GAP Practices: In the Barn/Packing House--Safe Water Sources

Safe water for processing produce and personal hygiene

- Backflow devices and air gaps are installed at appropriate locations
- Restrooms and handwashing sinks are supplied with potable water
- Produce is washed and/or cooled with potable water
- Wash water is changed when dirty or after several hours and maintained at a temperature of no more than 10° F cooler than the produce.
- Packing lines, conveyer belts and any other food contact surfaces, are washed rinsed and sanitized at the end of the day using potable water

In a packing operation, water is used to cool and wash produce, to clean and sanitize your plant, and to wash your hands. If the water you use is contaminated with pathogens (microbes that can make you sick), you run the risk of contaminating the food you grow and sell.

Water can be the source of a variety of pathogens including *E. coli O157:H7, Salmonella spp., Shigella spp., Cryptosporidium parvum, Giardia lamblia, Cyclospora cayetanensis, Norovirus,* and *Hepatitis A* virus. Produce related outbreaks of Salmonella, Giardia, and Cyclospora have been attributed to the use of contaminated water for irrigation or produce washing.

Preventing Cross-Connections in your washing/processing operation:
Without proper protection devices, something as useful as a hose attached to a faucet has the potential to poison the water supply in your processing facility. This can happen when there is a "cross-connection" in your water supply. A cross-connection is any actual or possible connection between the public or potable, private water source and a source of contamination or pollution.

If a cross-connection is present in the water supply, you may contaminate the water supply if "backflow" occurs. "Backflow" means that the water is flowing in the opposite direction from its normal flow. With the direction of flow reversed, due to a change in pressures, backflow can allow contaminants to enter your potable water system through cross-connections. Backflows due to cross-connections are serious plumbing problems. They can cause sickness and even death.

A potentially hazardous cross-connection occurs every time someone uses a garden hose sprayer to apply insecticides or allows a faucet hose to sit in contaminated or dirty wash water.

Without a backflow prevention device between your hose and the faucet, the contents of the hose and anything it is connected to can backflow into the piping system and contaminate your drinking water.

The simplest form of backflow prevention is an air gap--an unobstructed vertical distance between the faucet, hose or plumbing fixture and the flood level rim of the sink or receptacle. When air gaps exist, it is not possible for contaminants to flow into the water supply.

Using potable water for produce washing:
Water used during post-harvest handling and processing of produce is a potential source of contamination, especially if it is reused. Water quality needs depend on the use -- water quality needs may be greater for water used for a final rinse before packaging compared with water in a dump tank where field soil quickly mixes with the water.

Where water is reused for a series of processes, it is recommended that whenever possible, water flow counter the movement of produce through the different unit operations. For example, water might be used first in a final rinse then reused in an earlier unit operation, such as a dump tank.

What can you do?

☑ ***Backflow prevention***

- Be sure that you have backflow prevention devices installed in your water supply system.

☑ ***Produce washing and cooling***

- Consider water temperature. The safety of some fruits and vegetables is affected by the temperature of the water. If the water is much colder than the produce, it may be absorbed or get into the produce through the stem or blossom end during washing or cooling, along with pathogens that may be present in the water. You may need to heat the water or cool the produce in these cases. Water should not be more than 10°F colder than the produce.
- Brush washing is more effective than washing without brushes. Clean brushes often.
- Spray washing may cause spread of pathogens through the air or by contact with clean fruit or food contact surfaces.
- A series of washes may be more effective than a single wash.
- Change water when it is dirty or after several hours of operation.
- Clean and sanitize water contact surfaces such as dump tanks, flumes, wash tanks, and hydrocoolers as often as necessary.

☑ ***Antimicrobial washes may help minimize microbial contamination***

- All chemical washes must be used in accordance with FDA and EPA regulations.
- Chlorine is commonly added to water at 50-200 ppm total chlorine, at a pH of 6.0-7.5 for a contact time of 1-2 minutes.
- You need to routinely monitor antimicrobial chemical levels to make sure that they are at effective concentrations. As organic materials (dirt, leaves, fruit) and microbial load increases in wash water, antimicrobial chemicals become less effective against microorganisms.
- Use a sanitizer test kit (as those used for swimming pools) to monitor the level of chlorine.

☑ ***Handwashing***

- Make sure that potable water is available for handwashing in restrooms and processing areas.
- The processing area should be equipped with a separate sink, designated only as a handwashing sink.

☑ ***Cleaning and Sanitizing***

- Make sure that potable water is used for cleaning and rinsing packing lines, conveyer belts and any other food contact surfaces.
- If sanitizers are mixed with water, be sure to use potable water.

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