

Packing Lunches at the Child-Care Center



Public Health Reasons

Lunches or snacks prepared for a field trip or other outings could cause foodborne disease if they are not properly handled. Frequently foods that are to be eaten on a field trip are prepared several hours or even one day in advance of being served. This advance preparation makes it necessary to safely store these foods before service.

In order to pack foods appropriately, food workers must know the types of foods that are potentially hazardous. The U.S. Food and Drug Administration's (FDA) Food Code defines potentially hazardous food as a food that requires time and temperature control for safety (TCS) to limit pathogenic microorganism growth and toxin formation. Foods that are potentially hazardous must be held at 41°F (5°C) or colder OR at 135°F (57°C) or hotter. Examples of potentially hazardous foods include raw or cooked animal foods (meat, fish, poultry, dairy, eggs); heat-treated plant foods (cooked vegetables, baked potatoes, texturized vegetable protein); cut melons; cut leafy greens; garlic-in-oil that has not been acidified; raw bean sprouts; and cut tomatoes. Because it is impossible to keep foods hot when taking them on a field trip, only cold and room-temperature safe foods should be prepared because the cold foods can be kept cold in a cooler with ice.

The interaction between two intrinsic factors of food is used to determine if a food is potentially hazardous. These two factors are water activity (A_w) and pH. Water activity is the degree to which water is available for biochemical reactions. The optimum water activity for the growth of microorganisms is between 0.97 and 0.99. The pH is a measure of the acidity or basicity of an aqueous (water-based) solution. The interaction between water activity and pH determines if a food is potentially hazardous. For more information about determining if a food is potentially hazardous or not, refer to the 2009 FDA Food Code, Chapter 1.

In order to keep foods at 41°F (5°C) or colder, it is recommended to keep the refrigerator set at 39°F (3.8°C). A study of 37 childcare facilities in North Carolina and South Carolina, found that in 53.1% of the centers and 62.5% of homes, the air temperature inside the refrigerator was not adequate to keep foods at 41°F (5°C). If the refrigerator is not at 39°F (3.8°C) or colder, the food may be in the "temperature danger zone" allowing the growth of pathogens.

Practices

Before Packing Lunches and Snacks

- Wash hands with warm water and soap before and after handling food (See “Practicing Good Hand Hygiene for Food Workers” fact sheet).
- Clean and sanitize food preparation areas and utensils before beginning (See “Cleaning and Sanitizing Food-Contact Surfaces” fact sheet).

Packing Lunches and Snacks

- It is best to use clean sealable lunch boxes for storing and transporting lunches and snacks. Sealable lunch boxes are those that have lids that can lock to the sides of the box to prevent leaking.
- If no lunch boxes are available, use clean plastic bags, paper bags, or resealable zipper bags for foods.
- Use sealable containers or resealable zipper bags to hold foods that are to be placed in lunch boxes. Make sure containers or bags do not leak before placing them in lunch boxes or bags.
- Label lunch boxes or bags with the date and each child’s name.
- If potentially hazardous foods cannot be kept cold, pack foods that are not potentially hazardous foods, as they do not need refrigeration. Examples include crackers, chips, breads, mustard, pickles, hard cheese, peanut butter, whole fruits and vegetables, dry fruits and nuts, packaged pudding, dry cereal, canned meat and fish, packaged jerky, and hard or dry sausage.

Storing Lunches and Snacks

- Store all packed lunches and snacks in a refrigerator set at 39°F (3.8°C) or colder until placing them in a cooler before departure.
- In the refrigerator, store-packed lunches and snacks on a shelf above any raw meat to prevent the juice of the raw food dripping onto the lunch boxes.
- Never leave potentially hazardous foods out at room temperature for more than four hours.

Transporting Lunches and Snacks

- Transfer all packed lunches and snacks that are in the refrigerator to a clean cooler just before departing.
 - Place ice packs or bags of ice in the bottom of the cooler.
 - Before placing food in the cooler, make sure lunch boxes or bags have not leaked.
 - Place and arrange the pre-chilled lunches loosely on top of the ice to ensure the cold air inside the cooler circulates.

- Fill the remaining space in the cooler with ice packs or ice bags. A full cooler will maintain a cold temperature longer than a partially filled cooler.
- Place a refrigerator thermometer in the middle of the cooler to make sure the temperature is maintained at 41°F (5°C) or colder and leave it there until it is time to serve the food.
- Once the cooler is closed, do not open it again. If that is not possible, limit the number of times the cooler is opened. Opening the cooler will increase heat gain.
- When opening the cooler, close the lid as soon as the food has been taken out to prevent heat gain.
- If the cooler is stored outside, keep it in the shade or cover it with towels.
- Keep all lunches and snacks in the cooler until served.
- To avoid water soaking into foods, use the spigot on the cooler to drain off water.
- Throw out all leftover foods after the field trip. The only foods that can be saved and re-served are non-potentially hazardous foods that are in unopened packages.

References

1. Doyle, M. P., & Beuchat, L. R. 2007. *Food microbiology: fundamentals and frontiers*. 3rd Ed Washington, D.C.: ASM Press.
2. Food and Drug Administration. 2009. Food Code. (DHHS Publication no. PB2009-112613). Alexandria, VA: U.S. Department of Commerce Technology Administration.
3. Wohlgenant, K., Cates, S., Fraser, A., Chapman, B., Jaykus, L. A., & Chen, X. 2013. *Sanitation in classrooms and food preparation areas in child care facilities in North Carolina and South Carolina*. Manuscript in Preparation.

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