

**National Organic Standards Board  
Handling Committee  
Proposed Recommendation  
Chlorine Materials**

**October 5, 2011**

**List: § 205.605 Nonagricultural (nonorganic) substances allowed as ingredients in or on processed products labeled as “organic” or “made with organic (specified ingredients or food group(s)).”**

(b) Synthetics allowed--Chlorine materials.

**Committee Summary**

Chlorine is a member of the salt-forming halogen series, combines readily with many other elements, and is extracted from chlorides through oxidation often by electrolysis. With metals, it forms salts called chlorides. As the chloride ion,  $\text{Cl}^-$ , it is also the most abundant dissolved ion in ocean water. In nature, chlorine is found primarily as the chloride ion, a component of the salt that is deposited in the earth or dissolved in the oceans — about 1.9% of the mass of seawater is chloride ions and is not infrequently found in higher natural concentrations as well. In industry, elemental chlorine is usually produced by the electrolysis of sodium chloride dissolved in water.

Chlorine compounds are the most common equipment and food contact sanitizers used in the food processing and handling and are recognized by the FDA as being appropriate for their intended use. The health and environmental hazards associated with its manufacture and use are well researched and are mitigated through worker protection protocols, Good Manufacturing Practices, and oversight by local, state and federal agencies. The food processing community, pre-NOP certification programs, and past NOSB decisions have determined that—coupled with these mitigating features—the proven efficacy and reliability of these chlorine materials in support of food safety concerns outweighs the risks.

The annotations limiting the use of chlorine in §205.601(a) (2), §205.603(a)(7), and §205.605(b), do not align with a November 1995 NOSB recommendation on chlorine materials. This recommendation stated that chlorine materials should be allowed for use in organic crop production, organic food processing, and organic livestock production with the following annotation:

“Allowed for disinfecting and sanitizing food contact surfaces. Residual chlorine levels for wash water in direct crop or food contact and in flush water from cleaning irrigation systems that is applied to crops or fields cannot exceed the maximum residual disinfectant limit under the Safe Drinking Water Act (currently 4mg/L expressed as  $\text{Cl}_2$ ).”

This annotation was crafted to acknowledge that levels of chlorine permitted in municipal drinking water were considered acceptable for organic food production and handling. The language used in the proposed NOP rule published in March 2000 did not include the terms “in direct crop or food contact” and “in flush water ... that is applied to crops or fields.” The language used under §205.605 (handling uses) only mentions use in disinfecting food contact surfaces, leading some handlers to question whether chlorine could be used in direct food contact. The NOP responded in the preamble of the final rule (65 FR 80548, 80616, December 21, 2000) which stated that the use of the term “residual chlorine” referred to the chlorine that was present in water when it exited the facility as effluent.

The NOSB revisited the issue through a May 2003 recommendation. At that time, the NOSB noted that “residual chlorine” is a scientific term used when measuring chlorine. Residual chlorine (also called free or available chlorine) is the chlorine that remains available in solution after the disinfection step is complete, when the initial added chlorine material has been reduced by reaction, bound to the organic matter, or evaporated. The residual chlorine is what is still available to oxidize other substances. Residual chlorine is the fraction of available chlorine in solution derived from the disinfectant source. When calcium hypochlorite or sodium hypochlorite is used, the proper measure for residual chlorine is the sum of the concentrations of hypochlorous acid (HOCl) and hypochlorite ion (OCl<sup>-</sup>). For chlorine dioxide (ClO<sub>2</sub>), all unreacted chlorine is considered to be free chlorine. Another frequently used term is total chlorine, which is a measurement of the free plus inactive forms.

In 2003, the NOSB stated: “The Organic Foods Production Act is not designed to function as a waste water regulation. Instead, it is a regulation designed to protect organic integrity. As such, processing operations must demonstrate compliance with the chlorine annotation by monitoring the chlorine content of the water which is in direct contact with organic products, not the wash water which is discharged from the facility.”

In December 2010, the NOP issued draft guidance clarifying the use restrictions of chlorine materials in organic production and handling (the background of which is provided again within this recommendation). On review and consideration of this draft guidance, informed by public comment and review of a new TR provided by the NOP (supplied for Crops Committee sunset review), and with respect to the change in NOSB Policy and Procedures Manual, the Handling Committee wishes to recommend a change to the annotation to chlorine materials as noted below.

Additionally, the Handling Committee would like to note that other chlorine compounds, such as hypochlorous acid, may be appropriate materials to add to the annotation upon appropriate review, recommendation and Board vote.

### **Committee Recommendation**

The Handling Committee recommends the annotation of the following substance as follows:

§ 205.605 Nonagricultural (nonorganic) substances allowed as ingredients in or on processed products labeled as “organic” or “made with organic (specified ingredients or food group(s)).”

(b) Synthetics allowed--Chlorine materials

Chlorine materials (calcium hypochlorite, chlorine dioxide, and sodium hypochlorite) for disinfecting and sanitizing food contact surfaces, equipment and facilities may be used up to maximum labeled rates.

Chlorine materials in water used in direct crop or food contact is permitted at levels approved by the FDA or EPA for such purpose, provided the use is followed by a rinse with potable water at or below the maximum residual disinfectant limit for the chlorine material under the Safe Drinking Water Act or followed by other effective intervention or testing steps that would reduce and verify the residual chlorine levels to be 4mg/L or less on the product.

Chlorine in water used as an ingredient in organic food handling must not exceed the maximum residual disinfectant limit for the chlorine material under the Safe Drinking Water Act.

**Committee Vote**

Motion: John Foster

Second: Tracy Miedema

Yes: 6      No: 0

Abstain: 0      Absent: 1