

# NOSB NATIONAL LIST FILE CHECKLIST

## LIVESTOCK

**MATERIAL NAME:** #6 Folic Acid



**NOSB Database Form**



**References**



**MSDS (or equivalent)**



**TAP Reviews from:** William Zimmer, Lynn  
Brown

**NOSB/NATIONAL LIST  
COMMENT FORM  
LIVESTOCK**

**Material Name: #6 Folic Acid**

*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

Name of Material: FOLIC ACID

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

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?

No

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

Chemical Family, Properties = B vitamin

Any additional comments? (attachments welcomed)

Action: Component of DNA synthesis process and methyl unit production of amino acid methionine

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;**

*minimal*

- (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;**

*none known*

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

*minimal*

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

*essential B vitamins*

- (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;**

*Natural byproduct of many microbial systems which function as a source for higher life forms in many situations. Generally applied as a foliar for crop systems.*

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

*Optimize natural microbial sources i.e. fermentation in cattle rumen or lower intestinal tract*

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

*very compatible. Essential to life. Unknown "optimal" levels for plants and animals. Health maintenance.*

# 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: FOLIC ACID

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:

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?

Feed additive for non-ruminant animals

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

The information is correct

Any additional comments? (attachments welcomed)

Do you have a commercial interest in this material?  Yes;  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;**

*None*

- (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;**

*This is a required vitamin for humans, but use in animal feeds would not affect the concentration in animal tissue.*

- (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;**

*None*

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

*None*

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

*Folic acid use is compatible with sustainable ag.*

# NOSB Materials Database

1

## Identification

<b>Common Name</b>	<b>Folic Acid</b>	<b>Chemical Name</b>	
<b>Other Names</b>			
<b>Code #: CAS</b>	75708-92-8	<b>Code #: Other</b>	
<b>N. L. Category</b>	Synthetic Allowed		

## Chemistry

<b>Composition</b>		<b>Family</b>	
<b>Properties</b>			
<b>How Made</b>			

## Use/Action

<b>Type of Use</b>	Livestock
<b>Use(s)</b>	feed additive. Allowed by FDA discretion as stated by AAFCO: Crystalline Folic Acid.

**Action**

**Combinations**

## Status

**OFPA**

**N. L. Restriction** Category 3

**EPA, FDA, etc**

**Registration**

**Directions**

**Safety Guidelines** Causes eye and skin irritation. Wear protective clothing.

**State Differences**

**Historical status**

**International status**

**OFPA Criteria**

**2119(m)1:chem. inter.**

**2119(m)2: toxicity**

**2119(m)3:manufacture**

**2119(m)4:humans**

**2119(m)5: biology**

**2119(m)6:alternatives**

**2119(m)7:compatible**

**References**

See attached.



## FOLIC ACID REFERENCES

AU: Dumoulin,-P.G.; Girard,-C.L.; Matte,-J.J.; St-Laurent,-G.J.

TI: Effects of a parenteral supplement of folic acid and its interaction with level of feed intake on hepatic tissues and growth performance of young dairy heifers.

SO: J-Anim-Sci. Champaign, Ill. : American Society of Animal Science. Apr 1991. v. 69 (4) p. 1657-1666.

CN: DNAL 49-J82

AB: Forty-seven dairy heifers of approximately 10 d of age were assigned to a factorial experiment in which a supplement of folic acid (0 or 40 mg) administered weekly by i.m. injection and level of feed intake were the two factors studied. Blood hemoglobin and packed cell volume were not affected by the level of feed intake. However, they were both increased ( $P < .05$ ) by the supplement of folic acid. Average daily gain was analyzed over three different periods: 0 to 5 wk (before weaning), 5 to 10 wk, and 10 to 16 wk. Average daily gain was increased by the supplement of folic acid during the second period ( $P < .05$ ) and by ad libitum access to feed during the last two periods ( $P < .05$ ). These effects of supplement of folic acid on growth performance and on hematological cells may reflect a lack of folic acid during the weeks after weaning.

AU: Gregory,-J.F.-III

TI: Chemical and nutritional aspects of folate research: analytical procedures, methods of folate synthesis, stability, and bioavailability of dietary folates.

SO: Adv-Food-Nutr-Res. San Diego : Academic Press. 1989. v. 33 p. 1-101.

