The Food Safety Modernization Act (FSMA) Produce Safety Rule (PSR) sets a standard for preventing contamination from agricultural water for post-harvest use. Only use water that has been tested and confirmed to meet the standard of no detectable generic E. coli in a 100 mL water sample for postharvest use. Postharvest water refers to water used for rinsing, cooling, or icing harvested produce. It also includes water used for handwashing and cleaning food contact surfaces.

Postharvest water, even if it is clean at the start, can become contaminated by produce that contacts the water. One way to maintain water quality is to add sanitizers to all batch/bulk water. Adding a sanitizer does not clean each individual piece of produce, but it helps to prevent cross-contamination from the water to the produce by limiting the buildup of pathogens and other microorganisms in the water.

Using a sanitizer in the water can also help reduce the risk of pathogenic biofilm buildup on food contact surfaces when using single pass spraying of produce. (Biofilm is a cluster of microbes that are attached to a surface, particularly in a moist environment.)

Understanding the Terms
Always remember that cleaning, sanitizing, and disinfecting of food contact surfaces are not the same, although these terms are often used interchangeably.

Cleaning: Physically removes dirt and debris from food contact surface using clean water and detergents. Cleaning works by using warm, soapy water to physically remove impurities. It does not kill the germs but removes them from the surface.

Sanitizing: Reduces pathogens on the food contact surface to non-harmful levels.

Disinfecting: Kills almost all pathogens/germs on food contact surfaces using chemicals.

Cleaning always needs to be done before sanitizing and disinfecting!

What is a sanitizer?
Sanitizers are antimicrobial pesticides that, when used properly, lower the number of bacteria to safe limits. Sanitizers are usually used on surfaces that come into contact with food or in water. The antimicrobial product label will outline allowed uses, such as for water or food contact surfaces, as well as approved concentrations.
How are sanitizers regulated?

In the USA, sanitizers are considered antimicrobial pesticides, and their use is regulated by the US Environmental Protection Agency (EPA). Just like other pesticide types, the label is the law. Make sure the sanitizer you choose is labeled for the intended use and follow the use instructions.

Do not use untreated surface water for postharvest uses. If you use surface water, you must treat the water (using a validated, controlled treatment) before use and regularly monitor it to make sure the treatment is effective.

Use the sanitizers in the water system, but not directly in the water source, such as into the pond.

Details on EPA pesticide regulation can be found at: https://www.epa.gov/pesticide-registration/antimicrobial-pesticide-registration

Understanding Sanitizer Labels

All sanitizers approved by the EPA have labels, and the label is the law.

If a grower uses a sanitizer that does not have an EPA label, the grower should be able to prove that the product is suitable for the intended use (such as washing fresh produce) and for reducing contamination risks.

Things to look for on the product label:

- Name of the product.
- EPA registration numbers
- Ensure that the sanitizer is labeled for its intended use, for instance nonporous food contact surfaces or fruit and vegetable wash water.
- Active ingredients.
- Hazards to humans and domestic animals.
- Proper storage and disposal of the product or the containers.
- Directions for use and proper concentration.
- Efficacy statement regarding the microorganism(s) the particular sanitizer controls.

K-State Research and Extension
Some Important Things to Consider

• Follow the label directions to limit the possible risks to humans, wildlife, and the environment.
• EPA-approved sanitizers will always include the EPA registration and label.
• Pesticide regulations could vary from state to state. Consult with state regulatory agencies for the regulation of pesticide use.

How to Select Sanitizers for Intended Use

• Always consider worker and environmental safety when choosing sanitizers.
• Remember to follow label use instructions for appropriate personal protective equipment (PPE) when handling and mixing sanitizers.
• Some sanitizers may be corrosive when interacting with the environment.

Commonly Used Sanitizers

A number of chemical sanitizers are labeled for use in postharvest water including options for organic certified produce. Commonly used sanitizers include chlorine, chlorine dioxide, peroxyacetic (peracetic) acid, and hydrogen peroxide.

Understanding Personal Protective Equipment (PPE)

• Remember to follow label use instructions for (PPE) use when handling and mixing sanitizers
• Long sleeve shirt and pants.
• Chemical resistant gloves.
• Non-absorbent rubber boots.
• Eye goggles or face shields.

Use PPE fully especially when using undiluted sanitizers.

Mixing the Sanitizers in Proper Concentration

• The concentration of the active ingredient must be routinely monitored, along with other requirements of the label use instructions such as pH, turbidity, water temperature, etc to ensure that the treatment is effective and reduces risks.
• Make sure the sanitizer is not expired for the best effectiveness.
• Follow the instructions regarding storage conditions to limit degradations and effectiveness.
• Use appropriate test kits or test strips to measure the desired concentration of the finished sanitizing solution.
• The concentration of the sanitizing solution is described in terms of parts per million (ppm), so it is important to measure the ratio of sanitizer and mixing solution.

Make sure the water used for mixing sanitizers is potable in all cases!

Record Keeping

Always keep records after using sanitizers. Records may include name of sanitizer, purchase and opened date, surface, tools or equipment that sanitizer was used for, method of use, etc.