Synthetic? Explain (if appropriate)

It is a naturally occurring substance (asbestos mineral), that is highly processed or synthetically manufactured for use in the food industry.

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

The file is accurate.

This material should be added to the National List as:

- [ ] Synthetic Allowed,
- [X] Prohibited Natural, or
- [X] This material does not belong on the National List because:

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

Should only be used as a nutrient (not as a processing aid), and must be listed on the ingredient label.

Any additional comments or references?

There are other sources of dietary magnesium. There are other compounds (talc, starches, modified carbohydrates) that can be used for its other properties (anti-caking, lubricant, filter aid).

The human hazards associated with asbestos are well documented, and even though this is not the same crystalline form that asbestos exists in, and is unlikely to pose any of the same health risks, the perception of the consumer to seeing the chemical compound for asbestos present in a foodstuff, especially one labeled organic is not good public relations.

AU: Peleg,-Micha.; Hollenbach,-Ann-M.
TI: Flow conditioners and anticaking agents.
AB: Abstract: Flow conditioners and anticaking agents are finely-divided solids that are added to a host powder to improve its flowability and/or to inhibit its tendency to cake. The principal commercial food-grade conditioners include silicon dioxide, silicates, phosphates, stearic acid salts, talcum, starches, and modified carbohydrates. Some of these have different particle sizes or other characteristics for specific applications or products. Their various properties and functions include interruption of liquid bridging, competition for adsorbed water, lubrication, anti-static ability, and crystallinity modification. There are various methods used to evaluate their effectiveness. Varying the concentration of these additives can produce certain effects.
**Identification**

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Magnesium silicate</th>
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<tbody>
<tr>
<td>Other Names</td>
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<tr>
<td>Code #: CAS</td>
<td>Synthetic Allowed</td>
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<tr>
<td>N. L. Category</td>
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</table>

**Chemistry**

A very fine, white, odorless powder, free from grittiness. Insoluble in water and in alcohol, but is readily decomposed by mineral acids.

"A synthetic, usually amorphous form of magnesium silicate in which the molar ratio of magnesium oxide to silicon dioxide is approximately 2.5." (FCC)

The naturally occurring substance (asbestos mineral) is highly processed using synthetic steps for use in the food industry.

**Use/Action**

**Type of Use**

**Specific Use(s)** Formulation aid, Lubricant. In nutritional supplements; anticaking agent; filter aid.

**Action**

**Combinations**

**Status**

**OFPA**

**N. L. Restriction**

**EPA, FDA, etc** FDA-GRAS

**Directions**

**Safety Guidelines**

**State Differences**

**Historical status**

**International status**
NOSB Materials Database

OFPA Criteria

2119(m)1: chemical interactions Not Applicable
2119(m)2: toxicity & persistence Not Applicable
2119(m)3: manufacture & disposal consequences

2119(m)4: effect on human health

None. Although this is GRAS because the original asbestos content is not a threat to health, the consumer perception of a compound related to asbestos in food is not a good image of organics. (BD)

2119(m)5: agroecosystem biology Not Applicable
2119(m)6: alternatives to substance
   Anticaking agent: many alternatives. Nutrient: other Magnesium sources such as carbonate and chloride.
   Filtration aid: diatomaceous earth.

2119(m)7: Is it compatible?

References

AU: Tortuero,-F.; Rioperez,-J.
TI: Effects of low levels of dietary magnesium silicate supplementation on the performance and carcass characteristics of pigs from 24 to 68 kg body weight.
CN: DNAL 41.8-C163

