



Sanitizer Label Station

Supplies needed: Commercially available sanitizers (bleach, PAA), 2.5-gallon buckets for mixing, measuring cups, inorganic acid to adjust pH (if desired), pH meters or strips, active ingredient test strips, gloves, goggles, aprons (as required in EPA label)

Handouts:

EPA label for each sanitizer used
Model SOP for each sanitizer used



Fact sheet showing the disassociation (forms) of hypochlorite at pH from 4 to 9
Hand out describing the chemistry of common classes of sanitizer/disinfectant

Key concepts:

The label is the law, and it also is a key document describing appropriate use and disposal of sanitizer
Ability to mix properly is enhanced by providing Standard Operating Procedure based on the label.

Improper mixing of sanitizer reduces effectiveness of sanitizers, and may allow hazards to remain after application

Users must pay attention not only to effective use, but also environmental concerns including worker safety and proper disposal.

Where this fits in the PSA GT: Module 5.2 and Module 6

The Setup: A lot of people feel like sanitizing food contact surfaces is their safety net, and if they apply a stronger solution they will be safer. Improper use of sanitizer can give a false sense of security that, at times, is one or more of the following

Not protective

Chemically dangerous

Not within the law because it is not adhering to the label instructions

The elements of the label were discussed during a separate PowerPoint presentation on the subject.

Remind participants that the label generally includes the following valuable information.

General use instructions

Specific instructions for proper usage to achieve labeled purposes

Worker safety information

Storage and disposal information

Allow participants to look at the EPA labels, and a one-sheet SOP. Discuss the value of having a SOP to help workers follow the label appropriately.

The scenario for this demonstration is a tomato packing house, in which the tomatoes are sorted and washed prior to packing. The packing house uses either of the two sanitizers that are available, depending on the crew leader's preference, to sanitize the sorting table (a food contact surface).

The Demo: Split the participants into two groups. Each will mix two solutions. The first solution will be Ultra Clorox; Group A will be given the EPA label and Group B will be given an equivalent SOP. The second solution will be Sanidate 5.0. Group A will be given the SOP, and Group B will be given the EPA label. Each group will have access to the commercially-available sanitizer and PPE, pH strips, and active ingredient test strips or titration kits. For each mix, both groups will:

- Determine the appropriate target active ingredient

- Create mix instructions/determine the appropriate dilution

- Identify and use appropriate PPE

- Mix up the dilution and test the active ingredient. Was the theoretical dilution accurate? Is adjustment needed?

- Check other chemical requirements (e.g., pH). Is adjustment needed?

- Evaluate the disposal instructions and available facilities. Can the working solution, once consumed, be disposed of safely?

See following sheets for Standard Operating Procedures.

In Minneapolis, the following additional were successful

- Test the local water. To my surprise, the pH of Minneapolis water was super high. White distilled vinegar from the grocery to the rescue. ½ tsp per gallon was enough to bring the pH from 8.5 to about 7. However, after adding bleach it was back up to over 8. Trial and error was necessary to settle on 2-3 tsp vinegar to get the pH about 7.

- I “trained” my new employees as such

 - Welcome to your new job. Here at my farm we take food safety seriously, and sanitize our food contact tables twice a day using this spray bottle of sanitizer. We mix sanitizer weekly to make sure it’s fresh.

 - Here is the sanitizer we use (bottle of bleach or PAA). As you know the label is the law. Be sure to follow the label.

 - Group one: Here is the label

 - Group two: Here is an SOP that I wrote that is consistent with the label and also tells you how I want you to mix sanitizer on my farm.

- Group one struggles to find sanitizing food contact surfaces on the label, and we discuss things that ought to be done (like adjust pH) that aren’t on the label

- Group one is then asked to join Group two and follow the SOP; at this transfer time, the experience by Group 1 is explained to Group 2 so they understand the challenges.

- I had a pile of strips from teaching; some expired, some inappropriate range, some not even for the chemicals being used. It was instructive for the participants to go to “the cabinet” and find the appropriate strips. Then I goaded them to agree that adding a description of which strip to use would be a good add to the SOP.

 - The range of free chlorine was 200; we discussed that 200 ppm is the maximum allowable under food code and chose to dilute until we had something less than 200, rather than accept a reading of over 200

- In addition to the test strips, I encouraged each group to use the titration kit for peroxyacetic acid and the pH meter for pH to get a more accurate measurement

- This exercise took up to 30 minutes, with discussion.

