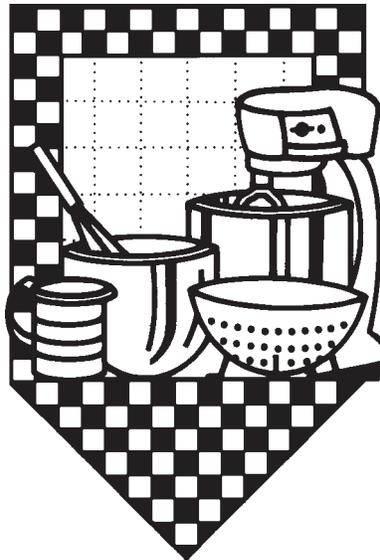


SELLING

FOOD

PRODUCTS:



a business from your home

You enjoy working with food. People compliment the foods you prepare. You are prompt, accurate, reliable, and do not mind working while others play. You do not expect to get rich quickly. You have a “head for business” (or a partner who does).

These statements describe a person who could succeed in the home food business. Catering, baking, cake decorating, specialty foods, whatever you choose—opportunities do exist. But, it takes a combination of hard work, correct decisions, and the luck of being in the right place with the right product at the right time.

Even then, your dream may not come true. Many home-based businesses fail in the first year, in most cases not because the product is bad but because there is not enough working capital, and/or the owner has inadequate skills in planning, organizing, controlling, directing, managing, or marketing.

Chances for success increase greatly if you take time to make a business plan. First, make sure there is a market for the product or service and that it is possible to make a reasonable profit. Look into state regulatory and licensing requirements for home food businesses. Also consider local zoning, income tax implications, insurance, and other legal matters. List immediate as well as future expenses.

After considering those factors, you must think about recipe standardization and procedures, pricing, policies, selling, delivery, recordkeeping, safety, sanitation, and the many other details that go into a successful business plan.

If possible, contact a Small Business Administration representative for assistance. Help also may be available through the small business centers that are part of the university extension system in many states.

Find the Market

A market is not always obvious. Look for a need that you can fill—for example, decorated cakes, lunches for bridge groups, or homebaked rolls on weekend mornings. Whatever the need, a good product is essential. It must be tasty and attractive, and consistent in taste and appearance. If you will offer a service rather than a specific product, that, too, must be consistent, reliable, and attractive to the customer.

Ideally, there should be little or no local competition for your product or service. If there is, find and promote some unique feature that makes yours better than the competitors’.

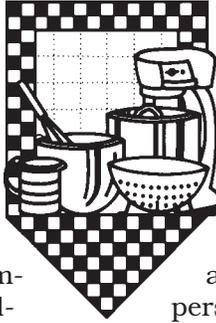
Think about the skills you have or will need to develop. Are you confident of your abilities or do you need more practice? If you need more training, is it available?

Avoid going into business just because you and your family or close friends like your food. Get opinions of strangers—the people who will buy your product. Be realistic. People who say they want your product or service may, when pressed, admit that they are not willing to pay the necessary price. Probe for true answers when assessing potential demand for your product. Find out just how much people are willing to pay.

Check sales potential by visiting with local grocers, convenience stores, and other shops that are appropriate for your product. Contact church groups, fraternal groups, and other clubs to see if they are interested in your product or service.

If potential customers do not appear interested, stop and take a critical look at your plans. Maybe you need to change or modify your plans, or consider something new.





Study the Competition

If similar businesses exist in your area, study them carefully. Who are their customers? How and where do they sell their products? What marketing methods and promotion pieces do they use? Learn from their successes and their mistakes.

How will your business differ from the competition? Why will customers prefer your product? The answers to these questions determine the unique “marketing position” to stress in sales talks to potential outlets and customers.

Licensing

The state government agency that regulates food and agriculture probably has requirements you must meet to sell your foods. Check the requirements before you go too far. You may find that a separate kitchen is required, or there is some other rule that you are not willing or able to meet. In some states, a home food business may be exempt from state licensing if it meets certain guidelines, often related to income limitations.

State regulations also may prohibit the sale of some types of home-prepared foods. For example, some states prohibit the sale of home-canned foods and/or the use of home-canned ingredients in foods for sale commercially.

Zoning

Always check local zoning restrictions before planning goes too far—and definitely before money is spent. Local ordinances may restrict the kind of home businesses allowed or prohibit a home business entirely.

Expenses

A business will have both fixed and variable expenses. Fixed expenses are those that do not change, such as rent. Also in this category are the “one time” or annual expenses such as equipment, remodeling, license fees, etc. Variable expenses change from month to month. Examples are utility bills, ingredient costs, transportation, supplies, promotion and advertising salaries.