AU: Peleg, Micha.; Hollenbach, Ann M.
TI: Flow conditioners and anticaking agents.
Abstract: Flow conditioners and anticaking agents are finely-divided solids that are added to a host powder to improve its flowability and/or to inhibit its tendency to cake. The principal commercial food-grade conditioners include silicon dioxide, silicates, phosphates, stearic acid salts, talcum, starches, and modified carbohydrates. Some of these have different particle sizes or other characteristics for specific applications or products. Their various properties and functions include interruption of liquid bridging, competition for adsorbed water, lubrication, anti-static ability, and crystallinity modification. There are various methods used to evaluate their effectiveness. Varying the concentration of these additives can produce certain effects.
MATERIAL SAFETY DATA SHEET
ASBESTOS

SECTION I - Product Identification

PRODUCT NAME: ASBESTOS
FORMULA: N/A
FORMULA WT: N/A
CAS NO.: COMMON SYNONYMS: MAGNESIUM SILICATE MINERAL

Precautionary Labeling

N/A

SECTION II - Hazardous Components

ASBESTOS FIBERS

SECTION III - Physical Data

BOILING POINT: N/A VAPOR PRESSURE @ 20°C (MM HG): N/A
MELTING POINT: (DEC.) VAPOR DENSITY (AIR=1): N/A
SPECIFIC GRAVITY: 2.5 EVAPORATION RATE: N/A
(H2O=1) (BUTYL ACETATE=1)
SOLUBILITY(H2O): INSOLUBLE PERCENT VOLATILES BY VOLUME: N/A
APPEARANCE & ODOR: GRAY, FIBEROUS

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
WEAR FULL PROTECTIVE CLOTHING
SPECIAL FIRE-FIGHTING PROCEDURES
WEAR SELF-CONTAINED BREATHING APPARATUS
UNUSUAL FIRE AND EXPLOSION HAZARDS
HAZARDOUS DUST IS RELEASED ON THERMAL DECOMPOSITION

SECTION V - Health Hazard Data

THRESHOLD LIMIT VALUE (TLV/TWA): OSHA STD-AIR: TWA 2 FB/CC CEILING: 10 FB/CC
TOXICITY: IHL-HMN TDLO: 2.8 FB/CC/5Y
IHL-HMN TCLO: 1.2 FB/CC/19Y
TOXIC EFFECT: CARCINOGENIC
NOTE: "FB" INDICATES "FIBERS"
EFFECTS OF OVEREXPOSURE
IRRITATING TO THE RESPIRATORY TRACT, SKIN AND EYES. CHRONIC
INHALATION OF HIGH LEVELS OF ASBESTOS PARTICLES WILL CAUSE
ASBESTOSIS. RECOGNIZED CARCINOGEN
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: STRONG ACIDS AND GLACIAL ACETIC ACID DUSTING
(DISPERSION OF FINE PARTICLES INTO THE AIR)
INCOMPATIBILITIES: ACIDS, OXIDIZERS, ALKALI METALS, ORGANIC MATERIALS
DECOMPOSITION PRODUCTS: ASBESTOS DUST

SECTION VII - Spill and Disposal Procedures

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE
SWEEP UP AND PLACE INTO SEALED CONTAINER

SECTION VIII - Protective Equipment

VENTILATION ADEQUATE TO MEET TLV LIMIT
WEAR APPROPRIATE DUST RESPIRATOR, GLOVES, GOGGLES AND CLOTHING

SECTION IX - Storage and Handling Precautions

AVOID DUSTING CONDITIONS BY WORKING IN SEALED OFF AREAS WEARING
PROTECTIVE CLOTHES
STORE ASBESTOS IN SEALED CONTAINERS

SECTION X - Transportation Data and Additional Information

WORKERS CONTINUOUSLY EXPOSED TO ASBESTOS SHOULD BE SUBJECTED
TO PREPLACEMENT AND ANNUAL MEDICAL EXAMINATIONS
REV. 9/85

(TM) and (R) : Registered Trademarks
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.
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MAGNESIUM SILICATE

