



Episode Twenty One - Managing post-harvest handling water

Welcome to episode 21 of Food Safety Bites, brought to you by the University of Wisconsin-Madison, and funded by the USDA Food Safety Outreach Program. This is your host Harriet Behar. This episode is **managing post-harvest handling water**. In these podcast episodes, I will identify issues, and provide suggestions for how to reduce various fresh produce contamination risks and keep your customers safe. We will not talk in detail about what is required for a GAP audit or a FSMA inspection. If you want more information on those, please see the links on the website where you found these podcasts.

In previous episodes, I discussed water use when growing produce, water testing and what is post-harvest water. In this episode, I will discuss how to prevent risk of cross contamination when washing and packing your produce. In the next episode, ice and ice slurries will be discussed, completing the six food safety bites episode focused on water! Remember, start with clean water. All water used in post-harvest handling must have been tested and shown to be potable and free from detectable E. coli. Use a sanitizer in the wash water to reduce the risk of cross-contamination amongst the produce in the tank. This sanitizer is not meant to clean the produce, but rather to prevent potential contamination that comes in on produce to spread to other produce items. Remove as much dirt and debris from the produce before the final rinse or dunk that contains the sanitizer to make the sanitizer as effective as possible.

Be aware of the temperature of the water and the temperature of your produce to prevent infiltration. Use a shallow dunk tank or flume and keep the produce in the tank for as short a time as possible to prevent infiltration from the higher pressure that occurs at the bottom of the tank.

Types and uses of sanitizers: All sanitizers used should clearly state on the label that they are approved for food contact surfaces and/or in produce wash water. Not all chlorine bleach you purchase in a grocery store for laundry, would be allowed for use on food. If you are certified organic, there are numerous sanitizers allowed, contact your organic certifier for more information. Chlorine, peracetic acid, and hydrogen peroxide are all common sanitizers used. There may be some sanitizers only listed for use on food contact surfaces and not necessarily for use in wash water, read the labels carefully. Many extension agents have information to help you find the sanitizer that works for your situations. Everyone who mixes the sanitizer in the wash water should be trained on how to add the right concentration for each area where the sanitizer is used such as the dunk tank or through the brush washer. Safety when handling the sanitizer, including use of goggles and heavy plastic gloves might be indicated and this protective equipment should be made accessible to those handling these concentrated chemicals. It is also a good idea to know the pH of the water you are using, in case the sanitizer concentration required in the water to be effective, needs to be adjusted higher or lower depending on that pH reading.

Cleaning and/or sanitizing harvest tools and containers- Plastic tubs, totes or buckets used for harvesting produce should be clean before use. Putting clean green peppers into a tote full



of dirt that just was used for potatoes, is not a good idea. Periodically throughout the season, depending on the condition of the containers, they should be washed thoroughly with detergent and then sprayed with or dipped into sanitizer water, to prevent buildup of bacteria. For knives, scissors or pruners, bring them out into the field clean and sanitized. Wash and re-sanitize them as needed or have multiple sanitized tools for each user.

Sanitizers in single pass water- If you are using single-pass water, meaning a flume or a brush washer or other equipment that does not recirculate water, there are dispensers that you can hook up to your water supply to meter the correct amount of sanitizer, based on the water's PH. This water can be used through a faucet, a hose, or your brush or barrel washer. Periodically test this water to monitor that the dispenser is incorporating the right concentration of the sanitizer into the water. If the sanitizer label requires it, use a potable water rinse after using the water with the sanitizer before boxing and storing the produce.

Sanitizers in dunk tanks or flumes- Sanitizers are especially important to use in recirculated water like dunk tanks to reduce the potential for cross contamination. Know the amount of water in the tank, so you can have the sanitizer concentration at the correct level for that volume of water. If the sanitizer label requires it, use a potable water rinse after removing produce from the tank before boxing and storage. When running significant volumes of produce through that water, or when switching crops change that water. When the water gets excessively cloudy with dirt, then it needs to be changed.

Turbidity – This is the term used to describe this cloudiness or clarity of the water, which can be affected by the presence of plant particles, plant juices or dirt. Excessive turbidity can interfere with the effectiveness of the sanitizers in that water. There are numerous ways to track the turbidity. You can use a clear container (plastic to avoid the use of glass in the pack shed) or a turbidity tube which is a tube with a black and white cross in the bottom used to measure water cloudiness. This tube will allow you to have an objective measurement of the cloudiness of the water, since you can put a volume of water in and then see if you can see the mark at the bottom of the tube. If you can, it's still clean, if you can't, it's too dirty and should be changed. Test various stages of cloudy water to learn when there is still presence of active sanitizer if you are using a sanitizer, and you will see how the sanitizer level decreases when you add soil to the water. Another method is to use a Secchi (S.E. C. C. H. I) disk. This involves using a disk that is placed in the bottom of a plastic container of water, which has a high contrast black and white pattern on it. When the pattern cannot still be seen through the cloudiness of a specific volume of water in the container, the water should be changed. This is the same concept as the tube, but is just a disk that is dropped into the tank.

So that's it for this episode of Food Safety Bites, the next episode is water testing. This is your host Harriet Behar brought to you by the University of Wisconsin Madison, talk to you next time!