

ABBREVIATED ENVIRONMENTAL ASSESSMENT FAP 2228

1. Date: June 27, 1994
2. Name of applicant or petitioner: VANETTA S.p.a.
3. Address: Alzala Trento, 10  
20094 Corsico (MI), ITALY
4. Description of proposed action: Food additive petition for menadione nicotinamide bisulfite (MNB), a feed grade stabilized vitamin K3, as an alternate source of vitamin K in animal feed.
5. Identification of the chemical substances that are the subject of the proposed action:
  - (1) Name. Menadione Nicotinamide Bisulfite 1,2,3,4 Tetrahydro-2-Methyl-1, 4-Dioxo-2 Naphtalene Sulfonic Acid Compound with 3 Pyridine Carboxylic Acid Amide
  - (2) CAS No. 73581-79-0
  - (3) Molecular weight. 376.42
  - (4) Formula. C17 H16 O6 N2 S
  - (5) Description. MNB is a white to pale yellow microgranular free flowing powder. MNB contains no additives or impurities.
6. Introduction of substances into the environment for the site of production: Production is in one facility located in Italy. As the alternative for manufacturing occurring in a foreign country, please see the attached photocopy of the certificate of operation for the plant with an accompanying English translation. The following comments identify the significance and importance of this certificate regarding compliance with applicable laws.

The certificate is issued by the province of Caserta in which the plant is located. The "Sindaco" is the administrative office charged with ensuring all companies in their province are in compliance with all Italian law. This includes, but is not limited to, all environmental and occupational matters. The original certificate must be on public display in the plant manager's office at all times, otherwise the facility will be closed by regulatory action. The plant is inspected by appropriate inspectors with respect to various functions and the results reported to the office of the Sindaco. That office then determines the appropriate course of action, if any, regarding the inspectors' findings. If the plant is considered to be in compliance with applicable laws, the certificate continues in effect. If not, fines can be assessed, time tables given to the firm to come into compliance, or the certificate is rescinded. Without an effective certificate, the firm must cease operations.
- 7-11. Documentation for items 7-11 of the EA format in 21 CFR 25.31a, concerning the fate, effects, resources and energy use, mitigation and alternatives is not provided, per

*Abbreviated Environmental Assessment Format.* The following comments, however, are offered for consideration.

MNB will be a substitution for the currently approved or accepted forms of menadione salts commonly used as vitamin K supplements in animal feeds and no additional or increased levels of vitamin K supplementation of animal feeds is being requested. Therefore, the total level of vitamin K supplementation of animal feeds will not be increased and no increase in any environmental effect can be expected.

The most definitive review of the possible environmental impact of vitamin K sources used in animal feed was the November 1990 *Finding of no Significant Impact and Environmental Assessment for Vitamin K Active Substances (VKAS)* prepared by the Center of Veterinary Medicine. This document was developed as an integral part of the Food and Drug Administration's action to determine the status of the various vitamin K sources then utilized. The action was taken in response to the July 13, 1990 order of the United States District Court for the Eastern District of New York. We are not aware of any information that would affect the basic content and conclusions of this extensive and comprehensive review of environmental considerations.

The discussion and conclusions of the *1990 Environment Assessment of VKAS* are valid when applied to Menadione Nicotinamide Bisulfite (MNB) as a substitute or replacement for one or more of the vitamin K sources currently approved or accepted for use in animal feed. Moreover, the results of application to MNB, a salt combination of two vitamin sources, logically reveal the same finding of no significant impact.

The publication by David H. Baker and Associates, *Menadione Nicotinamide Bisulfite Is a Bioactive Source of Vitamin K and Niacin Activity for Chicks*, demonstrates the expected biological activity of vitamin K and niacin from MNB as compared with other sources of these two essential vitamins. This work documents the availability of the two vitamins and MNB's value as an alternate source of these vitamins. It is thus evident MNB is split in the digestive tract into the two vitamins and the bisulfite component. The discussion of the environmental fate of the menadione and bisulfite portions of present VKAS sources in the November 1990 Agency review is applicable to MNB and reveals no cause for concern. Toxicity was not observed until supplement levels were increased to 6000mg/kg of diet. We are requesting supplementation levels of up to 2gms/T, which is in line with current levels using other approved or accepted sources of vitamin K. For these reasons it is reasonable to conclude and expect there will be no environmental consequences stemming from the requested approval and use of MNB.