HUMAN CONSUMPTION: 0.0008474 MG/KG BW/DAY/PERSON
MARKET DISAPPEARANCE: 1000.000 LBS/yr
MARKET SURVEY: 87
JECFA: NS

JECFA ADI: MG/KG BW/DAY/PERSON
JECFA ESTABLISHED: 1982
LAST UPDATE: 930815

RUCTURE CATEGORIES: B1

OMPONENTS:

OWNMS:

EMICAL FUNCTION:

CHNICAL EFFECT:

R REG NUMBERS: 182.2437 169.179 169.182

MIMUM TESTING LEVEL: 2

MENTS: STUDIES 1 AND 2 FROM SCOGS-61
DATA INSUFFICIENT FOR PRIORITY RANKING

X 9:

ORAL TOXICITY STUDIES (OTHER THAN ACUTE)

UDY: 1

OMPLECTENESS: SOURCE: PROC NATL ACAD SCI USA 65: 872-875
PE: SHORT TERM
CIES: RAT
RATION: 28 DAYS
EFTS: WATER INTAKE INCREASE

STEMS: "A FEW ANIMALS" DEMONSTRATED POLYURIA
ONE DOSE LEVEL ONLY; TEST COMPOUND = MAGNESIUM TRISILICATE
NO GROSS OR MICROSCOPIC CHANGES IN KIDNEY

UDY: 2 COMPLETENESS: SOURCE: PROC NATL ACAD SCI USA 65:
PE: SHORT TERM YEAR: 1970
ECIES: DOG LEL: 800 MG/KG BW/DAY
RATION: 28 DAYS HNEL:
FECTS: NEPHROTOXICITY
NEPHRITIS
INFLAMMATION
TES: KIDNEY
MEMENTS: GROSS AND MICROSCOPIC RENAL DAMAGE
ONE DOSE LEVEL ONLY; TEST COMPOUND = MAGNESIUM TRISILICATE

X 3: GENETIC TOXICITY STUDIES

UDY: 3A COMPLETENESS: SOURCE:
PE: YEAR:
ECIES: LEL: MG/KG BW/DAY
RATION: HNEL:
FECTS:
LLES:
MEMENTS:

UDY: 3B COMPLETENESS: SOURCE:
PE: YEAR:
ECIES: LEL: MG/KG BW/DAY
RATION: HNEL:
FECTS:
LLES:
MEMENTS:
Memo

TO: NOSB/USDA
FROM: Zea Sonnabend, TAP Coordinator
DATE: 4/4/95
RE: Additional information to add to Materials Files

Here are the additional pieces of information which were not available on time for the main mailing but are valuable to complete your evaluations of some materials. They are listed below in the same order as your indexed list of Materials on the Orlando agenda. It is suggested that you insert them in their proper places in the main binder.

Included here are:

<table>
<thead>
<tr>
<th>File #</th>
<th>Material</th>
<th>Document(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Enzymes, bacterial</td>
<td>TAP review by Rich Theuer (1p.)</td>
</tr>
<tr>
<td>37</td>
<td>Ash</td>
<td>TAP reviews by B. Baker (2pp.) &amp; E. Sideman (1p.)</td>
</tr>
<tr>
<td>38</td>
<td>Bordeaux Mix</td>
<td>TAP review by Eric Sideman (1p.) &amp; Report on Copper Fungicides from MOFGA (22pp.)</td>
</tr>
<tr>
<td>41</td>
<td>Fish Products</td>
<td>Database Form (accidentally omitted earlier-2pp.)</td>
</tr>
<tr>
<td>48</td>
<td>Potassium Permanganate</td>
<td>TAP review &amp; support information from Fred Klatte (15pp.)</td>
</tr>
</tbody>
</table>

Files not included in this mailing are those on Perlite (File #23) and Alcohol (#52). These materials were too incomplete to send and will have to be dropped from the agenda. TAP reviews not included here are those on Magnesium silicate (#17), Silicon Dioxide (#29) and Yeast, smoked (#35) from Rich Theuer and on Lime Sulfur (#43) and Oils, Petroleum (#45) from Helmut Reidl. The board will have to decide whether to proceed with these materials at the meeting in light of the information already available.
NATURAL ALLOWED MATERIALS REPORT
by Zea Sonnabend, April 1995

The list of materials proposed by the National Organic Standards Board Crops Committee to be allowed because they are natural (Addendum 4 of the Inputs for Organic Crops Production position paper 2) was sent to 17 people in the organic materials community for review. They were asked to identify any entries on the list which they believed may be synthetic, so that any synthetic materials could then be handled through the TAP review process before being accepted automatically.