CN: DNAL TX537.A38

AU: Kurtzweil,-P.; Young,-T.A.

TI: Folate folate folate.

SO: FDA-Consum. Rockville, Md. : Food and Drug Administration, Department of Health & Human Services. July/Aug 1991. v. 25 (6) p. 41.

CN: DNAL-FNC HD9000.9.U5A1

AB: This article gives essential facts and figures on folate. Nutrient sources, deficiency problems, and excess effects are included.

AU: Bailey,-L.B.

TI: The role of folate in human nutrition.

SO: Nutr-Today. Baltimore, Md. : Williams & Wilkins. Oct 1990. v. 25 (5) p. 12-19.

CN: DNAL-FNC RA784.N8

AB: This article reviews the role of folate as a nutrient with major implications for human growth and development. Absorption, transport, storage and excretion of folic acid are described. Food sources of folate, folate intake and the Recommended Dietary Allowances, assessment of and factors that influence folate status (infancy, adolescence, pregnancy, lactation, aging, alcohol, drugs and smoking) are also examined.

AU: Pesti,-G.M.; Rowland,-G.N.-III; Ryu,-K.S.

TI: Folate deficiency in chicks fed diets containing practical ingredients.

SO: Poult-Sci. Champaign, Ill. : Poultry Science Association. Mar 1991. v. 70 (3) p. 600-604.

CN: DNAL 47.8-AM33P

AB: Development of folate deficiency was evaluated in young chicks fed diets containing corn and soybean meal as major constituents. Folic acid deficiency, as indicated by retarded growth and feed efficiency, could be produced in 18-day-old chicks. Chicks fed the basal diet had increased growth when given supplements of either folic acid, choline Cl or DL-methionine, but not vitamin B12.

AU: Matte,-J.J.; Girard,-C.L.; Tremblay,-G.A.; Brisson,-G.J.

TI: Importance of folic acid in the nutrition of the gestating sow.

SO: Pig-News-Inf. Wallingford : Commonwealth Agricultural Bureaux. Sept 1989. v. 10 (3) p. 331-336.

CN: DNAL SF391.P55

AU: O'Connor,-D.L.; Picciano,-M.F.; Roos,-M.A.; Easter,-R.A.

TI: Iron and folate utilization in reproducing swine and their progeny.

SO: J-Nutr. Bethesda, Md. : American Institute of Nutrition. Dec 1989. v. 119 (12) p. 1984-1991.

CN: DNAL 389.8-J82

AB: The purpose of this investigation was to assess the usefulness of maternal and neonatal swine as animal models for studying iron (Fe) and folate nutrition during reproduction and growth. It is concluded that there is an increased dietary requirement for folate and iron during reproduction in swine, and that current recommended amounts of folate (0.6 mg/kg diet) and iron (80 mg/kg diet) may be underestimates of requirements for reproduction. Further, results show that iron nutrition may alter folate utilization in maternal and neonatal swine.

AU: Matte,-J.J.; Girard,-C.L.; Brisson,-G.J.

TI: Folic acid and reproductive performances of sows.

SO: J-Anim-Sci. Champaign, Ill. : American Society of Animal Science. Oct 1984. v. 59 (4) p. 1020-1025.

CN: DNAL 49-J82

AU: Chiquette,-J.; Girard,-C.L.; Matte,-J.J.

TI: Effect of diet and folic acid addition on digestibility and ruminal fermentation in growing steers.

CN: DNAL 49-J82

PY: 1993

AB: Eight ruminally fistulated steers (352 +/- 27 kg BW) were used in a replicated 4 X 4 Latin square design. Treatments were 1) 70% rolled barley + 30% timothy hay (HC), 2) HC + folic acid (2 mg/kg BW; HC + F), 3) 30% rolled barley + 70% timothy hay (HF), and 4) HF + F. Supplemental dietary folic acid had no effect on either of the forementioned variables, regardless of whether the animal received the HC or the HF diet. Ruminal DM disappearance of hay and barley was affected ( $P < .05$ ) by the type of diet fed but not by the addition of folic acid to either diet. Changes in ruminal VFA concentrations at various times after feeding were altered with folic acid addition; however, these modifications were not sufficient to affect in a significant way either ruminal or total tract digestibility.

