

Outdoor Food Preparation and Safety

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Foodborne illness increases dramatically during the summer months. When the weather is often hot and humid, more people are cooking outside at picnics, barbecues, and during camping trips. Food safety features that a home kitchen provides, such as thermostat-controlled cooking, refrigeration, and washing facilities, are not always available. This publication provides simple guidelines for safe food preparation while cooking out.

Prior To The Trip

Food Preparation:

- Wash hands, work areas, and utensils before preparing food.
- Thaw frozen foods in the refrigerator 18 to 24 hours in advance. Never thaw meat at room temperature or outdoors. Most bacteria grow rapidly in the temperature **Danger Zone** of 41°F to 140°F.
- Do not partially cook meat or poultry one day and finish the cooking the following day. If you cook ahead of time, completely cook and refrigerate.
- Meats may be marinated prior to grilling. A savory acidic marinade adds flavor and tenderizes the cut of meat. General rule is 1/3 cup of marinade per pound of meat overnight in the refrigerator. The remaining marinade can be used for basting while grilling, do not reuse after grilling unless boiled.

Pack Safely:

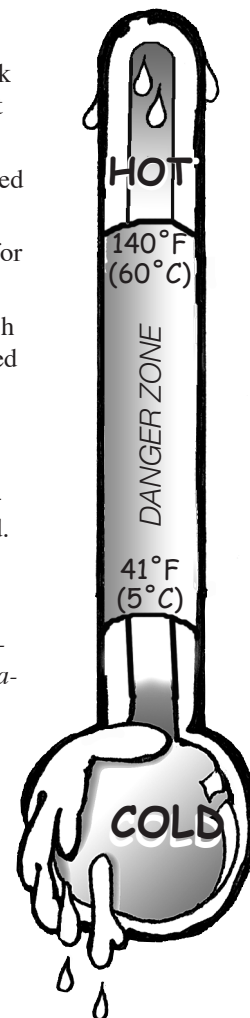
- Take only the amounts of food that will be consumed.
- Securely wrap foods that may drip or leak, especially raw meat, poultry, and fish.
- Pack potentially hazardous foods such as meat, poultry, fish, and eggs in a well-insulated cooler with ice or frozen gel-packs. A cooler filled with ice will maintain temperature longer than a cooler partially filled.

- Pack raw meat, poultry, and fish below ready-to-eat foods to prevent raw juices from dripping on other foods. Then pack cold foods in reverse order of use. First foods packed are last to be used.
- Avoid custard-like foods (i.e. cream-filled pies).
- Take at least two coolers – One cooler for food, another for beverages.
- Non-perishable foods such as fruits, fresh vegetables, hard cheeses, canned or dried meats or fish, peanut butter, breads, and crackers are safe at room temperature.
- Take water if you will be in an area that does not have running water. Water obtained from streams must be disinfected.

Disinfecting Water

VCE Publication 356-479, *Emergency Supplies of Water for Drinking and Food Preparation*. <http://pubs.ext.vt.edu/356-479/>

- Keep hot foods hot (>140°F) and cold foods cold (<41°F).



Cook Out Safety:

- When traveling place cooler in the passenger section of vehicle instead of in the hot trunk.
- Preserve cold temperature of food in a cooler by periodically replenishing ice.
- At the campsite, insulate coolers with a blanket, tarp, or poncho.
- Discard foods that warm above refrigerator temperatures of 41°F for 2 or more hours.

Preparing The Cooking Fire at The Campsite

Stack wood on several large sticks to protect from dampness.

Tinder - Pencil thin twigs, pine needles, bark, or shavings small enough to light easily.

Kindling - Wood between pencil and wrist thickness.

Fuel - Wrist size wood or larger to produce low manageable flames and hot coals for cooking.