Facilities and Appliances

In most states, separate kitchen facilities are required for a licensed food business. A person just starting out may prefer to rent kitchen space from a church or other facility rather than go to the expense of a second kitchen in the home. In general, it is wise to avoid major remodeling expenses initially, although adequate space is needed for preparation and storage. Even for an unlicensed business, it may be necessary to improve facilities to meet state or local guidelines.

Home-style appliances may not be a problem while the business is small, but commercial appliances may be needed eventually. Home refrigerators lack the capacity to cool large amounts of food rapidly, and shelving may not accommodate sheet trays and other large pans. More freezer space may be needed if it is necessary to prepare food in advance. In addition, larger cooking surfaces and more oven space may be necessary.

Kitchen Equipment

If possible, avoid expensive equipment purchases at the beginning. Certain utensils are essential, however; for example, portioning equipment (scoops, ladles, scales, quart and gallon measures), serving trays, serving utensils, dishes, and tongs.

As the business succeeds, reinvest profits in equipment to save hand labor or increase production capacity. It may become necessary to purchase equipment for the location where food is sold or served. Display racks or a special refrigerator may be needed, for example.

Food Costs

Estimate the cost of ingredients on a per unit basis (or per dozen, if small items such as cookies are involved). List the ingredients needed, then compare prices in both retail groceries and wholesale outlets. Try to find the most inexpensive ingredients, but do not sacrifice quality to cut costs.



In general, larger quantities of ingredients have lower unit cost. But wholesale buying of large quantities may not save money for a beginning business, particularly if food is perishable. The major advantage of wholesale buying is to maintain consistent product quality. It also may enable the purchase of ingredients that are difficult to obtain in small quantities.

Pre-prepared foods such as dehydrated soup bases and chopped nuts may reduce food costs by cutting preparation time.

Labor

Although you may be willing to work for nothing, assistants and delivery people will expect to be paid. Always include a labor cost, even if you do not intend to pay yourself a salary. This is a good business practice that will help establish a fair price.

One way to estimate labor cost is to divide the profit by hours spent. For example, if it takes 50 hours' labor to produce a \$100 profit, the labor cost is \$2 per hour. Another way to establish labor cost is to decide what your time is worth. You may think your time is worth \$2 per hour—or maybe \$20. It's up to you.

Labor cost is more than preparation time. A certain amount of time will be required for developing the business, transportation, purchasing, and recordkeeping. If others will be working as well (family members for delivery, for example), include their labor costs also. Will they work as quickly or efficiently as you do?

Transportation

Will you deliver your products? If so, include gasoline and other automobile costs as an expense. Is a special vehicle necessary? Will you need equipment to keep foods at recommended temperatures while in transit? Can you recover a prorated cost of the delivery vehicle, including fuel and maintenance?

Insurance

Do not assume a home business is covered by your homeowners policy. Check with your agent to see what coverage you have and what is needed. Types of coverage to consider are product liability (in case people become ill or injured

from your food), personal liability, auto (if your car is used for business purposes), fire, business interruption, and workers' compensation (if you hire employees).

If you do hire employees, you also will need to allow for employer payments to Social Security and unemployment funds.

Other Expenses

Although not all of the following expenses are applicable to your home business in the beginning, they may become significant as the business grows.

- Overhead for kitchen, equipment, and delivery vehicle
- Utilities (fuel) used in food preparation
- Licenses required by local, state, and federal governments
- Recordkeeping and required sales reports
- Customers who do not pay
- Accounting or legal fees
- Excess production (leftovers), pilferage, returns, and "mistakes"
- Food wrap, napkins, condiments
- Advertising and promotion, postage, telephone
- Kitchen modifications
- Interest
- Rent

If you have made major initial expenses such as kitchen remodeling or appliance purchases, ask an accountant to establish a monthly figure to include in expenses.

Pricing Products and Services

The price can make the difference between success and failure. Good prices make customers think they are getting their money's worth and make you think you are getting a fair return on your investment of time and money.



How much can you charge? Consider comparable commercial products, prices charged by others in your community for similar products, and “what the traffic will bear.” Consult business people in the community.

Prices should reflect all fixed and variable expenses in the business and provide what you consider a reasonable profit. Keep prices competitive and in a range that the target customers are willing to pay.

The following pricing methods are guides that you can adjust to your situation. Through experience, you will learn to set up your own pricing formula. Don't worry if the prices you set are a little higher than your competition—if you are sure your product is better in some way.

Cost-based Pricing

This method uses unit costs of ingredients, expenses, and labor to determine the price.

For example, as a maker of homemade bread, you have fixed expenses of \$50 per month; you plan to work one day each week, or 32 hours per month; your ingredient cost is \$.50 per loaf; and you can make 5 loaves in an hour. How much should you charge for each loaf?

