



BEYOND PESTICIDES

701 E Street, SE ■ Washington DC 20003
202-543-5450 phone ■ 202-543-4791 fax
info@beyondpesticides.org ■ www.beyondpesticides.org

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Ms. Michelle Arsenault
National Organic Standards Board
USDA-AMS-NOP
1400 Independence Ave., SW
Room 2648-S, Mail Stop 0268
Washington, DC 20250-0268

Re. LS: Acid-activated bentonite

These comments to the National Organic Standards Board (NOSB) on its Fall 2016 agenda are submitted on behalf of Beyond Pesticides. Founded in 1981 as a national, grassroots, membership organization that represents community-based organizations and a range of people seeking to bridge the interests of consumers, farmers and farmworkers, Beyond Pesticides advances improved protections from pesticides and alternative pest management strategies that reduce or eliminate a reliance on pesticides. Our membership and network span the 50 states and the world.

In reviewing this substance, the NOSB must apply the criteria in the Organic Foods Production Act (OFPA), that its use—

- (i) would not be harmful to human health or the environment;
- (ii) is necessary to the production or handling of the agricultural product because of the unavailability of wholly natural substitute products; and
- (iii) is consistent with organic farming and handling.¹

Acid-activated bentonite is one of three synthetic litter treatments under consideration at the fall 2016 meeting of the NOSB. The use of acid-activated bentonite as petitioned does not meet OFPA criteria of absence of harm to human health and the environment, essentiality, or compatibility with organic production.

Acid-activated bentonite poses hazards to human health, agroecosystems, and the environment.

Human health impacts

Acid-activated bentonite is extremely acidic (below 1.5, petitioner says 0.43, MSDS says 0.6).²

¹ OFPA §6517(c)(1)(A). Further details at OFPA §6518(m).

² TR lines 63-66.

Respirable particles of the highly acidic dust are present in the material.³ The TR says,⁴

The U.S. Department of Transportation regulates the shipping of acid-activated bentonite as a “corrosive material” (Hazard Class 8) due to the sulfuric acid content. This class of materials is defined at 49 CFR 173.136 as a liquid or solid that causes full thickness destruction of human skin at the site of contact within a specified period of time. Care must be taken to ensure that incompatible corrosive materials are not mixed. The Material Safety Data Sheet for the petitioned acid-activated bentonite indicates that it does not emit any volatile organic compounds. Applying water directly to the material must be avoided; aqueous runoff is acidic and corrosive.

Lack of Compatibility with an Organic System: Acid-activated bentonite is not compatible with organic production.

When applied to agricultural fields, litter treated with acid-activated bentonite adds ammonium sulfate, which acts as a synthetic source of the nitrogen and sulfur, thus acting as a synthetic fertilizer.⁵ It thus makes poultry litter unavailable for use in organic crop production. And it inhibits the use of poultry manure in compost because of yet lower C/N ratios.

Adverse Impacts on the agroecosystem

The extreme acidity is dangerous to poultry on contact or by ingestion.⁶ Since the pH-lowering effect lasts only 5-7 days, it is likely to be re-applied when birds are present.⁷

Hypochlorite compounds react with sulfuric acid to form chlorine gas. As with sodium bisulfate, this material should not, therefore, be used when sodium hypochlorite has been used for disinfecting and sanitizing poultry facilities.⁸

Adverse impacts on the environment

Manufacture of the substance depends on mining of clay and production of sulfuric acid, both of which have negative environmental impacts.⁹ Ammonium sulfate is produced by the reaction of the sulfuric acid in the bentonite. When applied to fields, it becomes fixed as nitrate, which is taken up by plants or can be lost in runoff.¹⁰

Lack of Essentiality: Acid-activated bentonite is not essential for organic production.

Like the other litter treatments, the effect is not long-lasting –only 5-7 days, so the permanent reduction of ammonia emissions should not be taken as a reason for using acid-activated bentonite.¹¹

³ TR lines 63-66; 419-424.

⁴ TR lines 347-353.

⁵ TR lines 303-312; 327-333; Table 3.

⁶ TR lines 383-385.

⁷ TR lines 318-319.

⁸ Sodium bisulfate TR lines 440-441.

⁹ TR lines 339-343.

¹⁰ TR lines 327-333.

¹¹ TR lines 318-319.

The Technical Review (TR) cites some alternative substances. Yucca root, a diet supplement, reduces ammonia production.¹² Clinoptilolite, diatomaceous earth, and montmorillonite are naturally-occurring minerals that absorb ammonia, reducing volatilization. The chemical and physical properties of peat make it effective in ammonia management. The TR states that there are currently several OMRI-listed alternatives, and one approved by EPA's Design for the Environment program.¹³

More importantly, acid-activated bentonite is used to support a particular type of management, in which "litter is reportedly reused for up to 35 flocks before it is changed."¹⁴ Since the C:N ratio of poultry litter is already much lower than required by NOP regulations for composting,¹⁵ the reuse of litter for many flocks only reduces the likelihood that composting will be used to manage manure and amend organic soil. In view of the many benefits of compost for both disposal of manure and growing crops, management systems that discourage composting should not be promoted through the allowance of synthetic inputs.

The TRs for litter treatments outline ways to reduce ammonia in poultry houses without the use of acid-activated bentonite. One option is increasing ventilation. Since young birds are susceptible to chilling, young chicks (less than 10 days old) may be housed separately, with low-hung infrared heaters. Assuming decreased ventilation is required to ensure warm temperatures for brooding chicks, starting with fresh litter containing essentially zero ammonia, combined with the comparatively low waste production of chicks (and therefore nitrogen) compared to larger birds could eliminate the necessity for acid-activated bentonite.¹⁶ Ventilation can be increased for older birds. Moisture management can be improved by eliminating leaks and spills. Changing litter more often would reduce ammonia problems.¹⁷

Conclusion

Because the petitioned use of acid-activated bentonite does not meet OFPA criteria of absence of harm to human health and the environment, essentiality, or compatibility with organic production, the petition should be denied, as proposed by the Livestock Subcommittee.

Thank you for your consideration of these comments.

Sincerely,



Terry Shistar, Ph.D.
Board of Directors

¹² TR lines 583-587.

¹³ TR lines 435-444.

¹⁴ Aluminum sulfate TR lines 609-609.

¹⁵ Moore, P. A., Daniel, T. C., Sharpley, A. N., & Wood, C. W. (1995). Poultry manure management: Environmentally sound options. *Journal of soil and water conservation*, 50(3), 321-327.

¹⁶ Aluminum sulfate TR lines 607-613.

¹⁷ TR lines 495-501.

