

Syn

Not allowed in organic
not on list

NOSB NATIONAL LIST FILE CHECKLIST

in made with (NO)

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 Durst
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, 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 Steve Taylor

Date 3-5-95

USDA/TAP Reviewer Comment Form

2.

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,

Prohibited Natural, or

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.

SO: Food-Technol. Chicago, Ill. : Institute of Food Technologists. March 1984. v. 38 (3) p. 93-102. ill.

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.

Signature 

Date 3/14/95

NOSB Materials Database

5.

Identification

Common Name **Magnesium silicate** **Chemical Name**
Other Names
Code #: CAS **Code #: Other**
N. L. Category Synthetic Allowed **MSDS** yes no

Chemistry

Family

Composition Properties

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

How Made

"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.

Processing

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

6.

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.

SO: Can-j-anim-sci. Ottawa : Agricultural Institute of Canada, 1957. Sept 1993. v. 73 (3) p. 665-667.

CN: DNAL 41.8-C163

AU: Peleg, Micha.; Hollenbach, Ann M.

TI: Flow conditioners and anticaking agents.

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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

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BOILING POINT: N/A VAPOR PRESSURE @ 20C (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

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SECTION IV - Fire and Explosion Hazard Data

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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

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SECTION V - Health Hazard Data

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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

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SECTION VI - Reactivity Data

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STABILITY: STABLE
CONDITIONS TO AVOID: STRONG ACIDS AND GLACIAL ACETIC ACID DUSTING
(DISPERSION OF FINE PARTICLES INTO THE AIR)
INCOMPATIBLES: ACIDS, OXIDIZERS, ALKALI METALS, ORGANIC MATERIALS
DECOMPOSITION PRODUCTS: ASBESTOS DUST

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SECTION VII - Spill and Disposal Procedures

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

=====

SECTION VIII - Protective Equipment

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

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SECTION IX - Storage and Handling Precautions

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

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SECTION X - Transportation Data and Additional Information

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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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U. S. FOOD AND DRUG ADMINISTRATION
FOOD ADDITIVE SAFETY PROFILE

MAGNESIUM SILICATE

INS# : 001343880 HUMAN CONSUMPTION: 0.0008474 MG/KG BW/DAY/PERSON
SP# : 2338 MARKET DISAPPEARANCE: 1000.000 LBS/YR
PE : ASP MARKET SURVEY: 87
S# : 0115 JECFA: NS
MA# : JECFA ADI: JECFA ESTABLISHED: 1982 MG/KG BW/DAY/PERSON
AS# : JECFA ESTABLISHED: 930815
LAST UPDATE:
I : DENSITY: LOGP:

STRUCTURE CATEGORIES: B1

COMPONENTS:

NONYMS: SILICIC ACID, MAGNESIUM SALT

CHEMICAL FUNCTION: G

PHARMACOLOGICAL EFFECT: FORMULATION AID
ANTICAKING AGENT OR FREE-FLOW AGENT

REGISTRATION NUMBERS: 182.2437 169.179 169.182

MINIMUM TESTING LEVEL: 2

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

EX 9: ORAL TOXICITY STUDIES (OTHER THAN ACUTE)

STUDY: 1 COMPLETENESS: SOURCE: PROC NATL ACAD SCI USA 65:
872-875

TEST TYPE: SHORT TERM YEAR: 1970
SPECIES: RAT LEL: 800 MG/KG BW/DAY
DURATION: 28 DAYS HNEL:
EFFECTS: WATER INTAKE INCREASE
TEST SITE: SOFT STOOL

REMARKS: "A FEW ANIMALS" DEMONSTRATED POLYURIA
ONE DOSE LEVEL ONLY; TEST COMPOUND = MAGNESIUM TRISILICATE

CNUM=2338

NO GROSS OR MICROSCOPIC CHANGES IN KIDNEY

UDY: 2 COMPLETENESS: SOURCE: PROC NATL ACAD SCI USA 65:
 872-875
 PE: SHORT TERM
 ECIES: DOG YEAR: 1970
 RATION: 28 DAYS LEL: 800 MG/KG BW/DAY
 FECTS: NEPHROTOXICITY HNEL:
 NEPHRITIS
 INFLAMMATION
 TES: KIDNEY
 MMENTS: 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:
 LLS:
 MMENTS:

UDY: 3B COMPLETENESS: SOURCE:
 PE: YEAR:
 ECIES: LEL: MG/KG BW/DAY
 RATION: HNEL:
 FECTS:
 LLS:
 MMENTS:

1e

Zea Sonnabend

(408)761-3213 phone, 761-8988 fax

Technical Advisory Panel Coordinator for the National Organic Standards Board

Memo

TO: NOSB/USDA
FROM: Zea Sonnabend, TAP Coordinator *Zea*
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:

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

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.

Zea Sonnabend (408)761-3213 phone, 761-8988 fax
Technical Advisory Panel Coordinator for the National Organic Standards Board

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), OCLA, 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 propably 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.

