Food Safety
Job Aids

The following job aids are included in the Food Safety training so that you can print them out and use them in your establishment. Some you may want to distribute to employees for discussion at regularly scheduled staff meetings, or you can post them on-site for employees to read. Others you can use as reference.

The following job aids are included:

- Foodborne Illness Chart
- FAT TOM Chart
- Temperature Danger Zone
- pH Scale
- The Five Steps for Proper Hand Washing
- Good Personal Hygiene Habits Checklist
- General Guidelines for the Effective Use of Chlorine, Iodine, and Quats
- Basic Safety Procedures in the Kitchen
- How to Use a Thermometer
- Safe Time and Internal Temperature Requirements for Cooked Foods
- Additional Safe Receiving Temperatures for Foods
- Two-Stage Cool Down Process
- HACCP Forms
# Foodborne Illness Chart

## Foodborne Illnesses Caused by Bacteria

<table>
<thead>
<tr>
<th>Foodborne Illness and Disease Causing Agent</th>
<th>Incubation and Typical Symptoms</th>
<th>Source</th>
<th>Control Measures</th>
</tr>
</thead>
</table>
| Bacillus Cereus Gastroenteritis             | Incubation period: 1 to 12 hours | *Bacillus cereus* is a bacterium that can be found in starchy foods, especially rice and rice dishes allowed to sit for over four hours in the Temperature Danger Zone. Often found in soil and dust. | • Cook and hold foods to required temperatures.  
• Cool properly  
• Avoid cross-contamination |
|                                            | Symptoms: The bacteria can cause two different toxins, resulting in two different symptoms: One to six hours in cases where vomiting is present and where diarrhea is predominant; six to 12 hours, may also cause nausea. | *Bacillus cereus* is a bacterium that can be found in starchy foods, especially rice and rice dishes allowed to sit for over four hours in the Temperature Danger Zone. Often found in soil and dust. | |
|                                            | Main implicated foods: starchy foods such as rice, pasta, and potatoes; cooked vegetables, milk products and meat products. | *Bacillus cereus* is a bacterium that can be found in starchy foods, especially rice and rice dishes allowed to sit for over four hours in the Temperature Danger Zone. Often found in soil and dust. | |
| Botulism                                   | Incubation period: 12 to 36 hours, with a range of one to 10 days, depending on dose ingested | *Clostridium botulinum* is found in soil and water. | • Properly can foods  
• Cook foods thoroughly  
• Refrigerate at proper temperatures. |
|                                            | Symptoms: Nausea, vomiting, fatigue, double vision, difficulty in breathing and swallowing. | *Clostridium botulinum* is found in soil and water. | |
|                                            | Main implicated foods: Canned foods (especially those canned in the home), ROP, MAP and Sous Vide foods; untreated garlic-and-oil mixtures. | *Clostridium botulinum* is found in soil and water. | |
| Clostridium Perfringens Gastroenteritis     | Incubation period: Six to 24 hours; typically 10 to 12 hours | *Clostridium perfringens* is a bacterium found in the intestines of an infected person and in animals and soil. | • Practice good personal hygiene.  
• Chill foods rapidly.  
• Hold-hot foods at 135°F or above. |
<p>|                                            | Symptoms: Abdominal pain, diarrhea, sometimes nausea and vomiting. | <em>Clostridium perfringens</em> is a bacterium found in the intestines of an infected person and in animals and soil. | |
|                                            | Main implicated foods: Contamination from improperly cooked meat and poultry products, stews, gravies, and sauces. | <em>Clostridium perfringens</em> is a bacterium found in the intestines of an infected person and in animals and soil. | |</p>
<table>
<thead>
<tr>
<th>Hemorrhagic Colitis</th>
<th>Incubation period: Three to eight days, with a median of three to four days.</th>
<th>EHEC are bacteria that can be found in the intestinal tract of cattle.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>May be asymptomatic, but associated with bloody stool, stomach cramps, and in extreme cases kidney failure.</td>
<td>Main implicated foods: Undercooked ground beef and contaminated produce.</td>
</tr>
<tr>
<td><strong>Enterohemorrhagic Shiga toxin-producing Escherichia coli (EHEC)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0157:H7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>026H11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0111:H8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0158:NM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Listeriosis</th>
<th>Incubation period: One day to 3 weeks.</th>
<th>Listeriosis is a bacterial infection of the intestinal tract. It is caused by <em>Listeria monocytogenes</em> which is commonly found in cool, moist environments in the soil, plants, or water.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Listeria monocytogenes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High-risk populations, especially pregnant women, are vulnerable.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pregnant women may miscarry; newborns may contract pneumonia, meningitis, or sepsis.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Salmonellosis</th>
<th>Incubation period: Six to 72 hours; usually about 12 to 36 hours.</th>
<th>The salmonella bacteria is found in the feces of infected farm and wild animals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Salmonella spp. bacteria</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Symptoms include: stomach cramps, diarrhea, vomiting, and fever.</td>
<td></td>
</tr>
</tbody>
</table>

