April 14, 2016

Ms. Michelle Arsenault
National Organic Standards Board
USDA-AMS-NOP
1400 Independence Avenue, SW
Room 2648-So., Ag Stop 0268
Washington, DC 20250-0268

Docket: AMS-NOP-15-0085

RE: Crops, Livestock, and Handling Subcommittees – Hypochlorous Acid

Dear Ms. Arsenault:

Thank you for this opportunity to provide comment to the National Organic Standards Board (NOSB) on its recommendations to list Hypochlorous Acid on the National List at § 205.601(a); § 205.603(a); and § 205.605(b).

The Organic Trade Association (OTA) is the membership-based business association for organic agriculture and products in North America. OTA is the leading voice for the organic trade in the United States, representing organic businesses across 50 states. Its members include growers, shippers, processors, certifiers, farmers' associations, distributors, importers, exporters, consultants, retailers and others. OTA's Board of Directors is democratically elected by its members. OTA's mission is to promote and protect organic with a unifying voice that serves and engages its diverse members from farm to marketplace.

Summary

OTA supports the subcommittee's position that electrolyzed water is a better alternative chlorine material to the options currently available to organic producers and handlers, and we support the listing of electrolyzed water on the National List. However, OTA recommends that NOSB return all three proposals to their respective subcommittees for further discussion and refinement of the recommendations.

We are concerned that by listing hypochlorous acid without further defining it as "electrolyzed water" (the petitioned substance), NOSB may inadvertently allow other forms of hypochlorous acid that were not reviewed by the subcommittees or the TR and were not petitioned for listing. NOP Policy Memo 15-4 clearly communicates that the current chlorine listings allow for the use of electrolyzed water in organic production and handling, so returning the proposals to subcommittee will not result in disruptions to the industry. Additionally, crop and livestock producers have indicated that additional uses of electrolyzed water (as fungicides and teat dips) may function as viable alternatives to currently listed materials and these use patterns should be considered by NOSB.

We offer the following, more detailed, comments within the context of the crops, livestock, and handling scopes for your consideration:

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Specificity

Electrolyzed water was petitioned for addition to § 205.601, § 205.603, and § 205.605 for use as an antimicrobial/sanitizer for use on equipment and raw agricultural products. The subcommittees summarize the advantages electrolyzed water has over other forms of hypochlorous acid forming chlorine materials (sodium and calcium hypochlorite). Because of these benefits, the subcommittee recommends the addition of hypochlorous acid to National List for its petitioned uses. However, it is unclear why the subcommittee recommended the listing of the generic substance hypochlorous acid rather than the specific petitioned substance "electrolyzed water." A simple patent search for hypochlorous acid shows that there are a number of additional methods for manufacturing the substance in addition to sodium hypochlorite, calcium hypochlorite, and electrolyzed water.

OTA is concerned that by listing hypochlorous acid on the National List, additional forms of the substance that have not been petitioned or reviewed may be used by organic producers and handlers. This would be inconsistent with how materials are added to the National List. Additionally, the listing of hypochlorous acid as a distinct substance from sodium and calcium hypochlorite does not recognize that these two latter substances form hypochlorous acid when put into solution.

Listing Option

Due to the confusion that listing electrolyzed water under the broader heading of hypochlorous acid would cause, OTA recommends the Board consider another option for its proposed listing of electrolyzed water on the various sections of the National List:

§ 205.601(a)(2): Chlorine materials – For pre-harvest use, residual chlorine levels in the water in direct crop contact or as water from cleaning irrigation systems applied to soil must not exceed the maximum residual disinfectant limit under the Safe Drinking Water Act, except that chlorine products may be used in edible sprout production according to EPA label directions.

- (i) Chlorine dioxide
- (ii) Hypochlorous Acid
  - (a) Calcium hypochlorite
  - (b) Sodium hypochlorite
  - (c) Electrolyzed Water

§ 205.603(a)(7): Chlorine materials – disinfecting and sanitizing facilities and equipment. Residual chlorine levels in the water shall not exceed the maximum residual disinfectant limit under the Safe Drinking Water Act.

- (i) Chlorine Dioxide
- (ii) Hypochlorous Acid
  - (a) Calcium hypochlorite
  - (b) Sodium hypochlorite
  - (c) Electrolyzed Water

§ 205.605(b): Chlorine materials – disinfecting and sanitizing food contact surfaces, *Except,* That, residual chlorine levels in the water shall not exceed the maximum residual disinfectant limit under the Safe Drinking Water Act (Chlorine dioxide; Hypochlorous Acid: Calcium hypochlorite, Sodium Hypochlorite, and Electrolyzed Water).

