

## Materials Compatibility (Estimated time 15-20 minutes?)

**Supplies needed:** Three separate metal pieces treated with three sanitizers, 100 ppm PAA, steel wool, pliers.

**Handouts:** Comparison of Various Sanitizers Handout, [Introduction to Selecting an EPA-labeled Sanitizer](#)

### Key Concepts:

- Various sanitizers react with materials differently
- Understanding the material of fabrication is essential to selecting the right surface sanitizer and avoiding corrosion or other damage

**Where this fits in the PSA GT:** Module 6

**The Setup:** Talk about the various sanitizers in terms of cost and their sensitivity to various environmental factors such as pH, hard water, and turbidity. Reference the Comparison of Various Sanitizers handout.

Introduce the three metal pieces (aluminum, stainless steel and galvanized) that have been treated with PAA, bleach and quaternary ammonia. The pieces have been cleaned and sanitized daily for several months. In some cases they already are showing signs of wear on account of the sanitizer. Ask, "Which sanitizers seem to have damaged the metals in question?" (They'll likely respond chlorine and PAA)

Once you receive an answer, follow it up with this explanation. It's important to understand that many sanitizers are oxidizers by nature. Oxidizers can rust metals with high iron content. This oxidation is most pronounced with chlorine and PAA. Non-ferrous metals, like aluminum, can also suffer corrosion by oxidizers.

**The Demo:** Pour the 100 ppm PAA into a clear glass. Use the pliers to place a small ball (about 1 inch diameter) of steel wool into the sanitizer, and squeeze the ball repeatedly. In about 30 seconds, you'll start to see rusty water start to ooze out of the steel wool.

**The Assignment:** Turn the group's attention to the piece of equipment you are standing near. Have them try to identify the materials that Zone 1 and 2 are made of. Then have them decide on a choice of sanitizer. Reinforce that the best choice may not be 100% corrosion free. Restate the question with one or more environmental factors that may influence the choice (e.g., if the tap water has a pH over about 7.5)

	Chlorine	Iodophor	Peroxyacetic Acid	Quaternary Ammonia
Corrosive	High	Moderate	Low	None
Water Temp Sensitivity	None	Moderate	None	High
pH Sensitivity	Moderate	Low	Low	Low
Foam Level	None	Moderate	None	High
Phosphate	None	High	None	None
Residual Activity	None	None	None	High
Soil Load Sensitivity	High	Moderate	Low	Low
Hard Water Sensitivity	Low	Low	Low	High
Labeled for Direct Produce Contact	Yes	No	Yes	No

MICHIGAN STATE UNIVERSITY Extension  
Adapted from Merieux Biosciences presentation by Jeff Lucas  
Release Date: August 2019