



## **Draft Guidance**

# **The Use of Chlorine Materials in Organic Production and Handling**

### **1. Purpose**

This guidance provides clarification regarding the use of chlorine materials in organic production and handling.

### **2. Scope**

This guidance provides information to certified and exempt organic operations and accredited certifying agents (ACAs).

### **3. Background**

The National Organic Program (NOP) is providing this guidance to clarify and ensure consistency in the use of chlorine products under the NOP regulations and in response to recommendations from the National Organic Standards Board (NOSB). 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 Cl<sub>2</sub>).”

This annotation was originally 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. 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 ( $\text{ClO}_2$ ), 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.” This statement represents NOP’s current thinking on this topic.

#### 4. Policy

As per the annotations in the National List shown below, residual chlorine levels in the water shall not exceed the maximum residual disinfectant limit under the Safe Drinking Water Act. To demonstrate compliance with the NOP regulations regarding chlorine, certified operators should monitor the chlorine level when the water has had last contact with the organic product in direct applications. A description of the operation’s monitoring procedure should be contained in the operation’s Organic System Plan. Documents used to demonstrate compliance should be reviewed and verified during the operation’s annual inspection.

##### Crop operations:

- Residual chlorine levels in the water in direct crop contact or as water from cleaning irrigation systems applied to soil should not exceed the maximum residual disinfectant limit under the Safe Drinking Water Act.
- Chlorine products may be used up to maximum labeled rates for disinfecting and sanitizing equipment or tools.

##### Livestock operations:

- For sanitizing livestock facilities and equipment, residual chlorine levels in the water in direct food or animal contact should not exceed the maximum residual disinfectant limit under the Safe Drinking Water Act.
- Chlorine products may be used up to maximum labeled rates for disinfecting and sanitizing equipment or tools.

##### Handling operations:

- For food handling facilities, chlorine materials may be used up to maximum labeled rates for disinfecting and sanitizing food contact surfaces.
- Water used in direct crop or food contact (including flume water to transport fruits or vegetable, wash water in produce lines, or carcass washing) is permitted at levels approved by FDA or EPA for such purpose, provided the use is followed by rinse with potable water that does not exceed the maximum residual disinfectant limit for the chlorine material under the Safe Drinking Water Act.
- Water used as an ingredient in organic food handling should not exceed the maximum residual disinfectant limit for the chlorine material under the Safe Drinking Water Act.



Definition: “Maximum residual disinfectant level” is a term defined by the Environmental Protection Agency (EPA) as the highest level of a disinfectant allowed in drinking water. This level is currently established by EPA at 4 mg/L for chlorine (as Cl<sub>2</sub>) and 0.8 mg/L for chlorine dioxide.

## 6. References

### Crops:

- § 205.601(a) As algicide, disinfectants, and sanitizer, including irrigation system cleaning systems
- (2) Chlorine materials - Except, That, residual chlorine levels in the water shall not exceed the maximum residual disinfectant limit under the Safe Drinking Water Act.
- (i) Calcium hypochlorite
  - (ii) Chlorine dioxide
  - (iii) Sodium hypochlorite

### Livestock:

- § 205.603(a) As disinfectants, sanitizer, and medical treatments as applicable
- (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) Calcium hypochlorite
  - (ii) Chlorine dioxide
  - (iii) Sodium hypochlorite

### Handling:

- § 205.605(b) Synthetics allowed:
- 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. (Calcium hypochlorite; Chlorine dioxide: and Sodium hypochlorite)