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Our suggested regulatory language is offered as an example of an approach NOSB could take in ensuring clarity around which forms of hypochlorous acid are allowed in organic production and handling and in acknowledging that sodium and calcium hypochlorite are other allowed materials that form hypochlorous acid when put into solution.

Crops
In regards to the use of electrolyzed water in organic crop production, OTA has heard from growers that there is interest in using the material as a crop protection product against mildews and other plant pathogens. It is unclear whether listing electrolyzed water as hypochlorous acid at § 205.601(a)(2) as the crops subcommittee recommends will allow this potential use or not. We encourage the Crops Subcommittee to reach out to organic growers, the NOP, and ACAs to explore if this potential use pattern is desired and effective to control plant diseases, permitted under current pesticide oversight regulations, and compatible with organic production principles.

Livestock
OTA has also heard from its membership of organic dairy producers that electrolyzed water has the potential to be a safe and effective alternative to iodine teat dips. Studies at Iowa State University indicate that electrolyzed water is a promising new technology for both pre- and post-milking teat dips that provides a safe alternative to iodine-based products (**attached as Appendix A**). Organic livestock producers have been unable to test these products on their herds, however, because, despite the NOP Memo 15-4, the allowance for chlorine products in livestock production is restricted to sanitizing equipment and does not permit their use as a teat dip. The Livestock Subcommittee should evaluate this potential use pattern for electrolyzed water, and the proper regulatory language that would allow this use if the recommendation returns to subcommittee for further discussion.

Conclusion
In closing, OTA supports the listing of electrolyzed water on the National List to allow this better alternative chlorine material in organic production and handling. However, we encourage NOSB to return the proposals to the respective subcommittees for further development of specific and appropriate listing motions. The listing of hypochlorous acid rather than electrolyzed water does not recognize that there are a number of additional methods for manufacturing hypochlorous acid that were not petitioned or reviewed. NOP's Policy Memo 15-4 already allows for the use of electrolyzed water, so there will not be disruptions to the industry by sending the proposals back to subcommittee. Lastly, additional use patterns for electrolyzed water in both crop and livestock production warrant consideration by the subcommittees in the development of future listing motions.

Again, on behalf of our members across the supply chain and the country, OTA thanks NOSB for the opportunity to comment and for your commitment to furthering organic agriculture.

Respectfully submitted,

Nathaniel Lewis
Senior Crops and Livestock Specialist, Organic Trade Association

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cc: Laura Batcha
Executive Director/CEO
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Appendix A: Evaluation of Chlorine Stability in a Novel Teat Dip Disinfectant System

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Appendix A

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Evaluation of Chlorine Stability in a Novel Teat Dip Disinfectant System

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Evaluation of Chlorine Stability in a Novel Teat Dip Disinfectant System

A.S. Leaflet R2801

Leo Timms, Professor of animal science

Summary and Implications

Chlorine concentrations of a novel generated germicidal compound (8000 ppm available chlorine) and pre (500 and 1000 ppm) and post dip (1000 and 2000 pm) made by dilutions with initial separate additive were very stable over 11, 20, and 42 day trials. Using different additives in pre and post dips (trial 2) or just post dips (trial 3) showed reduction in chlorine to 200 ppm within 24 hrs. This novel technology shows excellent chlorine stability over time (base solution) but also the importance of the additives and their potential effects on these concentrations.

Introduction

Today's consumer demands that food be produced at the highest level of quality and safety. The production and processing of safe, nutritional, high quality food products starts right on the farm. As farms get larger, their need to defend against harmful micro-organisms becomes even more critical. The capability to produce safe and effective hygiene and disinfection products on site, in sufficient quantities at a low cost, is a necessity for the farming and food industries, given current economics and input costs.

A hygiene technology that has been in use for more than 30 years in the water treatment industry, but never applied to agriculture, was introduced to the dairy industry earlier this year. The ECAlogix™ System (Zurex PharmAgra LLC) utilizes electro-chemical activation to create large amounts of an extremely efficacious germicidal solution, on-site, at a fraction of the current cost. This base disinfectant solution is blended with a portfolio of proprietary additive formulas to create application-specific products for numerous on-farm applications including animal and premise hygiene and water purification.