Zea Sonnabend (408)761-3213 phone, 761-8988 fax
Technical Advisory Panel Coordinator for the National Organic Standards Board

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 recieved 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 recieved 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.



**MATERIALS CURRENTLY UNDER REVIEW by
the NOSB as of April 1, 1995**

<u>#</u>	<u>Material</u>	<u>Ty</u>	<u>Date</u>	<u>Out</u>	<u>Reviewers*</u>	<u>By**</u>	<u>Returned</u>	<u>Sent to</u> USDA
1	Agar-agar	Pr	1/8/95		RT, ST	ZS	3/9 (ST), 3/13(RT)	3/16/95
2	Alginates	Pr	2/14/95		RT, ST	ZS	3/13(RT, ST)	3/16/95
3	Ammonium bicarbonate	Pr	1/8/95		RT, ST, BD	ZS	2/22(RT), 3/9 (ST), 3/14(BD)	3/16/95
4	Ascorbic Acid	Pr	2/6/95		RT, SH, MS	ZS	2/23(RT), 2/28(MS), 3/14(SH)	3/16/95
5	Calcium chloride	Pr	2/14/95		RT, ST, SH	ZS	2/22(RT), 3/9 (ST), 3/14(SH)	3/16/95
6	Calcium Hydroxide	Pr	1/8/95		RT, ST, BD	ZS	2/22(RT), 3/9 (ST), 3/14(BD)	3/16/95
7	Carraageenan	Pr	1/8/95		RT, ST, SH	ZS	2/23(RT), 3/9 (ST), 3/14(SH)	3/16/95
8	Citric Acid	Pr	1/8/95		ST, BD, SH	ZS	3/9 (ST), 3/14(BD, SH)	3/16/95
9	Diatomaceous earth	Pr	1/8/95		RT, ST, BD	ZS	3/9 (ST), 3/13(RT), 3/14(BD)	3/16/95
10	Enzymes, bacterial	Pr	1/8/95		RT, ST, WF	ZS	3/9 (ST), 3/30(RT), ?? (WF)	3/16/95
11	Iron sulfate	Pr	2/6/95		RT, ST, BD	ZS	2/23(RT), 3/13(ST), 3/14(BD)	3/16/95
12	Kaolin (clay) & Bentonite	Pr	1/8/95		RT	ZS	3/13(RT)	3/23/95
13	Kelp granules	Pr	2/14/95		RT, ST	ZS	3/9 (ST), 3/13(RT)	3/16/95
14	Lactic acid, fermtd	Pr	2/14/95		RT, ST	ZS	3/9 (ST), 3/13(RT)	3/16/95
15	Lecithin, Soy	Pr	2/14/95		RT, SH	ZS	3/13(RT), 3/14(SH)	3/16/95
16	Magnesium carbonate	Pr	2/6/95		RT, ST, BD	ZS	2/22(RT), 3/13(ST), 3/14(BD)	3/18/95
17	Magnesium silicate	Pr	1/8/95		RT, ST, BD	ZS	3/9 (ST), 3/14(BD)	3/18/95
18	Magnesium sulfate	Pr	2/14/95		RT, ST, BD	ZS	3/13(RT, ST), 3/14(BD)	3/18/95
19	Mono/Di-glycerides	Pr	2/14/95		RT, ST, SH	ZS	3/9 (ST), 3/13(RT), 3/14(SH)	3/18/95
20	Nitrogen	Pr	2/14/95		RT, SH, BD	ZS	3/13(RT), 3/14(BD, SH)	3/18/95
21	Oxygen	Pr	2/14/95		RT, ST, BD	ZS	3/9 (ST), 3/13(RT), 3/14(BD)	3/18/95
22	Pectin, Low-Methoxy	Pr	2/6/95		RT, SH, MS	ZS	2/28(MS), 3/13(RT), 3/14(SH)	3/18/95
24	Potassium carbonate	Pr	2/6/95		RT, ST, BD	ZS	2/23(RT), 3/13(ST), 3/14(BD)	3/18/95
25	Potassium chloride	Pr	1/8/95		RT, ST, BD	ZS	2/22(RT), 3/9 (ST), 3/14(BD)	3/18/95
26	Potassium citrate	Pr	2/14/95		RT, ST, BD	ZS	3/13(RT, ST), 3/14(BD)	3/18/95
27	Potassium iodide	Pr	2/14/95		RT, ST, BD	ZS	3/13(RT, ST), 3/14(BD)	3/18/95
28	Potassium phosphates	Pr	2/6/95		RT, ST, BD	ZS	2/22(RT), 3/13(ST), 3/14(BD)	3/18/95

