



Cooling Foods Properly

Nevada State Health Division
Public Health and Clinical Services
Environmental Health Section

Introduction

Cooling cooked foods properly is a critical defense in preventing foodborne illness in your establishment. Unless you are one of the fortunate few food establishments to have a quick chiller in your establishment, cooling can be one of the greatest challenges you face with regard to keeping your foods wholesome and your customers safe.

Critical Action

Cooked foods that are not served to your customers immediately need to be cooled very quickly and then stored in your refrigerator. Make sure each cooling unit in your establishment is holding at 40 degrees or less. If the food remains at a higher temperature before and during storage, a perfect environment for bacterial growth is created. Slow or inadequate cooling of foods allows bacteria to reproduce rapidly and is dangerous. Cooling issues are one of the leading causes of foodborne illness outbreaks in this country. Do not assume that a food mass will cool properly and uniformly in your refrigerator without your help. It will not!

Factors that Influence Cooling

The primary factor that influences the rate at which a food cools is its mass. Generally the denser a food is, the slower it is able to cool.

Methods for Cooling

There are many ways you can make a food cool quickly and properly. Here are a few:

Reduce the food mass - for example, cut roasts and turkeys into smaller chunks. Keep quantities smaller. The smaller the mass of food, the quicker it will cool. Spread cut portions of roasts and poultry out on sheet pans and let the air circulate around them in your refrigerator. Separate large quantities of stews, gravies and soups into smaller containers while cooling.

Use shallow pans - Lexan pans that stack are great for cooling large quantities of food because they allow the food to spread out in the refrigerator so that more of its surface area is exposed to refrigeration. Shallow stainless steel pans are proven to cool even faster! The pan should be no more than four inches high and the food depth should be no deeper than two inches. Do not stack pans on top of one another while cooling. Stacking not only increases mass but also keeps the air from being able to circulate around the pans so that heat can be removed from the food product. After the food is cooled you can then store it more compactly. Large plastic buckets are NOT approved to cool food. They keep the food column too dense for proper cooling. The inside of the food column of a plastic bucket will NEVER cool properly. If you are using buckets to cool food - you are playing Russian roulette with cooling and with food borne illness! During the cool down phase, keep food uncovered if safe, or loosely covered so that heat can escape.

Use Ice Water baths or Ice Wands - Immerse shallow pans of hot food into similarly shaped pans of ice water. Or use your prep sink to hold ice slurry that you can then use for cooling. Keep the food stirred to avoid hot spots in the food mass and use your

thermometer to see how quickly the food cools. Ice wands or paddles are a method that can also assist with proper cooling. These work best with someone in charge of the process who can watch the paddle and keep it moving through the food mass.

Adapt Recipes - You can reduce cooling time by adapting your recipes. Use ice water or ice slurry to cool cooked pasta, shrimp or any other food that you would normally rinse with water. You can also reduce the amount of water in a recipe and add ice at the final prep step in place of the water.

Helpful Suggestions

Verify Temperatures - Use a thermometer that is properly calibrated to record temperatures when cooling to make sure that the internal temperature is cooled from 140 degrees F. to 70 degrees F. within two hours; and then 70 degrees F. to 40 degrees F. or below, within four hours. So you have a total of six hours, but the first two hours are the most critical.

A Little Lesson in Microbiology

It has been shown scientifically that bacteria do not reproduce well when foods are subjected to the rapid cooling curve as described above. But perhaps you justify poor cooling practices by saying, "I am going to re-heat the food before I serve it anyway, so any bacteria that are in the food if it didn't properly cool will be killed then." You are correct that re-heating is a critical part of re-service of your menu items. HOWEVER - there are two ways that bacteria can make people sick in your establishment. The first is by ingestion of large numbers of bacteria that are produced during inadequate and improper cooling and not killed when you re-heat. That is why rapidly re-heating food prepared in advance or leftovers to 165 degrees F. is so important. The second way that bacteria can make your customers ill is by producing spores and toxins that are heat resistant. These spores and toxins are produced by the bacteria as a natural by-product of their existence in your food. No amount of re-heating can kill them. The best insurance that you have is to keep ALL bacteria from being able to thrive in food that you are cooling!

We Are Here to Help You

Contact us at the local Public Health and Clinical Services Environmental Health office in your town or area or by calling the main Carson number at (775)687-7533. We are happy to assist you with challenges related to safe food service in your food establishment.

Posted 2/1/2011