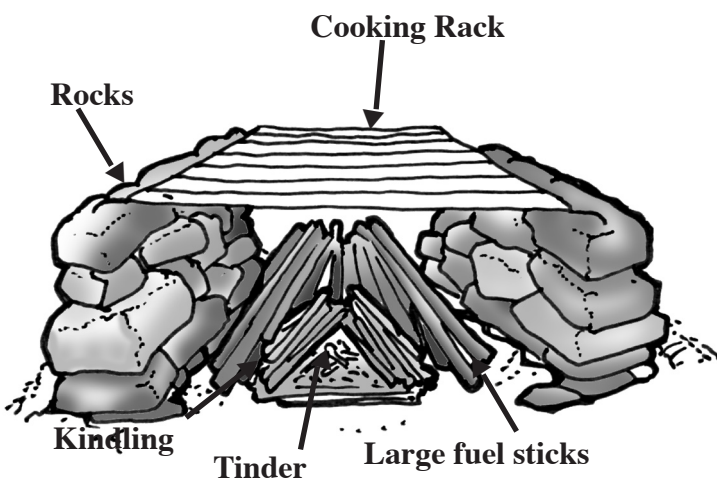
The A-frame Fire

Step 1 Arrange large rocks or mounds of earth about 1^{1/2} feet apart. Lay a cooking rack on top of these rocks or earth so that the rack is stable.

Step 2 Lay two 2 to 3 inch diameter sticks to form a triangle. On top place a small stick crosswise to the 2 sticks to form an **A**.

Step 3 Fill the entire center of the **A**-frame with loose mound of tinder or tightly twisted newspaper. Next lay several sticks of kindling across the **A**-frame.

Step 4 Ignite tinder; gradually add more kindling and finally heavier fuel logs. When fuel logs catch fire and flames have subsided in about 20 minutes, you are ready to cook.



Checking The Heat: Control the heat by the size of the bed of coals or how far the food is placed from the heat. If you can hold your hand at the cooking level for 4 seconds, the heat is very low. A two second count is a moderate temperature of about 325°F. Be prepared to raise or lower the food over the fire if the food is cooking too slow or too fast.

Safety Pointers For Grilling

Is the fire

- far enough away from trees, bushes, and dry grass?
- built in the open air and not in closed porches or garages?
- protected by rocks or dirt?

Is equipment on hand to control fires?

- Keep a bucket of water or a shovel of dirt near the campfire in case a stray ember needs to be extinguished.
- When finished with the fire, spread out the coals and pour on water. Do not leave the area until the coals are cool enough to touch.
- A sprinkler, glass bottle with holes in the lid, squirt bottle, or water gun can be used to control flames with water. Be careful not to use excessive water that could put the fire out or reduce the heat of the coals.

The Campfire Grill

If a grill is not available, improvise by using a wire shelf from an old oven (do not use grills from old refrigerators) or use heavy close-meshed wire fencing. Make sure the grill is even and well anchored to prevent spills and accidents. Use heavy skillets and pots with firmly fixed wire holders or long handles and flat, stable bottoms.

Grilling Utensils For Open Fires

Cooking utensils used on open fires will become quite black on the outside. Avoid spending vacations scouring pots and pans by soaping their outside before cooking. Use a bar of soap and water to make a heavy lather. Thoroughly coat the outside of the pan. Be careful to avoid the lip and inside of the pan or you will have soapy food. All the blackness will wash off easily in cold, running water with a wipe of a sponge.

Foil-Drug Store Wrap Method For Grilling

Aluminum foil can be used for individual meals or for main dishes or vegetables.

- Use one layer of heavy duty or two layers of lighter weight foil.
- Place the food in the center of the foil.
- Bring two edges of foil together above the food and fold to 1-inch folds until tight against the meat.
- Turn frequently to prevent burning.

Protein Cookery

High heat can easily denature and toughen proteins found in meat, poultry, and fish. It is best to cook meat completely using moderate heat to prevent excess loss of fat and juices. There is also less danger of overcooking when a moderate temperature is used. Steaks, chops, and ground beef patties can be cooked fast, whereas large cuts of meat, such as roast, should be cooked slowly. Juices from meat and poultry should run clear and fish should flake from a fork. Cook hot dogs thoroughly (steaming hot). **Use a meat thermometer to determine doneness.**


Thermy's Recommendations For Safely Cooking Meat

Cooking time will depend upon cut of meat, meat temperature, temperature of coals, outdoor temperature, and degree of doneness desired. Cooking time over a fire should be about the same as cooking in an oven or on top of a stove if the fire is the right temperature. If grilling from a frozen state, allow one and one-half times as long to thoroughly cook the meat.

