NOSB NATIONAL LIST
FILE CHECKLIST

LIVESTOCK

MATERIAL NAME: #11 Milk Replacers

✓ NOSB Database Form
✓ References
✓ MSDS (or equivalent)
✓ TAP Reviews from: Lynn Brown, Marta Engel
NOSB/NATIONAL LIST
COMMENT FORM
LIVESTOCK

Material Name: #11 Milk Replacers

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

COMMENTS/QUESTIONS:

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: Sept 19, 1995

Name of Material: Milk Replacers
Reviewer Name: MARTHA W. ENGEL, D.V.M.

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

Both - There may be both
If synthetic, how is the material made? (please answer here if our database form is blank)

Synthetic and natural components of milk replacers.

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?

I think while cow milk in cow/calf operations + dairy operations makes the most sense for organic production

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 MARTHA W. ENGEL, D.V.M. Date 9/21/95
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;

\textit{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;

\textit{Not likely}

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

\textit{Possible—don't know much about the manufacturing process}

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

\textit{Not likely}

(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;

\textit{Don't know}

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

\textit{Mother's milk}

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

\textit{Organic farming is about using naturally occurring biological systems. We have cows eating grass. Producing milk. Why not feed it to the babies?}
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: Sept. 19, 1995

Name of Material: Milk Replaces
Reviewer Name: Lynn Brown

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

Synthetic - Some milk based or milk products
If synthetic, how is the material made? (please answer here if our database form is blank) Mineral + vitamin supplements should be allowed. Milk replacers based on non milk products, i.e., vegetable derived protein, meat extracts, etc. should be synthetic not allowed.

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?

Milk replacer based on non milk products should not be allowed.

Please comment on the accuracy of the information in the file:
I believe the information is accurate.

Any additional comments? (attachments welcomed)

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

Signature Lynn Brown Date 9/14/95
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;

   No Problem

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;

   No Problem

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

   None

4. the effect of the substance on human health;

   No 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;

   No Problem

6. the alternatives to using the substance in terms of practices or other available materials; and When the dairy milk is not available a good milk replacer based on milk products is a good substitute. Vegetable based milk replacers generally do not as good.

7. its compatibility with a system of sustainable agriculture.

   It is compatible with sustainable agriculture
**Identification**

**Common Name**  Milk Replacers

**Other Names**  D-(+)-Lactose

**Code #: CAS**  63-42-3  D-(+)-Lactose

**N. L. Category**  unknown

**Chemical Name**  

**Code #: Other**  

**MSDS**  yes

**Chemistry**

**Family**

**Composition**  May contain any or all of the following: Milk, soybeans, soy protein concentrate, meat-solubles, pea-derived protein, fish protein concentrate, dietary amines, porcine immunoglobulin, amino acids.

**Properties**  Provides the balanced amounts of nutrients as found in milk.

**How Made**

While the primarily milk derived and soy derived milk replacers are from natural sources, the additives and the processing necessary to form soy protein concentrate may not be natural. The question needs to be addressed of whether the milk and soy sources need to be organically produced.

**Use/Action**

**Type of Use**  Livestock

**Use(s)**  Nutrient source for young animals.

**Action**

**Combinations**

**Status**

**OFPA**

**N. L. Restriction**

**EPA, FDA, etc**

**Safety Guidelines**

**Directions**

**Registration**

**Historical status**

**International status**

**State Differences**
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

Natural mother’s milk.

2119(m)7: Is it compatible?

References

See attached references.
MILK REPLACERS REFERENCES

AU: Mir,-P.S.; Burton,-J.H.; Buchanan-Smith,-J.G.
TI: Nutritional performance of calves fed milk replacers containing processed soybean products.
CN: DNAL 41.8-C163

AU: Royeaerd,-H.; Heyde,-H.-van-der; Mets,-J.P.-de; Henderickx,-H.K.
TI: The use of milk replacers and the effect on subsequent performance of newborn piglets.
CN: DNAL SF5.B74

AU: Gardner,-R.W.; Shupe,-M.G.; Brimhall,-W.; Weber,-D.J.
TI: Causes of adverse responses to soybean milk replacers in young calves.
CN: DNAL 44.8-J822

AU: Erickson,-P.S.; Schaufl,-D.J.; Murphy,-M.R.
TI: Diet digestibility and growth of Holstein calves fed acidified milk replacers containing soy protein concentrate.
CN: DNAL 44.8-J822

AU: Knott,-F.N.
TI: Observations on use of acidified milk replacers.
CN: DNAL 275.29-N811NC

AU: Khorasani,-G.R.; Ozimek,-L.; Sauer,-W.C.; Kennelly,-J.J.
TI: Substitution of milk protein with isolated soy protein in calf milk replacers.
CN: DNAL 49-J82

AU: Khorasani,-G.R.; Sauer,-W.C.; Maenhout,-F.; Kennelly,-J.J.
TI: Substitution of milk protein with soyflour or meat-solubles in calf milk replacers.
CN: DNAL 41.8-C163

AU: Schoonderwoerd,-M.; Misra,-V.
TI: Detection and quantitation of pea and soy-derived proteins in calf milk replacers.
CN: DNAL 44.8-J822