Step 1: Figure the productive working hours (total hours spent in actually making the product)—Seven hours of the 32 are spent in bookkeeping, shopping, and delivery, so are not productive hours. Therefore, your total productive hours per month are 25 ($32 - 7 = 25$).

Step 2: Figure expenses per hour—Divide the monthly fixed expenses by the productive working hours in one month ($\$50 \div 25 = \2 fixed expenses per hour).

Step 3: Figure ingredient cost per hour—Multiply the ingredient cost of one loaf (\$.50) by the number of loaves you can make in an hour ($\$.50 \times 5 = \2.50).

Step 4: Set labor cost—In this example, you decide you are willing to work for \$2 per hour.

Step 5: Add

| | |
|----------------|--------|
| Fixed expenses | \$2 |
| Ingredients | \$2.50 |
| Labor | \$2 |

\$6.50 total per hour cost

Step 6: Divide the total per hour cost by the number of loaves you can make per hour— $\$6.50 \div 5 = \1.30 —the minimum price that will cover your costs.

Will customers pay \$1.30 for a loaf of your bread? Compare the price with that of similar products. If it seems low, consider increasing it a little. (After all, \$2 per hour is a pretty low labor cost.) However, if the price is considerably higher than the competition, consider the options below.

- Reduce ingredient cost
- Reduce labor cost
- Increase per hour production
- Decrease expenses
- Improve work methods (which may accomplish all four of the above)

Percent Food Cost Pricing

This quick method is used by many restaurants. It is based on the theory that food cost makes up about 40 percent of the price. To set a price, multiply the food cost by $2\frac{1}{2}$ (40% by $2\frac{1}{2} = 100\%$).

In the example of the breadmaker, the food cost of \$.50 is 38 percent (rounded to 40 percent) of the total selling price of \$1.30.

The 40 percent figure is just a guideline; it may not be a suitable standard if ingredients cost very little but the product requires a great deal of labor or if ingredients are so expensive that no one would pay $2\frac{1}{2}$ times the cost.

Some experts say that a reasonable price for catering is ingredient cost $\times 3$. To get a price per person, divide that total by the number of people the food will serve.



Pricing for Services Only

If the client purchases the ingredients or reimburses you, prices may cover labor or service only. Again, charge a reasonable but competitive price that takes into consideration any unique skills and special equipment.

Policies and Price Sheet

List policies on a price sheet that is duplicated and made available to customers. In addition, post both prices and policies in your kitchen. Some basic policies are listed below.

- Minimum order size
- Time needed to fill order
- Delivery schedule
- Advance payment and billing procedures
- Returns
- Cancellations
- Price changes
- Other rules you will follow

Sales – Expenses = Profit

To estimate profit, make a conservative estimate of the number of products you expect to sell during a certain time period—six months perhaps. Multiply that figure by the selling price per product.

Estimate expected total expenses for the same time period. Subtract this total from the total sales. The answer is the anticipated profit.

How does the anticipated profit figure compare with what you could make through other job opportunities? What about the money you must invest in the business? Could that money earn a better rate of return elsewhere? If the anticipated profit figure is satisfactory to you, proceed with your business plan.

Standardize Recipes

Standardized quantity recipes are necessary to ensure uniform product results and keep preparation costs steady. If you plan to adapt a

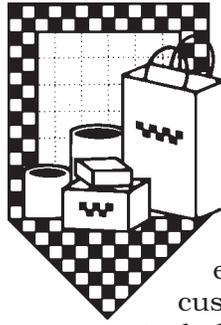
favorite recipe, remember that simply multiplying all quantities may cause reactions that will affect the final product. Brands of ingredients can make a difference too, so don't change brands without testing the result.

Experiment with cost-cutting measures that don't affect the final product. For example, discover the minimum amount of each ingredient without affecting quality. Arrange equipment for most efficient production, and streamline work methods as well.

To complete the standardization, practice making the recipe over and over until the result is the same every time. The recipe should include the following:

- Appropriate descriptive title;
- Size of servings—in volume, weight, or size of pieces;
- Yield—number of servings and/or volume or weight;
- Pan size needed, especially for baked or congealed items, or if important to the quality of the finished product or portion sizes;
- Number of pans needed and whether glass or metal;
- Ingredients in order used and brand name;
- Type or form of ingredients, such as melted fat, all-purpose flour, finely chopped onions;
- Quantity of ingredients in both weight and volume; and
- Clear, precise instructions for—
 - Preparing and combining ingredients
 - Cooking method, time and temperature
 - Size or portion and method of service
 - Possible substitutions, if desirable.

