



Effectiveness of Cooling Methods

Proper cooling is a critical control point

Improper cooling of foods can contribute to foodborne illness. Cooling according to FDA *Food Code* guidelines can help prevent the growth of pathogens in food. These guidelines are:

- Cool foods to 70 °F within 2 hours.
- Cool foods to 41 °F within a total of 6 hours.
- Cool foods starting from room temperature to 41 °F within 4 hours.

Cooling study results

Recent studies at the Center for Food Safety in Child Nutrition Programs compared cooling methods for various foods commonly prepared and cooled in schools. The study monitored time and temperature for taco meat, chili, rice, and tomato sauce (marinara) at a depth of 2 and 3 inches placed in the refrigerator, freezer, and in ice water baths. The research study showed:

- The chili, taco meat, and tomato sauce cooled in 2-inch pans in the freezer, and the rice cooled in 2-inch pans in an ice water bath in the refrigerator were the only methods that met the FDA's time and temperature guidelines.
- The 2-inch pans of chili, tomato sauce, and beef taco meat that were cooled in the walk-in refrigerators cooled from 135 °F to 70 °F within two hours but failed to cool all the way to 41 °F in a total of six hours.
- None of the food in the 3-inch pans met the FDA's time and temperature requirements.
- Ice water baths and chill sticks that are not used properly can actually increase the length of time for cooling.
- It is important for schools to monitor and document temperatures and times throughout the cooling process.

Recommendations

- Cool food such as chili, tomato sauce, and taco meat in pans no more than 2 inches deep.
- Cool food in the freezer.
- Cool rice in ice water bath in the refrigerator.
- Loosely cover food or cool food uncovered if protected from overhead contamination.



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- Active cooling is encouraged. However, ice water baths and chill sticks only speed the cooling process if the coolant remains cold. Ice and chill sticks must be replaced as they melt.
- Blast chillers are recommended for schools where food is cooled in high volumes.
- Temperatures must be monitored and documented through the entire cooling process. If time and temperature guidelines are not met, take corrective action.

References

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