



BEYOND PESTICIDES

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

April, 2016

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. HS: Sodium Dodecylbenzene Sulfonate

These comments to the National Organic Standards Board (NOSB) on its Spring 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.

Sodium dodecylbenzene sulfonate (SDBS) is used –along with lactic acid– as one of the active ingredients in a formulated antimicrobial product for use in produce wash waters. The intended function of the product is to reduce the number of microorganisms in fruit and vegetable process water and on the surface of the fruit or vegetable. The proposed use is on raw and processed fruits and vegetables and involves a minimum ninety (90) second immersion in the antimicrobial wash water, followed by a draining process prior to further processing and/or serving. It may also be used on food contact surfaces.

Kay Antimicrobial Fruit and Vegetable Treatment contains the active ingredients SDBS (1.23%) and lactic acid (17.29%).¹ Its label contains the following warnings: “Causes substantial but temporary eye injury. Harmful if absorbed through the skin.... Prolonged or frequently repeated skin contact with the concentrate may cause allergic reactions in some individuals.” The product is claimed to kill 99.9% of *Escherichia coli*, *Listeria monocytogenes*, and *Salmonella enterica*.

The petition states:

The activity of SDBS (CAS # 25155-30-0) is commonly hypothesized to be one of the three following mechanisms¹:

¹ Petition, p. 29.

1. Protein denaturing
2. Essential enzyme inactivation
3. Membrane disruption and alteration of cell permeability.²

SDBS (aka Sodium lauryl benzene sulfonate, CAS # 25155-30-0) is on EPA's Safer Chemical Ingredients List, and rates a green circle for use as a surfactant. It is commonly used in detergent products. SDBS is also used as an "inert" ingredient in pesticide products, and was formerly listed on EPA List 3. Presumably, it would be allowed as an "inert" ingredient in pesticides used in organic production, according to the "inerts" annotation recommended by the NOSB at the fall 2015 meeting. This petition, however, requests its use as an antimicrobial active ingredient.

Beyond Pesticides opposes the listing of SDBS at this time. SDBS has advantages over other antimicrobials, particularly chlorine-based materials, including acidified sodium chlorite. However, we believe that the NOSB needs to base any decisions on petitions for antimicrobial products on a thorough review of the need for all antimicrobials and the available products. Please see our comments on hypochlorous acid for more discussion of that issue.

With regard to SDBS itself, the comments below address OFPA criteria.

SDBS is hazardous to human health and the environment.

SDBS is not generally recognized as safe.³ There is much missing data for both human health endpoints and exposure.⁴ It is moderately acutely toxic by inhalation and dermal exposure; moderately acutely irritating by dermal exposure; and highly acutely irritating to eyes—it produces corneal opacity that is not reversible in 72 hours.⁵ Chronic exposure shows impacts on liver, kidneys, reproduction, and development. Several experiments show carcinogenicity.⁶ Impurities that may be found in SDBS include sodium sulfate, dodecylbenzene, sulfones, sodium carbonate, sodium chloride, water, and free oil.⁷

SDBS is highly mobile in soil and non-volatile from water. Biodegradability results are mixed. In some experiments, SDBS inhibited degradation. Decomposition products detected after desulfonation included 1-tetralone, 1-indanone, 4-methyl-1-tetralone, and naphthalene.⁸

² Petition, citing Cords, B.R., Burnett, S.L., Hilgren, J., Finley, M., and Magnuson, J., "Sanitizers: Halogens, Surface-Active Agents, and Peroxides," in *Antimicrobials in Food*, 3rd ed. Boca Raton, FL: CRC Press, 2005, ch.16, pp. 533-6.

³ <http://www.accessdata.fda.gov/scripts/fdcc/?set=GRASNotices>.

⁴ Alkylbenzene Sulfonates Final Work Plan, September 2013.

<http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OPP-2013-0097-0005>.

⁵ EPA Summary table quoted in petition, p. 45.

⁶ EPA Summary table quoted in petition, pp. 46-57.

⁷ <http://toxnet.nlm.nih.gov/cgi-bin/sis/search2/r?dbs+hsdb:@term+@DOCNO+740>.

⁸ HSDB: Sodium Dodecylbenzenesulfonate. <http://toxnet.nlm.nih.gov/cgi-bin/sis/search2/r?dbs+hsdb:@term+@DOCNO+740>.

Acute toxicity to aquatic organisms ranges from slightly toxic to highly toxic.⁹

The NOSB must investigate the toxicity of the above impurities and degradation products.

SDBS is not essential for organic production and handling.

There are many available sanitizing and disinfecting agents, including chlorine materials, other synthetic materials –ethanol, isopropanol, hydrogen peroxide, ozone, and peracetic acid– and nonsynthetic materials –including ethanol, l-lactic acid, citric acid,¹⁰ and essential oils.¹¹ Please see our comments on hypochlorous acid for more discussion of essentiality. This is an issue that deserves concentrated attention by the NOSB.

The compatibility of SDBS with organic production and handling is questionable.

Like all antimicrobials, SDBS has negative impacts. To the extent that organic producers must use antimicrobials, the choice must be made in favor of those that have fewer negative health impacts on workers and consumers, degrade quickly to non-toxic products, and do not pose environmental hazards throughout their life cycle. SDBS is used in products that provide an alternative to chlorine-based chemistry, but further examination is necessary to determine whether SDBS ranks among those suitable for organic production.

Conclusion

SDBS should not be added to the National List at this time. The NOSB should perform a thorough review of the need for antimicrobials and the available products before adding another one.

Thank you for your consideration of these comments.

Sincerely,



Terry Shistar, Ph.D.
Board of Directors

⁹ Pesticide Action Network database Sodium dodecylbenzene sulfonate, http://www.pesticideinfo.org/Detail_Chemical.jsp?Rec_Id=PC33286.

¹⁰ <http://www.epa.gov/pesticides/regulating/labels/design-dfe-pilot.html>.

¹¹ Janssen, A. M., Scheffer, J. J. C., & Svendsen, A. B. (1987). Antimicrobial activities of essential oils. *Pharmaceutisch Weekblad*, 9(4), 193-197.