As fat drips from cooking food, flames will appear. Hot coals, not flames should be used for cooking protein to prevent fat dripping into the fire. To minimize fat drippings trim excess fat from meat, and use lean ground hamburger. Be careful with marinades that contain fat such as margarine, butter, or vegetable oil.

When cooking meats and poultry, use tongs, spatulas or asbestos gloves. Long handed tongs and spatulas are available in cookout supplies. The prongs of a fork pierce the meat fibers, which release valuable juices and flavor and add "fuel" to the fire. Be careful that juices from raw meat, poultry, or fish do not touch (**cross-contaminate**) other foods. **Wash hands and always use clean plates and utensils for serving cooked foods.**

Use A Food Thermometer



Thermy™

"IT'S SAFE TO BITE WHEN THE TEMPERATURE IS RIGHT!"

Temperature Rules!

... for cooking foods at home.

140 °F • Ham, fully-cooked (to reheat)	165 °F • Ground turkey & chicken
145 °F • Beef, lamb & veal steaks & roasts, (medium rare)	• Stuffing
160 °F • Hamburger, meatloaf & other ground meats,	• Casseroles (Mixed dishes)
• Beef, lamb & veal steaks & roasts (medium)	• Leftovers
• Pork chops, ribs & roasts	170 °F • Chicken & turkey breasts
• Egg dishes	180 °F • Chicken & turkey whole bird, legs, thighs & wings
	• Duck & goose

It's the only way to tell if your food has reached a high enough temperature to destroy harmful bacteria.

USDA Meat and Poultry Hotline
1-800-535-4555
www.fsis.usda.gov/thermy

FSIS
Food Safety and Inspection Service
U.S. Department of Agriculture

Clean-up

Leftovers - Immediately place perishable food back into the cooler containing ice or frozen gel-packs. Discard leftovers that have been at outdoor temperatures more than two hours. If the outside temperature exceeds 90°F, discard leftovers after one hour. Plan ahead and minimize leftovers.

Cooked meat and poultry leftovers must be grilled (reheated) to 165°F within 3 days. If you plan on keeping cooked meat or poultry beyond 3 days, place in freezer bags and freeze. Leftovers may be discarded by burning in the campfire.

Dishwashing - If you use soap or dishwashing detergent, make sure you wash pots at the campsite, dumping dirty water in a dump station. If a dump station is not available, dispose of dirty water at least 50 feet from streams, lakes, or springs. Use disposable wipes for hands and quick cleanups.

Cleaning The Grill - Use a wire brush to scrape loose particles that stick to the grill. Soak the grill in hot soapy water.

Trash - Trash that cannot be easily burned should be collected and disposed of at the campsite collection area or taken home. Spoiled food left at the campsite can make animals that roam the campgrounds sick. Take responsibility and "Leave No Trace" at the campsite.

Is Consumption Of Grilled Food A Health Risk?

Some studies suggest that a diet consisting of charred grilled foods may increase cancer risk. However, no evidence exists that eating moderate amounts of grilled, non-charred meats poses a health problem. To minimize the risk follow these tips when grilling:

- Choose lean cuts of meat and remove subcutaneous fat (fat surrounding the meat) to reduce fat drippings on coals.
- Precook high fat meats, such as ground beef, to remove some of the fat before grilling.
- Avoid excess browning by cooking meat to the proper temperature and at the appropriate grill level so that meat is not directly above coals.
- Grill meat in aluminum foil or pan until the last few minutes of cooking.
- Use hard wood rather than soft wood.
- Clean the grill after each use.

Food Safety During A 4-H Camp Or 4-H Outdoor Adventure Program*

*For more information about incorporating outdoor cooking into your 4-H Camp or 4-H outdoor adventure program, contact Barry Garst, Extension Specialist, 4-H Staff Development and Youth Camping, at (540) 231-6373.



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