Stress to helpers the importance of following the recipe exactly. Make sure they know what is meant by terms such as mix, beat, and fold. Be specific as to how many strokes to beat, or how long to mix. These details can make a difference.



Appearance

Attractive products sell better. Attractiveness refers to both the appearance of the food and how it is packaged or displayed. Strive for innovative but appropriate food arrangements. Prepare the product the way you want it to look and take color photographs. Post these in the kitchen so that both you and your helpers can achieve a consistent appearance.

Packaging

Today's customers are concerned about sanitation and food safety. Securely wrapped and sealed packages are vital if food is sold through retail outlets. Packaging also contributes to the appearance of a product, so choose a packaging method that enhances what you sell.

Contracts

If possible, get written orders or contracts from buyers, especially if you are producing for resale through retail outlets. This is businesslike and also helps prevent errors and misunderstandings. The order form should have space to write the price, order type and amount, time of delivery, last date order may be changed or canceled, and payment schedule. If food is for resale, be sure the order form specifies the policy on return of unsold merchandise, especially if perishable.

Recordkeeping

Records tell you where you have been, where you are, and where you are going. Business experts say there is a close relationship between inadequate recordkeeping and business failures.

State and federal governments require certain records, and, in addition, detailed records help pinpoint deductions at tax time.

Set up a simple bookkeeping system to keep track of expenditures.

Marketing, Promotion, and Advertising

The words marketing, promotion, and advertising have different meanings.

Marketing includes all the decisions involved in the business effort: the product itself, production, pricing, promotion, selling, service, and customer satisfaction.

Promotion is the communications aspect of marketing that includes whatever is done to tell the public/potential customers about the product. This might include written publicity, news releases, demonstrations or talks to local groups, posters, free samples, displays, brochures or catalogs, and advertising.

Take advantage of promotion opportunities. For example, if you are asked to donate products for community charity events, ask for recognition in some way. As the business grows, however, you may be asked to donate products frequently. Don't feel you must always donate; politely decline those you do not wish to support or do not feel will advance your business interests.

Advertising is paid promotion. A newspaper or radio station may be interested in a feature story on your new business or your unusual product, but after that, you will most likely have to pay for publicity in the news media. When you pay for newspaper space and radio time, you can say exactly what you want about your product (provided what you say is allowed by law).

However, advertising is not the first thing you should think about. The overall marketing plan should come first.

The Marketing Plan

A marketing plan begins with some realistic goals, with enough time for the goals to be reached. What do you expect to accomplish in six months? In a year? In five years?

Next, think about how to reach the goals. Consider the product in relation to the potential customers. Think about who the customers are, where they go, what they do, what they like and dislike, their income and education. What do these people need? Your business should meet either a real or a perceived need.

How will you reach people to tell them about your product? That is where promotion and advertising come in. What are your customers' social, leisure, reading habits? Where do they go? What kinds of promotion and advertising are most likely to reach them? For example, it probably is a waste of money to advertise expensive catered dinners in a shopper newspaper that features garage sale ads.



Develop a portfolio or album with photographs of your products to use when talking to potential customers, especially retail outlets. If possible, have a professional photographer take the picture to present the food in the most appealing way. There are techniques to food photography that only a professional will know.

Create a Professional Image

One important part of business success is **image**. If you are professional in your work and in your dealing with customers, they will have confidence in you and feel good about using your product or service. It costs very little to create a professional image. Here are a few tips.

- Be available during your advertised business hours; if you must go away, leave messages where you can be reached.
- Return phone calls promptly.
- Respond to inquiries and requests for price quotes immediately.
- Be sure food looks professionally prepared and is attractively displayed.
- Make sure you, your workplace, and your equipment are neat and clean.
- Meet agreed-upon deadlines.
- If you use the family telephone for your business, insist that family members answer correctly and know how to take orders and messages.

Food Safety

A seller of food has both ethical and legal liabilities to provide food that is reasonably free of bacterial and physical contaminants. In addition, illness or injury to a customer can spell disaster for a food business.

Licensed businesses must be inspected and follow state safety and sanitation regulations. Unlicensed businesses may need to meet special guidelines for home bakeries and other food sales from the home.

Keeping the food free of physical contaminants is less of a problem if you keep both yourself and the work area neat and clean. Be especially alert for hair, either human or animal—the most likely unwanted ingredient of home-prepared products. Other possible physical contaminants that will “turn-off” customers are bits of eggshell, fingernails or metal particles, paper, cardboard, dirt, and grease.

Avoiding Bacterial Contamination

Table 2 lists some of the common illnesses caused by improperly prepared food. The best rule of thumb for safety is “hot foods hot and cold foods cold.” Do not serve any foods that cannot be kept at their recommended cold or hot levels until serving time.