# MATERIAL SAFETY DATA SHEET

## FOLIC ACID

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### SECTION I - Product Identification

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PRODUCT NAME: FOLIC ACID  
COMPANY NAME: SIGMA CHEMICAL COMPANY  
DATE: 01/22/88  
EMERGENCY TELEPHONE: (314) 771-5765  
RTECS: LP5425000  
CAS #: 75708-92-8  
SYNONYMS: NDA

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### SECTION II - Hazardous Components

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NA

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### SECTION III - Physical Data

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MP: NDA  
BP: NDA  
APPEARANCE & ODOR: NDA

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### SECTION IV - Fire and Explosion Hazard Data

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EXTINGUISHING MEDIA:

WATER SPRAY.

CARBON DIOXIDE, DRY CHEMICAL POWDER, ALCOHOL OR POLYMER FOAM.

SPECIAL FIREFIGHTING PROCEDURES: WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING TO PREVENT CONTACT WITH SKIN AND EYES.

UNUSUAL FIRE EXPLOSIONS HAZARDS:

NDA

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### SECTION V - Health Hazard Data

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ACUTE EFFECTS: MAY BE HARMFUL BY INHALATION, INGESTION, SKIN ABSORPTION.

CAUSES EYE AND SKIN IRRITATION.

TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL/PHYSICAL/TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.

FIRST AID PROCEDURES:

IMMEDIATELY FLUSH EYES OR SKIN WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES; ASSURE ADEQUATE FLUSHING BY SEPARATING EYELIDS WITH FINGERS.

IF INHALED, REMOVE TO FRESH AIR.

IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION.

IF BREATHING IS DIFFICULT, GIVE OXYGEN.

INGESTION:

NDA

CALL A PHYSICIAN !!!

CONTAMINATED CLOTHING & SHOES: WASH BEFORE REUSE.

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### SECTION VI - Reactivity Data

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STABILITY:

NDA

HAZARDOUS COMBUSTION:

CARBON MONOXIDE, CARBON DIOXIDE  
NITROGEN OXIDES  
HAZARDOUS POLYMERIZATION:  
NDA  
INCOMPATIBILITIES:  
OXIDIZING AGENTS  
MAY DECOMPOSE ON EXPOSURE TO LIGHT

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**SECTION VII - Spill and Disposal Procedures**

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SPILLED MATERIAL: EVACUATE AREA. SHUT OFF ALL SOURCES OF IGNITION.  
WEAR CHEMICAL SAFETY GOGGLES, RUBBER BOOTS, HEAVY RUBBER GLOVES.  
WEAR SELF-CONTAINED BREATHING APPARATUS.  
AVOID RAISING DUST.  
VENTILATE AREA & WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.  
SWEEP UP OR PICK UP & PLACE IN A BAG AND HOLD FOR WASTE DISPOSAL.  
DISPOSAL: INCINERATOR  
CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER.  
OBSERVE ALL FEDERAL, STATE AND LOCAL LAWS.

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**SECTION VIII - Protective Equipment**

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EYES: SAFETY GOGGLES  
SKIN: CHEMICAL RESISTANT GLOVES, CLOTHING  
VENTILATION: MECHANICAL EXHAUST  
RESPIRATOR: NIOSHA/MSHA-APPROVED RESPIRATOR  
OTHER: SAFETY SHOWER AND EYE WASH.  
FULL PROTECTIVE CLOTHING.

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**SECTION IX - Storage and Handling Precautions**

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STORAGE PRECAUTIONS: DO NOT GET IN EYES, SKIN, CLOTHING. DO NOT PIPET BY MOUTH.  
DO NOT BREATHE VAPOR.  
KEEP TIGHTLY CLOSED.  
WASH THOROUGHLY AFTER HANDLING.  
STORE IN A COOL DRY PLACE.  
AVOID PORLONGED OR REPEATED EXPOSURE.  
LIGHT SENSITIVE

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**SECTION X - Transportation Data and Additional Information**

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TOXICITY DATA:  
ORL-RAT LD50 (MG/KG): NDA  
IHL-RAT LD50 (PPM): NDA  
SKN-RBT LD50 (MG/KG): NDA  
ORL-HMN LD50 (MG/KG): NDA

(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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