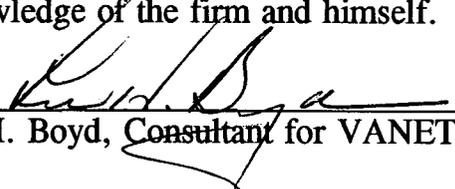
We have, however, one observation which may further reinforce the FONSI for both present and future sources of VKAS, such as MNB. It concerns the "Magnitude of Use for Approved VKAS" appearing on page 8 of the *Environmental Assessment*. The estimate of vitamin K use in animal feed far exceeds that available from market sources. Available information indicates total use is actually only a fraction of that shown in the 1990 FONSI to have no significant impact. Since the potential impact was based on estimated use that far

exceeded what is believed to be actual use, substantially lower actual use reinforces a finding of a lack of impact.

Market sources support an estimated total annual U.S. feed consumption of 140,000 kilos of pure menadione, or 500,000 kilos of VKAS (MSBC and MPB). The figures shown on page 8 vastly exceed the industry estimate of VKAS consumption.

12. List of preparers: Lee H. Boyd, ESQ.-PAS, for VANETTA S.p.a.

13. Certification: The undersigned certifies that the information presented is true, accurate, and complete to the best knowledge of the firm and himself.

  
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Lee H. Boyd, Consultant for VANETTA S.p.a.

14. References:

- (1) Vanetta Food Additive Petition - FAP 2228 dated May 27, 1993
- (2) Dr. George Graber letter to Lee H. Boyd dated June 22, 1993 and Lee Boyd's response dated July 5, 1993, regarding Vanetta Food Additive Petition 2228.
- (3) 21 CFR Section 25.31a and FDA's *Abbreviated Environmental Assessment Format*
- (4) *Finding of No Significant Impact and Environmental Assessment for Vitamin K Active Substances (VKAS)*, November 1990, prepared by CVM-FDA.
- (5) March 1992 letter from VANETTA S.p.a. documenting retention of Lee H. Boyd as firm's consultant for FDA matters.

## **E. Safety**

See report of David H. Baker and Associates under Section C. This report documents the safety of MNB when fed at high levels.

Vitamin K and niacin are two vitamins long and widely used in supplemental form in animal feeds.

MNB is a combination of sources of these two essential nutrients for poultry which are used by the consuming animals as such for their dietary needs. As essential components of the diet, they will perform their respective food-nutritional functions in the same manner as other sources of these same nutrients from natural or supplemental forms. Human food derived from consuming animals will not be affected through the animals' consumption of these essential nutrients that are a normal part of a fully adequate animal diet. No new material is being introduced into animal feed or human food.

G. Regulation modification

A separate new food additive regulation is required since MNB has not previously been the subject of such a regulation. The following regulation is proposed:

573. \_\_\_ Menadione nicotinamide bisulfite. The food additive, menadione nicotinamide bisulfite, may be safely used in accordance with the following conditions:

(a) The additive is 1,2,3,4, tetrahydro-2-methyl-1, 4-dioxo-2 naphtalene sulfonic acid compound with 3 pyridine carboxylic acid amide. CAS No. 73581-79-0.

(b) The additive is used or intended for use as a nutritional supplement for the prevention of vitamin K deficiency, and as a source of supplemental niacin, in poultry diets at a level not to exceed 2 grams per ton of complete feed.

(c) To assure safe use, the label and labeling of the additive shall bear adequate directions.

H. Environmental information

Production of MNB is accomplished at the Vanetta S.p.A. plant in Italy. Vanetta S.p.A. also produces MPB and MSBC. That plant, identified in the enclosed documents, is in compliance with applicable local environmental requirements, per the enclosed documents.

On the basis of production in Italy, compliance with local environmental requirements, the fact MNB is composed of two commonly supplemented nutrients, and that MNB will be used as an alternate or substitute, and discussions with Agency personnel, an *Abbreviated Environmental Assessment* has been prepared. It is included in this section.