The bacteria that can cause illness live and multiply best at room temperature, but they also grow and multiply in the range between 40°F (refrigerator temperature) and 140°F (minimum oven temperature). Foods should not be held at room temperature for more than two hours (see

Table 1. Leading factors contributing to foodborne illness

1. Improper temperature control
 - a. Store perishables at 40°F or below.
 - b. Cook foods to 165°F or higher.
 - c. Keep hot foods at 140°F or higher.
 - d. Keep cold foods at 40°F or below.
2. Poor personal hygiene—unclean hands and sneezing on food.
3. Unclean work area and equipment (utensils).
4. Cross-contamination
 - a. Raw and cooked food contact.
 - b. Equipment and work surfaces not clean.



Figure 1 and Table 1). Bacteria are not killed unless food is heated above 165°F.

Potentially hazardous foods are those that contain meat, fish, poultry, eggs, and milk products. Treat with special care foods that are warm or room temperature, handled, and not heated to the 165°F temperature that destroys bacteria. Good examples are salads with poultry, fish, macaroni, and egg, as well as cream puffs and custard-filled desserts. Carry these foods and others like them to the serving place in an insulated ice chest or similar container. Keep ice clean and do not let it touch the food.

If time between cooking and serving is more than two hours, refrigerate the food and reheat it just in time for serving. Reheat to serve above 165°F, then hold above 140°F. Do not use a warming unit to reheat food.

More Tips for Handling Food Safely

- If practical, rinse foods with cool, running water before preparation to get rid of some harmful bacteria.
- Wash hands before handling food, frequently during preparation, and always after doing unrelated activities such as answering the telephone, using the toilet, or blowing your nose. Dry hands with a paper towel or hot air.
- After handling raw meat, fish, poultry, or eggs, wash hands and equipment with soap and water before working with other foods.
- If possible, keep raw and cooked foods in separate coolers or refrigerators to avoid cross-contamination. If raw and cooked foods are stored in the same refrigerator, store raw foods below cooked foods and food that will not be cooked prior to consumption.
- Avoid touching face, mouth, or hair when hands are clean. Keep hair under a scarf, cap, or hairnet.
- Do not handle food if you have cuts, scratches, or sores on face, hands, or arms. A bandage does not give necessary protection.
- Do not handle food if you are sick or have a cold, sore throat, sinusitis, or diarrhea.
- Never lick fingers or use the cooking spoon to taste the food. Use the “two spoon” technique: dip in with the cooking spoon and transfer to the tasting spoon.
- Whenever possible, use clean kitchen tools instead of hands. For example, use tongs instead of fingers for breads, butter squares, lettuce leaves, cold meat slices, and cheese cubes.
- Keep kitchen and work area clear of pets and pests.
- Do not buy or use cracked or dirty eggs.
- Refrigerate ground meats and cooked foods in shallow pans (no more than four inches deep) to promote quick cooling. Use a thermometer to see that the center reaches 40°F within two hours.
- Keep frozen foods frozen until ready to use. Cook vegetables while still frozen or icy. Serve immediately.
- Always use covers to prevent contamination of cooked food.
- Put newly purchased groceries away immediately, making sure perishable foods go into refrigerator or freezer immediately.
- Keep frozen meats, including turkey and chicken at 40°F while thawing. If you must speed up the process, place under cold running water. Roasts or unstuffed turkey (with giblets removed) may go into the oven while still frozen (remember to increase roasting time).
- Bacteria thrive in partially cooked meat, so never partially cook a roast or turkey one day and then finish it the next. Some bacteria may produce toxins that are not destroyed by further cooking.
- Raw poultry or meat should not come into contact with other foods, especially those eaten raw or only slightly cooked. This means cutting surfaces and knives must be thoroughly washed if used for raw meat or poultry.