The electrochemical activation (ECA) process begins when water is mixed with a purified sodium chloride solution. It moves through an electrolytic cell to generate an active germicidal agent. This concentrate solution is an oxychloride combination that is more effective than common chlorine bleach, yet safe when applied to skin tissue. This system allows farms to focus on sustainability and food safety by creating high quantities of germicidal agents from the concentrate and/or proprietary additives to defend against a wide spectrum of microorganisms. Used for cleaning, sanitizing and disinfection, the system can be applied to pre-milking and post-milking teat hygiene, hoof treatment, cleaning equipment, cleaning walls and calf hutches, CIP cleaning, laundry and water treatment.

The objective of this overall study is to evaluate the stability of the base germicidal product as well as dilutions used for pre and post milking teat dipping, as well as evaluate teat health and integrity when used. The objective of this paper is to present stability results as teat health and integrity data is currently being analyzed.

Materials and Methods

Initial base product: The initial base germicidal stock compound supplied to ISU generated through ECAlogix™ System was designed to have 8000 ppm chlorine.

Cows and procedures: All protocols were approved by the ISU Committee on Animal Care. Two pens (1 each) of 48 animals were used to evaluate pre-dip and post dips only individually (trials 1 and 2) and then both pens were used where both pre and post dips were used together in a half udder design (right side teats dipped with experimental pre and post dips, left teats with control commercial teat dips).

Pre and post dip products: Appropriate dilutions of pre (500 -1000 ppm) and post (1000 – 2000) milking teat dips were made and initially tested. Following a 2 week comparative trial (trial 1), 1000 ppm and 2000 ppm solutions were chosen (pre and post dips, respectively) for a comparison of dip additive formula trial (3 weeks- trial 2) and then a half udder comparative experiment against commercial dip products (trial 3 – 6 weeks). Both pre and post dips had proprietary formulas added to them to facilitate proper teat cleaning (pre dip) as well as skin condition emollients (pre and post dip)

Product chlorine concentrations and stability: A teat dip cup filled with the initial stock germicide solution was placed in the milking parlor and served as a base control over time (never used for dipping). Pre and post milking teat dips were made in 1 gallon quantities that would last ~ 1 week. Chlorine concentrations in all these products were tested every few days by drawing directly from the teat dippers being used or stored in the milking parlor. Testing was done with a chloride titration testing kit and compounds. 10 drops of a 50% Potassium iodide was added to the diluted sample followed by 3 drops of 50% sulfuric acid (yellow color indicated chlorine present). 5 drops of a 1% starch solution were then added (blue color) and the drops (1 at a time) of a thiosulfate titrant solution were added until the sample turned colorless. When the initial solution was diluted 10 fold 3X, each thiosulfate drop equated to 1 ppm total available chlorine.

Results and Discussion

Trial 1: Chlorine stability over an 11 day period for Trial 1 is shown in Figure 1. Pen 11 had right side teat (11 R) pre-dipped with 500 ppm solution while left teats were pre-dipped with 1000 ppm solution (11 L). Pen 10 had right side teat (10 R) post-dipped with 1000 ppm solution while left teats were post-dipped with 2000 ppm solution (11 L). Overall chlorine stability of all pre and post dips and the stock solution were excellent over the 11 day period.

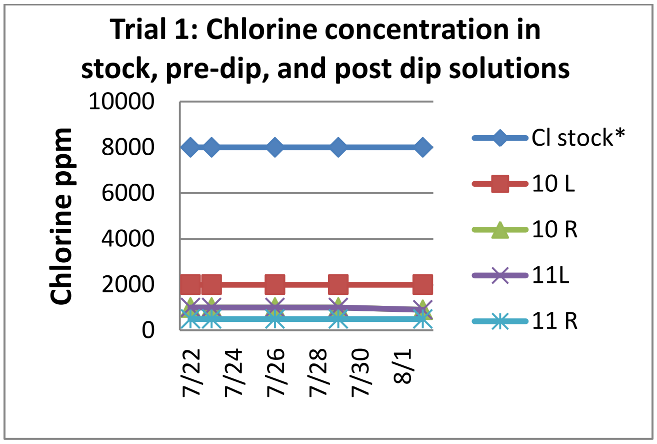

Figure 1. Chlorine concentrations for stock solution, pre (11 L and 11R), and post (10L and 10R) milking teat dips over an 11 day period.