The following 13 people responded to the mailing:

Brian Baker (BB), California Certified Organic Farmers (CCOF), California
Tim Batiste (TB), Washington State Department of Agriculture, Washington
Kate Burroughs (KB), Harmony Farm Supply, California
Brian Caldwell (BC), NOFA-NY, New York
John Clark (JC), Roseland Farms, Michigan
Lynn Coody (LC), Organic Agsystems & Oregon Tilth, Oregon
Tane Datta (TD), Hawaiian Organic Farmers, Hawaii
David Engel (DE), OCIA, Wisconsin
Bart Hall-Beyer (BH), ATTRA, Arkansas
Joseph Heckman (JH), Rutgers Univ. & NOFA-NJ, New Jersey
Joe Kovach (JK), Cornell University, New York
Eric Sideman (ES), Maine Organic Farmers & Gardeners (MOFGA), Maine
Tom Thomas (TT), Farm Verified Organic, Nebraska

The following entries were identified by one or more respondents as being possibly synthetic. Their comments follow, if given.

Adjuvants, vegetable oil (JC)
Alcohol (BC, JC, LC) - Can be either natural or synthetic
Animal By-Products (DE) - Suspect due to pathogens.
Borate (KB, JC, ES) - mined sources are synthetically reacted to purify
Carbon Dioxide gas (JC)
Chelates, natural (JC) - natural ones are not affordable.
Deer & Rabbit Repellents (BB, KB, TT, LC, BH) - a broad category
Epsom salts (Magnesium Sulfate) (BB, KB, LC, JC, BH) - no natural sources currently available. Produced by heating magnesium carbonate or reacting mg oxide with sulfuric acid.
Fish Products (ES) - Fish hydrolysates should be in the synthetic allowed category.
Gibberellic Acid (JC, TD) - Both natural and synthetic sources.
Humic Acid Derivatives (BB, JC) - humates reacted with strong bases.
Leaves (JH)
Lignites (JC) - treated with chemicals.
Niter (KB, JC, LC) - it is mentioned in literature but we don't know of natural source. Should be prohibited natural (BH, DE).
Oxalic Acid (JC)
Phosphate Rock (JH)  
Potassium Chloride (Muriate) (JC, DE, BH) - Should be prohibited natural (BH, DE).  
Potassium Sulfate (JC)  
Sand (TB) - the Silicon Dioxide used in food processing is synthetically derived.  
Sticky Barriers (BB, JC) - Usually made from petroleum derivatives.  
Sulfate of Potash Magnesia (JC) - mined Sul Po Mag only is natural.  
Tree Seals (BB, KB, JC) - most sources synthetically compounded from paraffin or latex.  
Vitamins (LC, DE, JH) - Can be either natural or synthetic

Of the above list, many of them are already on the proposed synthetic allowed list because it was realized they had both synthetic and natural forms. These include: Alcohol, Borate, Chelates, Deer & Rabbit Repellents (Ammonium soaps), Fish Products, Sand (as Silicon Dioxide for Processing), Tree Seals, and Vitamins.