Figure 1. Temperature guide to food safety

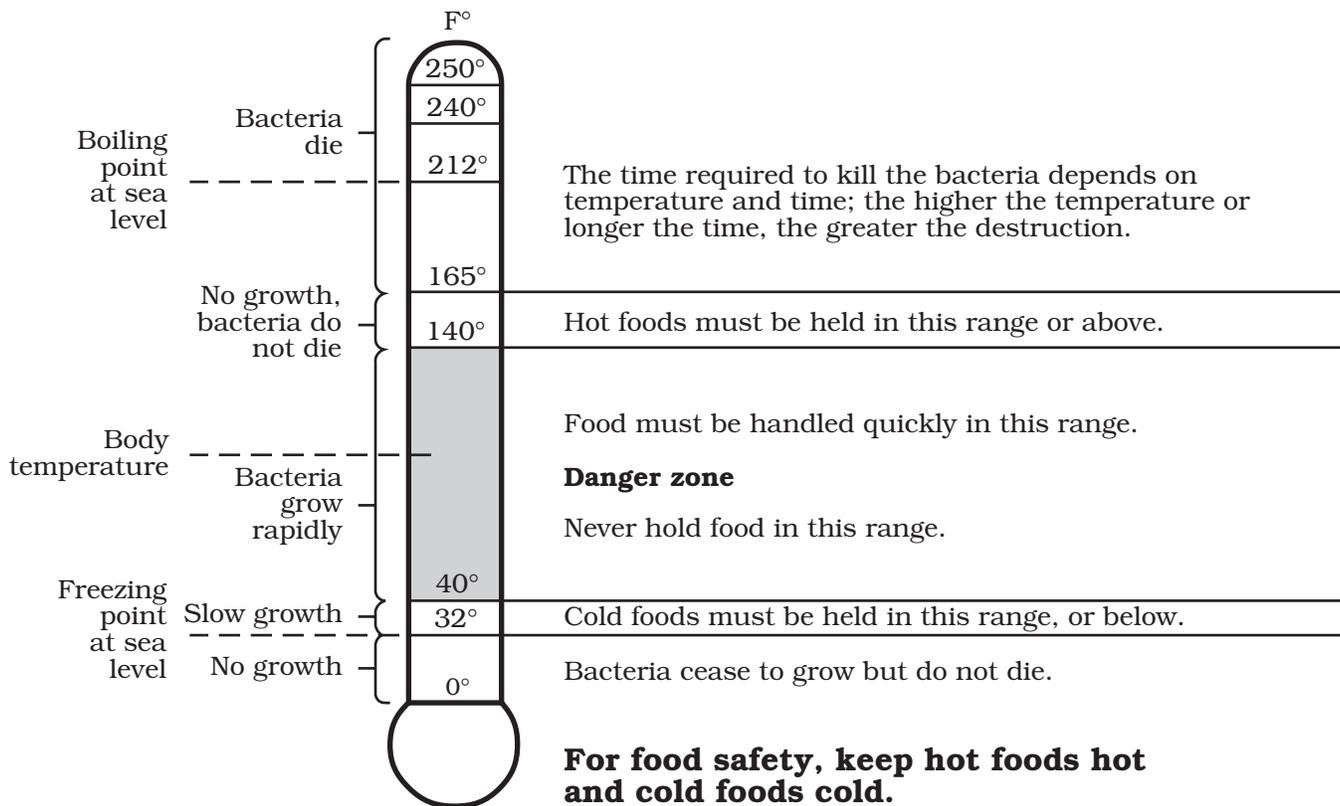


Table 2. Foodborne illnesses

| Illness and symptoms | Foods often involved | Preventive measures |
|---|--|---|
| <p>Botulism—Double vision, inability to swallow, speech difficulty, progressive respiratory paralysis. High fatality rate. Comes on 12 to 36 hours or longer after eating involved food.</p> <p>Duration—3-6 days</p> | <p>Improperly home-canned low or medium-acid foods; smoked fish. Rarely, commercially canned foods.</p> | <p>Bacterial spores in foods are destroyed by high temperatures obtained only in the pressure canner. More than 6 hours is needed to kill the spores at boiling temperature (212°F). The toxin is destroyed by boiling for 10 to 20 minutes; time required depends on kind of food.</p> |
| <p>Campylobacter jejuni—Fever; mild to severe and often bloody diarrhea; abdominal cramps that may be severe; possible headache, malaise, muscle or skeletal pain, or vomiting. Recognized only within the last 10 years as problem to humans. Thought to be more common cause of acute gastroenteritis than <i>Salmonella</i>.</p> <p>Duration—2-7 days</p> | <p>Raw or undercooked meats, especially poultry; raw (unpasteurized) milk; water supply that has been contaminated with animal or human feces.</p> | <p>Heating and refrigeration practices to kill or control <i>Salmonella</i> also appear to be effective against <i>Campylobacter</i>.</p> |
| <p>Escherichia coli - E. coli O157:H7—One of four highly infectious types that causes gastrointestinal disease in people, especially infants, elderly, and immune-compromised people. Type O157:H7 causes bloody diarrhea and severe stomach cramps. Hemolytic Uremic Syndrome (HUS) in children can result in acute kidney failure and death and blood clots in the elderly. Other <i>E. coli</i> types can cause infant diarrhea, “traveler’s diarrhea,” and shigellosis-type dysentery.</p> | <p>Inadequately cooked ground beef, unpasteurized apple cider and juice, contaminated lettuce, sprouts, and other vegetables and foods.</p> | <p>Cook ground beef to 165°F interior temperature. Use only pasteurized apple cider and juice or bring to boil before serving, rinse-wash fruits and vegetables. Practice good personal hygiene to prevent person-to-person exposure.</p> |

Table 2. Foodborne illnesses (cont.)