29	Silicon Dioxide	Pr	2/14/95	RT, ST, BD	ZS	3/9 (ST), 3/14(BD)	3/18/95
30	Sodium carbonates	Pr	1/8/95	RT, ST, BD	ZS	2/22(RT), 3/9 (ST), 3/14(BD)	3/18/95
31	Sodium citrates	Pr	2/14/95	RT, SH, BD	ZS	3/13(RT), 3/14(BD, SH)	3/18/95
32	Sodium Hydroxide	Pr	2/14/95	RT, ST, BD	ZS	3/9 (ST), 3/13(RT), 3/14(BD)	3/18/95
33	Sulfur dioxide	Pr	2/14/95	RT, ST, BD	ZS	3/13(RT, ST), 3/14(BD)	3/18/95
34	Xanthan Gum	Pr	1/8/95	RT, SH, BD	ZS	2/23(RT), 3/14(BD, SH)	3/18/95
35	Yeast, smoked	Pr	2/6/95	MS	ZS	2/28(MS)	3/23/95
36	Aquatic Plant Extracts	Cr	1/17/95	JJ, BS, DB	JB	3/8(BS), 2/12(DB), 3/11(JJ)	3/14/95
37	Ash	Cr	1/17/95	SC	JB	2/23(SC), 3/24(ES)	3/16/95
			3/15/95	ES			
38	Bordeaux Mix	Cr	7/20/94	EA, PV	ZS	8/17(PV), 3/24 (ES)	3/16/95
			3/15/95	ES			
39	Boric Acid	Cr	1/17/95	JF, JJ	JB	3/11(JJ), 3/4(JF), 3/14(BB)	3/14/95
			2/20/95	BB, PS			
40	Boron Products, Soluble	Cr	1/17/95	LC, PV,	JB	2/7(LC), 2/18(PV), 3/14(BB)	3/14/95
			2/20/95	BB, PS			
41	Fish Products	Cr	1/17/95	JJ, BS, PS	JB	2/1(PS), 3/8(BS), 3/11(JJ)	3/14/95
42	Lime, Hydrated	Cr	1/17/95	DB	JB	2/12(DB)	3/16/95
43	Lime Sulfur	Cr	1/17/95	HR, DB	JB	2/12(DB)	3/16/95
44	Micronutrient Sprays	Cr	1/17/95	PV, VP&BW, BB	JB	3/2(VP&BW), 2/18(PV), 3/14(BB)	3/14/95
45	Oils, Petroleum Based	Cr	1/17/95	HR, VP&BW	JB	3/2(VP&BW)	3/16/95
46	Pheromones	Cr	1/17/95	BS, JK	JB	3/8(BS), 3/11(JK)	3/14/95
47	Potassium Bicarbonate	Cr	1/17/95	WJ, BB	JB	2/19(WJ), 3/14(BB)	3/16/95
48	Potassium Permanganate	Cr	1/17/95	WJ, BB	JB	2/19(WJ), 3/14(BB), 3/20(FK)	3/16/95
			3/15/95	FK			
49	Soaps	Cr	7/20/94	DB,SC,JF,JJ, JK,HR,PS,PV	ZS	7/29(JK,SC), 8/18(HR, JJ, PV, PS) 10/15(DB)	3/14/95
50	Sodium Nitrate	Cr	9/23/94	BS, WJ	ZS	10/12(WJ, BS), 2/1(PS), 3/11(JJ)	3/14/95
			1/17/95	PS, JJ	JB		
51	Sulfur	Cr	1/17/95	PS, PS, JK, WJ	JB	2/1(PS), 3/8(WJ), 3/11(JK)	3/14/95
			2/20/95				
53	Aspirin	U	9/23/94	ME, WZ	ZS	10/24(ME), 3/23 (WZ)	3/23/95
54	Biotin	U	9/23/94	RK, WZ	ZS	10/19(RK), 3/23 (WZ)	3/23/95

	LI	9/23/94	RK, WZ	ZS	10/19(RK), 3/23 (WZ)	3/23/95
55 Iodine						
56 Piperonyl Butoxide	Bo		PS, HR	JB		
57 Strychnine	Bo		PS, GO	JB		
58 Tobacco (Nicotine)	Bo		GO, JC	JB		

* PROCESSING: RT= Rich Theuer; ST= Steven Taylor; SH= Steven Harper; BD= Bob Durst; MS= Mark Schwartz; WF= William Fordham
 CROPS: PS= Paul Sachs; BB= Brian Baker; LC=Lynn Coody; DB= Donald Blakeney; SC= Samuel Colner; WJ=Walter Jeffery; JK= Joseph Kovach; JJ= James Johnson; BS= Bruce Spencer; PV= Phillip VanBuskirk; VP. & BW= Vivian Purdy & Bill Wolf; JF= Jerald Fellelson; HR= Helmut Reidl; ES= Eric Sideman; FK= Fred Klatte.
 LIVESTOCK: ME= Martha Engel; RK= Richard Krengel; WZ= W. Zimmer
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 ** Files are all prepared and sent by the same person; either John Brown (JB) or Zea Sonnabend (ZS)
 Any materials not on this list have not yet been sent out.