Many participants had never worked in a lab setting, so we had to be very careful with safety and teach basic technique (like, leave the pH probe in the water to get a measurement). Similarly, people who had never spent time baking didn’t know the abbreviations tsp and Tbsp.

Later groups made only one solution (bleach) and measured PAA that was created by a prior group using titration.

Mix Data Sheet – Bleach for Food Contact Surfaces

[illegible]

Mix Data Sheet – SaniDate for Food Contact Surfaces

[illegible]

Standard Operating Procedure

Mix Working Solution of Clorox Ultra to Sanitize Food Contact Surfaces

Materials:

2.5-Gallon Bucket, clean
Clorox Ultra
Measuring spoon
Free chlorine test strips
pH test strips or pH meter
Gloves, goggles
Bleach for food contact surfaces record sheet

Procedure:

Add 1 gallon water from the wash sink (potable water) to the bucket
Put on gloves, safety glasses
Minneapolis water is pH 8.5. Lower the pH by adding 1 Tbsp vinegar.
Rinse the spoon in the bucket and stir the solution; do NOT add Clorox to dirty spoon
Carefully measure 1 Tbsp Clorox and dip it into the water
Do not pour the Clorox in, pouring may cause splashing
Swirl the bucket to mix
Measure the pH to confirm that the pH is between 5.5 and 7.5; If the pH is out of range, notify a supervisor for instruction
If using Hydrion test strips:
Check expiration date; notify supervisor if test strips are expired
Tear off a 2-inch length of paper and dip the lower ½ inch of paper into mix
Compare against the color chart
If using pH meter, check calibration log. Calibrate using separate SOP if more than 1 week has passed since the meter was last calibrated
Remove protective cap and push power button, be careful not to tip the cap and lose the soaking solution that is inside
Immerse end of pH meter in the bleach solution and observe pH
Rinse with tap water, and replace protective cap (add more solution, if necessary)
If the pH is above 7.5, slowly add a small amount of additional vinegar
Record the pH on the data sheet, before and after adjusting (if necessary)
Measure free chlorine to confirm that the active ingredient is in the range **150 to 200**
Check expiration date; notify supervisor if test strips are expired
Dip the test strip into mix; compare against color chart
If the concentration is too low, add a small amount more Clorox and re-test
If the concentration is too high, add more water and re-test
Record the concentration on the data sheet, before and after adjusting (if necessary)
Fill spray bottles and squirt bottles with new solution, write date on bottles
Rinse any leftover solution down the municipal drain with plenty of water
Remove and replace PPE; discard disposable gloves; wash and replace reusable gloves

Standard Operating Procedure

Mix Working Solution of Sanidate 5.0 for Food Contact Surfaces

Materials:

2.5-Gallon Bucket, clean
SaniDate 5.0
Measuring spoon or cup
Peroxyacetic acid titration kit
Coveralls over long-sleeved shirt and long pants, rubber gloves,
chemical resistant footwear plus socks, and protective eyewear
(goggles or face shield)
SaniDate for food contact surfaces record sheet

Procedure:

Add 1 gallon water from the wash sink (potable water) to the bucket
Put on gloves, safety glasses, coveralls; ensure you are wearing appropriate clothing
Minneapolis water is pH 8.5. Lower the pH by adding 0.5 tsp vinegar
Carefully measure 1 Tbsp SaniDate 5.0 (1/2 ounce) and dip volume into the water
Do not pour the SaniDate in, pouring may cause splashing
Swirl the bucket to mix
Measure peroxyacetic acid (PAA) to confirm that the active ingredient is in the range **150 to 500**
Check expiration date on titration kit; notify supervisor if test strips are expired
Use the syringe or the markings on the vial to fill vial to 30 mL, or simply dip the vial
Add 10 drops sulfuric acid 50% and swirl 5 seconds
Add 1 drop potassium iodide and swirl 5 seconds
Add 5 drops starch indicator and swirl 5 seconds
Add sodium thiosulfate 0.1 N drop by drop until the color changes from blue-black to clear
The dark color may re-appear; add drops until the solution stays clear for 10 seconds
Record number of drops in record sheet
Multiply number of drops by five to obtain concentration in ppm, record in record sheet
If the concentration is too low, add a small amount more SaniDate and re-test
If the concentration is too high, add more water and re-test
Fill spray bottles and squirt bottles with new solution, write date on bottles
Rinse any leftover solution down the municipal drain with plenty of water
Remove and replace PPE
Discard disposable gloves; wash and replace reusable gloves