



Episode Twenty Four - Managing ice

Welcome to episode 24 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 ice used in post-handling**. 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 and risks when growing produce and for post-harvest handling as well as water testing for these uses. Ice, ice slurries, like all water in contact with produce in post-harvest handling should be potable and you should develop protocols around the handling of the ice to prevent contamination of the produce it touches.

Why use ice? For some types of produce, after cooling produce from the field in a cooler, keeping the produce very cold in storage and transport is important in preserving quality and extending shelf life so the produce arrives to the customer in good condition.

Ice is not appropriate for all types of produce, and in many cases, ice can injure the produce, making it lose quality quickly. Some customers may expect some types of produce to arrive iced. Most fruits should not be iced as well as thin skinned vegetables since they cannot tolerate temperatures so close to freezing. Produce that can be iced with good results include asparagus, cauliflower, broccoli, green onions, cantaloupes, carrots, sweet corn, as well as leafy greens like kale, collards, swiss chard and watercress.

Sources of ice- Farmers can buy pallets of bagged chipped ice made from potable water, or they can purchase an ice making machine appropriate to the size of their operation's needs and hook that up to their own potable water source. All sources of water from ice should have documentation that they were from a source that was free of detectable generic e coli.

If you have your own ice machine, don't forget to develop and implement protocols for contamination prevention. Empty it routinely with a complete cleaning and sanitizing whenever it is being used. Biofilm accumulation inside ice machines is an issue due to the presence of undisturbed water and ice. The pathogen listeria can survive and thrive in these machines. Ice should be removed only with the designated scoop for that purpose, never with hands or a random bucket.

There are some growers from the plain community who cut pond ice or collect snow in the winter to maintain a cold room successfully through the summer for their produce. This ice is acceptable as long as the ice and the water melting from that ice does not contact the produce. Crushed ice is the preferred form of ice, since it does not have sharp edges that can puncture the produce.



How to apply ice- Pay attention to the cleanliness of worker hands when opening up ice bags and if spreading the ice in the boxes. The scoop or shovel used to move ice from an ice machine should be dedicated to that use and cleaned and sanitized before use. Hanging the shovel or scoop so it is not touching the floor will help prevent it from spreading contamination when used to move ice.

One or two layers of waxed paper over the produce to protect it from direct chilling of the produce is a good idea for the more sensitive iced produce, especially for the leafy greens and green onions. Since the ice will wet the produce underneath it when it melts, it is important to keep the produce cool after icing. If the produce warms when it is wet, this will provide for an environment where bacteria could multiply.

Top icing will help maintain the temperature of the produce but does not have a significant effect on lowering the temperature of the produce in the interior of the case. Use ice on produce that is already cooled to the temperature you wish to have it.

Using ice in your dunk tank- Be aware of the risk of infiltration and monitor the temperature of the produce and the temperature of the water. Infiltration happens when the water is more than 10 degrees cooler than the inside of the produce and can cause the water to be sucked into the flesh of the produce. If the ice you are using is causing the water to be more than 10 degrees cooler than the produce, air chill the produce further before placing in that cold water to avoid infiltration. Follow the good handling practices for sanitizer use and checking turbidity in iced dunk tanks.

Storing iced produce- Use clean strong waxed fiberboard boxes, or plastic crates that have been cleaned and sanitized so when the ice starts to melt, your boxes will not collapse and release produce onto the floor of your cooler. Stack iced boxes only on top of other iced products, so the melting water will not drip onto dry produce. Be aware of standing water that can puddle under boxes of iced produce, and squeegee that area dry as soon as possible after the iced produce is shipped. Workers need to know that boxes of iced produce are much heavier than before they contained ice, so they handle these boxes in a way that avoids injury. They might be able to lift three cases of broccoli without ice, but probably not three cases when recently top iced.

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