That leaves the following entries for the NOSB to decide what to do with:  
Adjuvants, vegetable oil (JC), Animal By-Products (DE), Carbon Dioxide gas (JC),  
Epsom salts (Magnesium Sulfate) (BB, KB, LC, JC, BH), Gibberellic Acid (JC, TD),  
Humic Acid Derivatives (BB, JC), Leaves (JH), Lignites (JC), Phosphate Rock (JH),  
Potassium Chloride (Muriate) (JC, DE, BH), Potassium Sulfate (JC), Sticky Barriers (BB, JC), Sulfate of Potash Magnesia (JC). It should be noted that in no cases except for Silicon Dioxide above and Epsom Salts and Humic Acid Derivatives from Brian Baker, were comments made or information provided to support the opinion.

(The recommendation of the TAP coordinator for the NOSB is to refer any of the above which have 2 or more opinions that it is synthetic to the TAP review process by acclamation. That would be Epsom Salts, Gibberellic Acid, Humic Acid Derivatives, Niter, Potassium Chloride, and Sticky Barriers. The others should either be dropped pending supporting evidence or discussed individually for referral to TAP).

Several other relevant comments were mentioned by some reviewers. They are itemized below:

- Bt as it is commercially available is full of inerts which are probably largely synthetic (LC & BC)
- Mined minerals may be chemically changed but natural forms are available. (LC)
- One reviewer is of the opinion that natural inputs must be from certified organic source (JC)
- Seaweed and sea animal wastes are contaminated (JC)
- Supporting information on leather tanning was provided which could count as a TAP review on that entry on the Synthetic list. While leather was not on the natural list provided, this reviewer wanted to make sure it was a synthetic and provides opinion that it should be prohibited as such. (BH)

The individual responses and supporting material will be available in Orlando if any NOSB member wishes to look at them.
Progress Report to the NOSB/USDA  
for the period February 16, 1995 to March 31, 1995

Some 55 materials files were coalesced and sent to the USDA during this period which will be on the agenda of the April NOSB meeting. The details of these materials are in the enclosed table and in the index to the mailing the NOSB received about materials. In conjunction with John Brown, the reviews were received back from TAP members and the information compiled onto a Database form, edited, and assembled into a packet containing a NOSB comment form, the TAP reviews, database form, MSDS, FASP (for processing) and supplemental information in some cases. Additionally some introductory information such as a glossary, explanation of the database, index and description of the TAP reviewers was prepared for the Board with the materials files.

There were another handful of materials which had been sent out in February, but which were not complete enough for one of several reasons, to get onto the agenda for April. These include Perlite for Processing, Alcohol for Livestock, and Copper, Parapheromones, and Soap-Based Herbicides for Crops. There are a few of the 55 materials on the agenda which have only one TAP review and may be removed from consideration for that reason, but that will be up to the NOSB to decide in Orlando.

A list of information gaps for the next round of files to go out to the TAP was prepared and faxed to John Brown on March 8th. An additional mailing for the Natural Allowed list was made to supplement the comments received so far. A brief report on this will be presented in Orlando.

While many of the TAP members have performed exceptionally and deserve some commendation, a few have been dropped from the roster because of lack of participation. There are currently still enough TAP reviewers for all the Livestock materials, and all but a very few of the Processing ones. The Crops area is still quite short of available TAP reviewers. On December 21, 1994 I sent a fax to the USDA office with a list of those crops materials for which we do not have enough TAP reviewers. While they have said they are working on it, I have yet to receive any names from them. I will be pursuing the few additional leads I have, and hope that all NOSB members will do the same.

Lastly, as of March 31 I have accumulated almost $3000 of time worked which I do not have a contract yet to get paid for. My repeated inquiries to the USDA have not resulted in anything tangible. This situation should be discussed in Orlando.
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<td>Kaolin (clay) &amp; Bentonite</td>
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Any materials not on this list have not yet been sent out.

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<td>Ps, HR</td>
<td>Bo</td>
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</table>

56 Piperonyl Butoxide
57 Streptomycin
58 Tobacco (Nicotine)

3/23/95 3/23/95 (vz)
10/14/91 3/23 (vz)
1 9/23/94 RV WZ