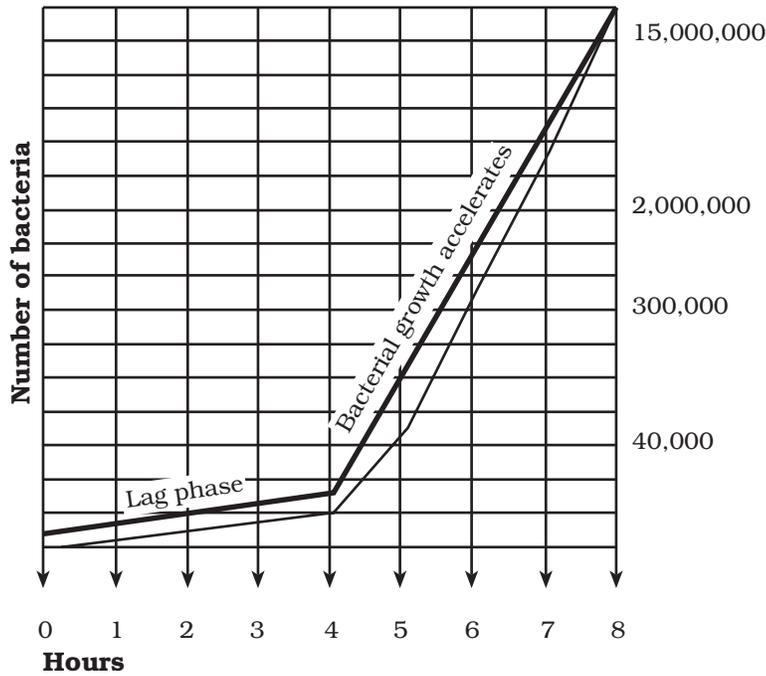
| Illness and symptoms | Foods often involved | Preventive measures |
|---|---|---|
| <p>Listeriosis (<i>Listeria monocytogenes</i>)—Nausea, vomiting, fever, and headache. Severe cases result in abortion, still-birth, perinatal septicemia and meningitis to surviving infants, and/or death. Susceptible include elderly, immune compromised, infants, and unborn.</p> | <p>Meat products like precooked frankfurters and cold cuts, raw milk soft cheeses, raw milk, precooked poultry and seafood products, and unwashed fruits and vegetables. This bacteria will grow slowly at refrigerator temperatures.</p> | <p>Eat pasteurized milk and pasteurized milk cheeses. Reheat frozen and refrigerated precooked meat and poultry products like frankfurters. Wash-rinse fruits and vegetables. Store perishable foods below 40°F and use up rapidly.</p> |
| <p>Perfringens poisoning—Nausea, abdominal pains, diarrhea (like mild 24-hour flu); comes on 10 to 12 hours after eating involved food.</p> <p>Duration—may persist for 24 hours.</p> | <p>Cooked meats, poultry, fish, gravies, and main dish casseroles that have not been properly cooled and refrigerated and then have not been reheated above 165°F.</p> | <p>Cool foods rapidly; put foods in shallow pans in refrigerators. Keep cold foods at 40°F or below; keep hot foods at 140°F or above. Reheat leftover foods to 165°F. Wash hands after going to toilet, handling raw meat, and doing activities other than food preparation. Clean and disinfect kitchen equipment. Restrict workers with diarrhea from touching foods.</p> |
| <p>Salmonellosis—Sudden onset of vomiting, abdominal pain, diarrhea. Usually fever, chills, severe headache. Can be dangerous for infants, elderly, and anyone with low resistance. Comes on 12 to 72 hours after eating involved food.</p> <p>Duration—2-7 days</p> | <p>Food animals may harbor <i>Salmonella</i>. Raw poultry, meats, eggs, and dairy products are most frequently involved. Also transmitted by infected people, pets, insects, and rodents. <i>Salmonella</i> are destroyed by heating food to 140°F for 10 minutes or to higher temperature for less time.</p> | <p>Cook foods to internal temperatures of 165°F. Use separate equipment for raw and cooked products. Cool foods in shallow pans in refrigerators. Keep cold foods at 40°F or below; keep hot foods at 140°F or above. Reheat leftover foods to 165°F. Clean and sanitize kitchen utensils and equipment. Wash hands after visiting toilet and handling raw foods of animal origin. Restrict workers with diarrhea or fever from touching foods.</p> |
| <p>Staphylococcus poisoning (staph)—Vomiting, abdominal cramps, diarrhea, sweating (often attributed to “the flu”). Comes on 1 to 6 hours after eating involved food.</p> <p>Duration—1-2 days</p> | <p>Custard or cream-filled baked goods, ham, meat, poultry and egg salad sandwiches, potato and macaroni salads, creamy salad dressing. Transmitted by people who carry the bacteria. Bacteria thrive at temperatures between 40°F and 140°F.</p> | <p>Wash hands after coughing, sneezing, smoking, going to the toilet. Practice good personal hygiene. Cool foods rapidly; put foods in shallow pans in refrigerators. Keep cold foods at 40°F or below; keep hot foods at 140°F or above. Cover infections with water-proof dressing or bandaid. Restrict workers with diarrhea or colds from touching foods.</p> |
| <p>Viral Infections—Small Round Structured Viruses (SRSVs) including Norwalk virus cause gastroenteritis and Hepatitis A virus causes hepatitis. These virus originate from and reproduce in human intestine. They do not increase in numbers in food but will survive in food. Poor personal hygiene (unwashed hands) contaminates food during preparation. SRSVs usually cause sudden onset uncontrollable projectile vomiting, diarrhea, and stomach pain within 15 to 72 hours. Viral Hepatitis A incubation is 3 to 6 weeks with gradual development of symptoms: loss of appetite, malaise, fever, and vomiting followed by jaundice. Illness lasts a few weeks to several months. Usually more severe symptoms in adults.</p> | <p>Shellfish such as oysters and mussels from sewage-contaminated waters. Fruit and vegetables if fertilized with sewage sludge or contaminated water. Foods such as salads and desserts contaminated by infected food workers.</p> | <p>Do not prepare foods for others if suffering from vomiting or diarrhea and after 1 week after jaundice onset. Food handlers exposed to Hepatitis A given immunoglobulin injection. Follow stringent personal hygiene with frequent hand washing. Heat treat shellfish to 195°F for 1.5 minutes. Avoid cross-contamination of raw shellfish with other foods.</p> |



