

Fillings that contain raw vegetables such as lettuce, carrots, or tomatoes, and those with egg whites, jelly, or mayonnaise do not freeze well. The vegetables become limp, the egg whites become tough, and the other fillings make the sandwich soggy.

To prepare frozen sandwiches, spread each piece of bread from edge to edge with softened butter or margarine. This keeps the bread from absorbing moisture. Sandwiches can be frozen for 3–4 weeks.

In addition to freezing, there are other ways to keep a sandwich cold. Reusable ice packs and insulated lunch carriers work well. Another way is to freeze a small can of juice, which is then packed with the lunch. The juice is thawed and ready to drink in 3–4 hours and the rest of the lunch has been kept cool.

In the past, it was believed that food mixtures that contained mayonnaise spoiled more rapidly than the same foods without mayonnaise. Commercial mayonnaise actually slows the growth of bacteria. This is because it contains lemon juice and vinegar, both acids that make conditions less favorable for the survival and growth of bacteria. However, adding mayonnaise to a sandwich should not be considered a substitute for keeping the sandwich cold.

The recommendations for keeping lunches cold are particularly important when the lunch contains a sandwich or salad made of eggs, roast beef, turkey, or other cooked meats, fish, or poultry, because these are quite perishable.

Cured meats such as bologna, salami, and ham contain nitrites that inhibit the growth of bacteria, so they spoil less rapidly than uncured meats.

Soups, stews, and chili make a hearty lunch. These foods (unless canned) should not be kept at room temperature. To use them in a packed lunch, heat to boiling and put in a thermos bottle. The food will be kept hot enough to prevent bacterial growth for 4–6 hours.

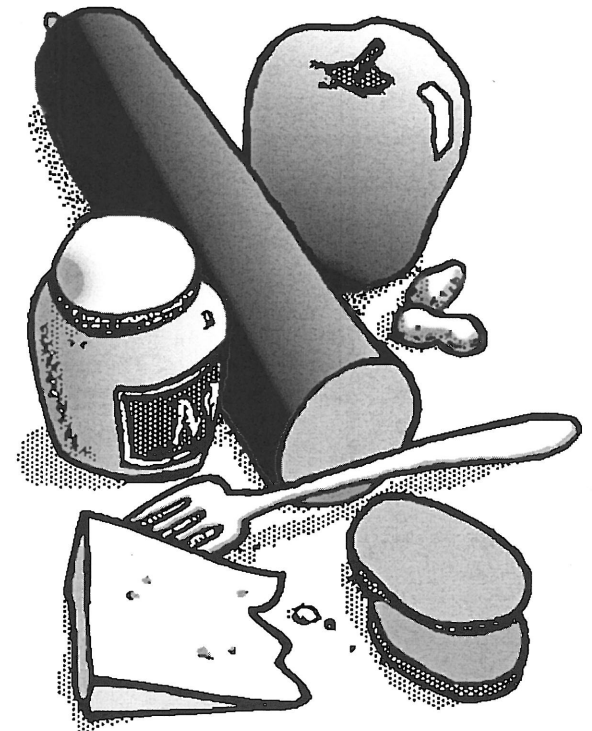
Custards, puddings, and cream pies are so easily spoiled by bacteria that they should never be used in packed lunches unless they are kept cold by ice or refrigeration. The safest way to send custards and puddings in a packed lunch is to buy individual servings of commercially prepared puddings which do not need to be refrigerated.

The length of time foods will be in the danger zone of 40°–140°F should be a primary factor in deciding what foods will be included in the packed lunch. If the lunch cannot be kept cold, choose foods that can be kept safely at room temperature.

*Val Hillers is Extension Food Specialist,  
Department of Food Science and Human  
Nutrition, Washington State University.*

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# Pack a Safe Lunch



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Val Hillers

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**P**acked lunches are often kept at room temperature for 4–6 hours. Foods which will be kept at room temperature need to be selected and handled carefully to prevent food poisoning.

## Why Can Food Make Us Sick?

Most common food poisoning results from eating foods that contain large numbers of harmful bacteria or from eating foods in which bacteria have previously produced toxins (poisonous substances).

Bacteria are extremely small living organisms. They thrive in warm, moist foods, and many can double their number every 20 minutes when the temperature is between 90°–100°F. In addition to temperature, the rate of bacterial growth depends on moisture content and acidity. Bacteria can grow rapidly in moist, low-acid foods such as eggs, milk, meat, fish, and poultry.

There are two ways to keep a packed lunch safe to eat. One is to choose foods which may safely be kept at room temperature because food-poisoning bacteria do not grow in them. The other is to keep the bacteria count low by careful handling of foods.

## Safe Foods

Bacteria do not grow in foods that are high in acid or low in moisture. Foods that can safely be left at room temperature for 4–6 hours are:

- nuts and peanut butter
- bread, cookies, crackers, and cake
- jam, honey, syrup, and candy
- butter, margarine, and cooking oil
- dry cereals
- powdered milk (until reconstituted)
- raw, cooked, or dry fruit
- raw vegetables
- pickles, relishes, mustard, and ketchup
- dry or hard cheeses
- yogurt
- dried sausages, such as salami, pepperoni, and jerky
- canned foods (until opened)
- fruit pies

## Handle-With-Care Foods

These potentially unsafe foods are perishable; they must be handled properly to keep bacteria from growing:

- raw or cooked meat, fish, and poultry
- sandwiches and salads which contain meat, fish, or poultry
- cooked vegetables
- cooked cereals and legumes, such as rice and beans
- custards and puddings
- milk and milk products (except hard cheeses and yogurt) shellfish
- dressings and gravies
- processed meats (bologna, hot dogs, etc.)

## How to Keep the Bacteria Count Low

Perishable foods can be kept safe to eat if they are handled in a way that keeps the bacteria count as low as possible. Countertops, cutting boards, knives, and other utensils used to prepare lunches should be kept clean by washing them thoroughly with soap and water. Wash hands also. Wash thermos bottles and rinse in boiling water after each use.

Cooked meats to be used in sandwiches should be cooled quickly after being cooked, and kept refrigerated until the sandwich is made. Use a fork or tongs to place meat, poultry, or fish in the sandwich. This will prevent the spread of bacteria from fingers to food.

## Using Handle-With-Care Foods in Lunches

Perishable foods must be kept either cold or hot. This is because bacteria grow most rapidly at temperatures between 40°–140°F. Perishable foods should not be held in this temperature range for more than 2–3 hours—including preparation time.

One way to assure safety of the meat in a sandwich is to make the sandwich and freeze it. The frozen sandwich will thaw in time for lunch and will also keep the rest of the lunch cool until then.

Most sandwiches freeze well if they are frozen in plastic bags designed for freezing. There will be some loss of quality if the sandwich is frozen in a thin sandwich bag. A package of one or two sandwiches will thaw in 3–3 1/2 hours.

Sandwich fillings that freeze well include cheddar cheese or cream cheese, sliced or ground meat, sliced or ground poultry, fish, cooked egg yolk, and peanut butter.