



# BEYOND PESTICIDES

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Ms. Michelle Arsenault  
National Organic Standards Board  
USDA-AMS-NOP  
1400 Independence Ave. SW.,  
Room 2648-S, Mail Stop 0268  
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## Re. LS: Zinc sulfate petition

These comments to the National Organic Standards Board (NOSB) on its Spring 2015 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 groups around the world.

The Livestock Subcommittee (LS) proposes the following listing:

**§205.603(b)** As topical treatment, external parasiticide or local anesthetic as applicable  
Zinc sulfate for use as a footbath only.

Copper sulfate is currently allowed for the use, but according to the petition, copper cannot be used safely with sheep.

## Zinc sulfate poses environmental and health risks.

According to the technical review, emissions from zinc and zinc sulfate production include sulfur dioxide and other gases (sulfur oxides (SO<sub>x</sub>), nitrogen oxides (NO<sub>x</sub>), volatile organic gaseous compounds (non-methane volatile organic compounds and methane (CH<sub>4</sub>)), carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), and ammonia (NH<sub>3</sub>), particulate matter, and heavy metals such as cadmium and zinc. Other chemicals released include lead, cadmium, mercury, zinc, polychlorinated biphenyls (PCBs), and polychlorinated dibenzodioxins.

The disposal method for spent foot bath solutions is mixing the solution with manure, and eventually spreading it on fields. There is concern about build-up of copper and zinc from the disposal of this solution. A study cited by the TR found, “[F]arms regularly using CuSO<sub>4</sub> could be applying as much as 4 to 6 kg of Cu/ha annually from the disposal of footbath solutions, which

is considered as much as 45 to 50 times the annual Cu needed for most crops.”<sup>1</sup> This article recommends steps to lower the impacts of copper sulfate from footbaths on soils: test for copper regularly; spread the copper solutions across a large area; reduce the concentration of copper in and frequency of footbath use; use a clean water footbath preceding the copper sulfate footbath in order to improve efficacy; and finally, “The best long-term solution is to find new ways of preventing or treating hoof problems besides using CuSO<sub>4</sub>.”

With regard to zinc sulfate, however, the situation is less clear. Zinc can have severe impacts on soil microbial life. However, according to the TR,

Zinc sulfate interacts with the soil to which it is added. Its toxicity is dependent on its bioavailability. Bioavailability depends on soil type and aging, which further depend on pH, cation exchange capacity and leaching (Smolders, 2009). Soil biochemistry influences the predicted no effect concentration (PNEC) and ecological soil screening level (Eco-SSL) for zinc sulfate, however; zinc soil concentrations protective of wildlife and the environment have not entirely been resolved.

Therefore, it is not easy to point to a threshold above which soil zinc concentrations should not raise. The best practice might be to ensure that zinc levels in the soil do not increase –unless the zinc is added to correct a deficiency.

### **There are alternatives to zinc sulfate.**

The TR lists ethanol, pine tar, peracetic acid, and hydrogen peroxide, in addition to copper sulfate as alternative materials. The TR also lists aspirin and a combination of tea tree oil, jojoba oil, benzathonium chloride, water, propylene glycol, and emulsifiers. Not all of the ingredients of the last are on the National List. Alternative control methods listed in the TR include isolation of affected individuals, application of topically applied agents to hooves that have been pared to expose lesions, full access to pasture, housing with dry floors when indoors, and a good diet rich in zinc.

### **Routine use of zinc sulfate is not compatible with organic production.**

The Livestock Health Care Standard requires:

§205.238 (a) The producer must establish and maintain preventive livestock health care practices, including:

(3) Establishment of appropriate housing, pasture conditions, and sanitation practices to minimize the occurrence and spread of diseases and parasites;

So, if zinc sulfate is used, it should not be the first recourse, but the alternative that is used when the other management practices mentioned above have been shown to be insufficient.

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<sup>1</sup> Downing, T. W., Stiglbauer, K., Gamroth, M. J., & Hart, J. (2010). Case study: Use of copper sulfate and zinc sulfate in footbaths on Oregon dairies. *The Professional Animal Scientist*, 26(3), 332-334.  
<http://pas.fass.org/content/26/3/332.full.pdf>

## **Conclusion**

If the NOSB decides to approve zinc sulfate, it should include an additional annotation comparable to the annotation for coppers in crops, as well as an expiration date to ensure that zinc sulfate receives rigorous review and that soil problems that arise may be addressed:

§205.603(b) As topical treatment, external parasiticide or local anesthetic as applicable  
Zinc sulfate for use as a footbath only, *provided*, that zinc sulfate must be used and disposed of in a manner that minimizes accumulation in the soil, as shown by routine soil testing.  
Until [5 years from publication in the *Federal Register*].

Thank you for your consideration of these comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Terry Shistar". The signature is fluid and cursive, with a long horizontal stroke at the end.

Terry Shistar, Ph.D.  
Board of Directors