

# Wash Water Sanitizers

This fact sheet is part of a series about food safety on the farm for fruit and vegetable growers. Developed for the Minnesota Fruit and Vegetable Growers Association by Annalisa Hultberg and Michele Schermann. Reviewed by Dr. Cindy Tong.

Washing fresh produce with potable water treated with a sanitizing agent reduces illness-causing pathogens, such as *E. coli*, *Cyclospora*, and *Salmonella*. Use sanitizer in your wash water on leafy greens (e.g. lettuce, spinach), peppers, green beans, green onions, melons, cucumbers, and zucchini. Do not wash berries (e.g. strawberries, blueberries, blackberries, raspberries) or tomatoes.

Keep chlorine and other sanitizers away from children and pets and in tightly closed and labeled containers away from heat and direct sunlight. Read and follow label instructions; sanitizing chemicals can be toxic at full strength.

## How to use sanitizer in your wash water.

### Step 1. Remove soil and organic matter from produce before washing.

Lightly brush produce with thick skins or rinds (e.g. melons, potatoes, carrots) or prewash in plain water (e.g. leafy greens).

Organic matter reacts with the sanitizer solution to lower its effective concentration. The more organic matter in a water/sanitizer solution, the less effective the sanitizer is.

### Step 2. Measure and mix solution for rinsing.

If you are using household chlorine bleach, measure 1.5 Tablespoons of bleach per 5 gallons, or 1 cup for each 50 gallons.

If you are using any other sanitizer, follow directions on packaging.

Water used for washing must be clean and potable (drinkable).

If you wash tomatoes or melons, the water temperature should not be more than 10 degrees F cooler than the interior of the produce. If the water is colder, the water and any pathogens in the water can be sucked inside the tomato or melon and no amount of sanitizing will kill the interior pathogens.

Water should be a cool temperature, but not cold. If it is too cold the sanitizer will not be effective; if it is too warm it may encourage the growth of some pathogens and disease. Generally sanitizers work best between 55 degrees F and 120 degrees F. Check the label of the sanitizer for effective temperature range.



## For more information on Wash Water Sanitizers

- Postharvest Chlorination, UC Davis, Publication 8003
- Disinfection of Produce Wash Water, Michigan State Univ, AES 652
- Guidance for Industry: Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables, FDA.

If using household chlorine, use only plain, unscented household bleach without added thickeners or fragrances.

### Step 3. Rinse products in solution.

Be very gentle with leafy greens and other items. Let the water remove the dirt, not your hands. Do not immerse tomatoes. Tomatoes should be wiped with a clean cloth that has been dipped in sanitizer solution, or wiped with single-use paper towels.

**Step 4. Rinse product in fresh potable water** to remove residual sanitizer.

### Step 5. Change water frequently.

Used wash water can be poured onto non-edible crops, grasses or shrubs if you don't have a drain. Make sure to change water when it becomes dirty and when a new crop is added. After dumping old water, refill container with clean water, re-measure the sanitizer and test for concentration.

### Step 6. Monitor pH and sanitizer levels.

To maintain levels that are appropriate for your sanitizer, use test strips or another method to verify the concentration after each addition of sanitizer. Chlorine based sanitizer should be kept at 50-100 ppm.

Other sanitizers will vary - follow the instructions on the package. pH level should be maintained between 6.0 and 7.0 to provide for greatest effectiveness. You can buy chlorine test strips at restaurant supply stores. Test strips for other products are

generally available where those products are sold.

### Step 7. Always document the sanitizer levels on a log sheet.

Keep a log sheet with the date, time, and concentration levels near your washing station. You should check the sanitizer level in the water after each addition of sanitizer and document the level on the log sheet.

DO NOT add sanitizer at random times or in unmeasured amounts. This is not effective and the levels will vary greatly.

### Sanitizers for produce wash water\*

#### Chlorine bleach (*hypochlorite*).

Assuming 5.25% hypochlorite in household bleach, for concentration of 50-100 ppm, use 1-2 cups per 50 gallons of water and test with chlorine test strips to check.

#### Pro-San citric acid-based sanitizer.

[www.millertechintl.com/prosan.htm](http://www.millertechintl.com/prosan.htm)

#### SANOVA acidified sodium chlorite-based sanitizer.

Available from Ecolab. Call Ecolab Inc., 651-293-2233.

#### Tsunami 100 paracetic acid-based sanitizer.

Available from Ecolab. Call Ecolab Inc., 651-293-2233.

#### StorOx hydrogen peroxide-based sanitizer (Biosafe Systems)

[www.biosafesystems.com](http://www.biosafesystems.com)

\*These are commonly used sanitizers. This list is for information and should not be viewed as an endorsement of a product by the University of Minnesota, the Minnesota Fruit and Vegetable Growers Association, Minnesota Department of Agriculture, or the USDA.



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