AU: DeBoer,-H.; Hacker,-R.R.; Leeson,-S.; Wagemans,-V.
TI: Fish protein concentrate (Conmar 80) or refined soy flour as substitutes for skim milk powder in calf milk replacers.
CN: DNAL 41.8-C163

AU: Grant,-A.L.; Thomas,-J.W.
TI: Improving milk replacers containing soybean proteins with dietary amines.
CN: DNAL 284.9-M58

AU: Hand,-M.S.; Hunt,-E.; Phillips,-R.W.
TI: Milk replacers for the neonatal calf.
AU: Maxfield, S.L.; White, R.D.; Walters, J.L.; Allen, S.D.
TI: Whole milk or milk-replacer: a nutritional and economic comparison.
CN: DNAL 100-UT1F

AU: Seeigraber, F.J.; Morrill, J.L.
TI: Effect of protein source in calf milk replacers on morphology and absorptive ability of small intestine.
CN: DNAL 44.8-J822

AU: Silva, A.G.; Huber, J.T.; DeGregorio, R.M.
TI: Influence of substituting two types of soybean protein for milk protein on gain and utilization of milk replacers in calves.
CN: DNAL 44.8-J822

AU: Wijayasinghe, M.S.; Smith, N.E.; Baldwin, R.L.
TI: Growth, health, and blood glucose concentrations of calves fed high-glucose or high-fat milk replacers.
CN: DNAL 44.8-J822

AU: Whiting, R.; Owen, B.D.; Elliot, J.L.; Beames, R.M.
CN: DNAL 41.8-C163

AU: Jenkins, K.J.; Emmons, D.B.
TI: Fortification of calf milk replacers with amino acids in free form of plastein-bound.
CN: DNAL 41.8-C163

AU: Latrille, L.; Pare, J.P.; St-Laurent, G.; Pomar, C.
TI: Heavy veal production with Holstein calves raised by multiple suckling or milk replacers and fattened with whole corn, barley or oats.
CN: DNAL 41.8-C163

AU: Stobo, I.J.F.
TI: Milk replacers for calves [Diets, composition, digestion].
CN: DNAL SF95.N87-1983

AU: Swannack, K.
TI: Systems of calf rearing [Weaning, feed intake, milk replacers].
CN: DNAL SF95.N87-1983

AU: Campos, O.F.; Huber, J.T.
TI: Performance and digestion by calves from limestone added to milk replacers containing soy protein concentrate.
CN: DNAL 44.8-J822
MSDS for D-(+)-LACTOSE

1 - PRODUCT IDENTIFICATION

PRODUCT NAME: D-(+)-LACTOSE
FORMULA: C12H22O11 FORMULA WT: 342.30
CAS NO.: 63-42-3 NIOSH/RTECS NO.: OO962500
COMMON SYNONYMS: B-LACTOSE; MILK SUGAR; 4-O-BETA-D-GALACTOPYRANOSYL-D-GLUCOSE
PRODUCT CODES: P347
EFFECTIVE: 06/09/86 REVISION #01

PRECAUTIONARY LABELLING
BAKER SAF-T-DATA(TM) SYSTEM
HEALTH - 0 NONE
FLAMMABILITY - 1 SLIGHT
REACTIVITY - 1 SLIGHT
CONTACT - 0 NONE
HAZARD RATINGS ARE 0 TO 4 (0 = NO HAZARD; 4 = EXTREME HAZARD).

LABORATORY PROTECTIVE EQUIPMENT: SAFETY GLASSES; LAB COAT
PRECAUTIONARY LABEL STATEMENTS
KEEP IN TIGHTLY CLOSED CONTAINER. WASH THOROUGHLY AFTER HANDLING.
SAF-T-DATA(TM) STORAGE COLOR CODE: ORANGE (GENERAL STORAGE)

2 - HAZARDOUS COMPONENTS

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>%</th>
<th>CAS NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOT APPLICABLE</td>
<td></td>
<td></td>
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3 - PHYSICAL DATA

BOILING POINT: N/A VAPOR PRESSURE(MM HG): N/A
MELTING POINT: N/A VAPOR DENSITY(AIR=1): N/A
SPECIFIC GRAVITY: 1.53 EVAPORATION RATE: N/A
(H2O=1) (BUTYL ACETATE=1)
SOLUBILITY(H2O): APPRECIABLE (MORE THAN 10 %) % VOLATILES BY VOLUME: 0
APPEARANCE & ODOR: WHITE CRYSTALLINE POWDER.

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.
SPECIAL FIRE-FIGHTING PROCEDURES
FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND SELF-CONTAINED
BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN POSITIVE PRESSURE MODE.

5 - HEALTH HAZARD DATA

CARCINOGENICITY: NTP: NO IARC: NO Z LIST: NO OSHA REG: NO
EFFECTS OF OVEREXPOSURE: NO EFFECTS OF OVEREXPOSURE WERE DOCUMENTED.
TARGET ORGANS: NONE IDENTIFIED
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE IDENTIFIED
ROUTES OF ENTRY: NONE INDICATED

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 BREATHE 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.

6 - REACTIVITY DATA
STABILITY: STABLE  HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: NONE DOCUMENTED
INCOMPATIBILITIES: STRONG OXIDIZING AGENTS

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.

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

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.

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)