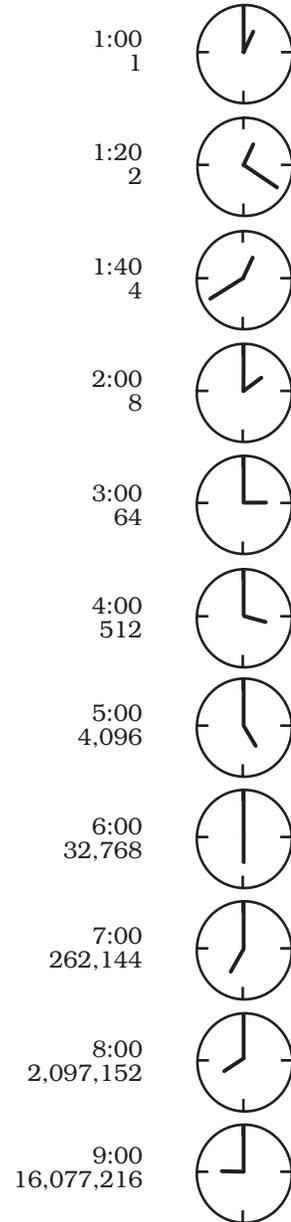
Figure 2. Bacterial growth rate

This chart illustrates how a bacterium grows when food is held in the temperature danger zone. When food is initially held at ideal growth temperatures for bacteria, the growth rate is slow. This is termed the lag phase; it takes bacteria time to adjust to the environment and the numbers reproduced are lower. Beyond this initial period, bacterial growth accelerates rapidly.

Under ideal conditions bacteria will multiply by dividing in two every 20 minutes. This means a bacterium can grow to more than 16,000,000 in 8 hours.



Time:
Number of bacteria:



Do not hold food in the temperature danger zone for more than two hours.

North Central Regional Extension publications are prepared as a part of the Cooperative Extension activities of the 13 land-grant universities from the 12 North Central States in cooperation with the Extension Service, U.S. Department of Agriculture, Washington, D.C.

Prepared by Jim Huss, Iowa State University extension specialist in hotel, restaurant, and institution management; William L. LaGrange, Iowa State University extension food scientist; and Diane Nelson, Iowa State University extension communication specialist.

Programs and activities of the Cooperative Extension Service are available to all potential clientele without regard to race, color, sex, national origin, or disability.

In cooperation with the North Central Region Educational Materials Project

Issued in furtherance of Cooperative Extension work, Acts of Congress of May 8 and June 30, 1914, in cooperation with the U.S. Departments of Agriculture and Cooperative Extension Services of Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. Stanley R. Johnson, director, Cooperative Extension Service, Iowa State University, Ames, Iowa 50011.