Trial 2: Chlorine stability over a 20 day period for Trial 2 is shown in Figure 2. Pen 11 had right side teat (11 R) pre-dipped with 1000 ppm solution with a new additive (in both pre and post dip) while left teats were pre-dipped with initial 1000 ppm pre-dip solution (11 L). Pen 10 had right side teat (10 R) post-dipped with 2000 ppm solution with a new additive (in both pre and post dip) while left teats were post-dipped with 2000 ppm initial post dip solution (11 L).

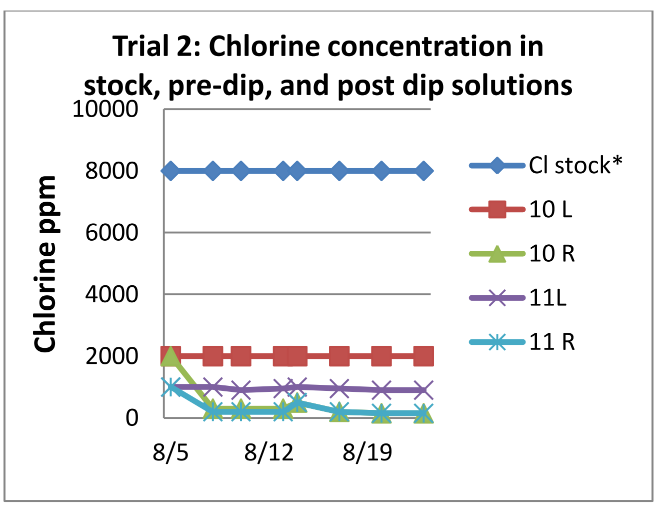

Figure 2. Chlorine concentrations for stock solution, pre (11 L and 11R), and post (10L and 10R) milking teat dips over a 21 day period.

Overall chlorine stability of stock solution and initial pre and post dips (11L and 10 L)with original separate additives were stable across the 3 weeks. Pre and post dips at 1000 ppm and 2000 ppm (11R and 10R), respectively at the start that used new additives saw reduced chlorine concentrations within 24 hrs (down to 200 ppm).

Trial 3: Chlorine stability over a 6 week period for Trial 3 is shown in Figure 3. Post milking teat dips were initially 2000 ppm solutions while pre-dips were 1000 ppm. New dip solutions were made on 8/26, 9/27, and 10/7. Predip additives were same as original trial 1 in all dips. Postdip made on 8/26 had original post dip additive while dips made on 9/27 and 10 7 had a new post dip additive. Overall chlorine stability of stock solution and pre and post milking teat dips with the original additives were stable and excellent over time. Using a new post dip additive resulted in lower chlorine (200 ppm) within 24 hours post dip mixing at 2 separate new batches

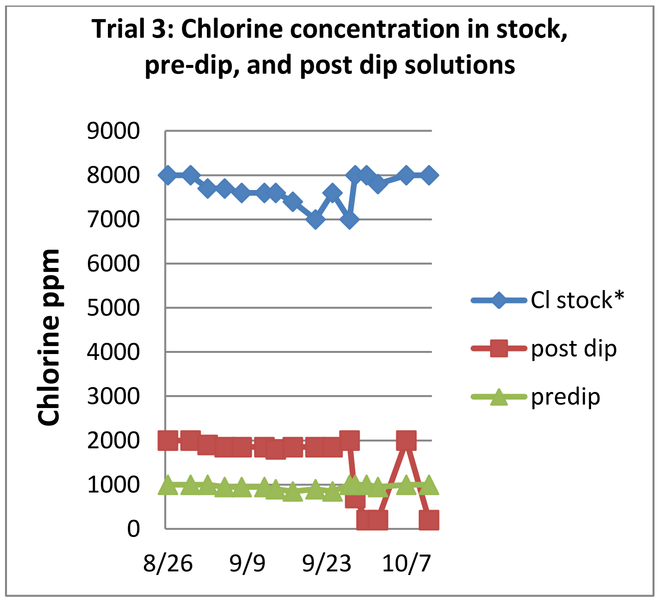

Figure 3. Chlorine concentrations for stock solution, pre and post milking teat dips over a 42 day period.

Summary

Chlorine concentrations of a novel generated germicidal compound (8000 ppm available chlorine) and pre (500 and 1000 ppm) and post dip (1000 and 2000 pm) made by dilutions with initial separate additive were very stable over 11, 20, and 42 day trials. Using different additives in pre and post dips (trial 2) or just post dips (trial 3) showed reduction in chlorine to 200 ppm within 24 hrs. This novel technology shows excellent chlorine stability over time (base solution) but also the importance of the additives and their potential effects on these concentrations.