### Hemorrhagic Colitis

**Enterohemorrhagic Shiga toxin-producing Escherichia coli (EHEC)**

- 0157:H7
- 026H11
- 0111:H8
- 0158:NM

- **Incubation period**: Three to eight days, with a median of three to four days.
- May be asymptomatic, but associated with bloody stool, stomach cramps, and in extreme cases kidney failure.
- **Main implicated foods**: Undercooked ground beef and contaminated produce.

### Listeriosis

**Listeria monocytogenes**

- **Incubation period**: One day to 3 weeks.
- High-risk populations, especially pregnant women, are vulnerable.
- Pregnant women may miscarry; newborns may contract pneumonia, meningitis, or sepsis.

### Salmonellosis

**Salmonella spp. bacteria**

- **Incubation period**: Six to 72 hours; usually about 12 to 36 hours.
- Symptoms include: stomach cramps, diarrhea, vomiting, and fever.

- **Main implicated foods**: Raw poultry, eggs, dairy, and produce, as well as foods that have been cross-contaminated from raw poultry.

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- **Exclude infected worker from the food establishment.**
- **Cook to proper internal temperature—especially ground beef.**
- **Avoid raw and cooked cross-contamination.**
- **Practice good personal hygiene.**

- **Cook raw meat and hold as required.**
- **Avoid cross-contamination.**
- **Use pasteurized dairy products.**
- **Throw out expired product.**

- **Cook foods thoroughly.**
- **Use pasteurized egg products and milk.**
- **Avoid cross-contamination from raw to cooked foods.**
- **Practice good personal hygiene.**
<table>
<thead>
<tr>
<th>Disease</th>
<th>Incubation period</th>
<th>Description</th>
<th>Main Implicated Foods</th>
<th>Control Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Shigellosis</strong></td>
<td>12 to 96 hours; 1 to 3 days</td>
<td><strong>Shigella spp. bacteria</strong>&lt;br&gt;<strong>Shigella</strong> bacteria&lt;br&gt;Incubation period: 12 to 96 hours; usually 1 to 3 days.&lt;br&gt;Symptoms: Bloody diarrhea, stomach cramps, sometimes accompanied by fever.</td>
<td>Foods that are handled, such as tuna, potato, macaroni and chicken salads.&lt;br&gt;Foods that come in contact with contaminated water, such as produce.</td>
<td>• Exclude infected worker from the food establishment.&lt;br&gt;• Practice good personal hygiene.&lt;br&gt;• Protect and treat water.&lt;br&gt;• Control flies.</td>
</tr>
<tr>
<td><strong>Staphylococcal gastroenteritis</strong></td>
<td>30 minutes to eight hours; two to four hours</td>
<td><strong>Staphylococcus aureus</strong>&lt;br&gt;Incubation period: 30 minutes to eight hours; usually two to four hours.&lt;br&gt;Symptoms: Nausea, vomiting, stomach cramps.</td>
<td>Foods that are handled, such as TCS salads and deli meats.&lt;br&gt;Humans are the primary source of contamination. It is easily transferred to TCS foods that are handled, such as TCS salads and deli meats.</td>
<td>• Cool, reheat, and hold foods properly.&lt;br&gt;• Practice good personal hygiene.&lt;br&gt;• Avoid direct hand contact with food.&lt;br&gt;• Cover open cuts and sores on hands and arms.</td>
</tr>
<tr>
<td><strong>Vibrio Gastroenteritis</strong></td>
<td>Usually between 12 and 24 hours, but can range from four to 30 hours.</td>
<td><strong>Vibrio parahaemolyticus</strong>&lt;br&gt;Incubation period: Usually between 12 and 24 hours, but can range from four to 30 hours.&lt;br&gt;Symptoms: Diarrhea, abdominal cramps, nausea, vomiting, headache, fever, chills.</td>
<td>Raw shellfish, especially oysters, shrimp and blue crabs, and cross-contamination from contaminated seawater.</td>
<td>• Purchase seafood from approved vendors.&lt;br&gt;• Avoid cross-contamination.</td>
</tr>
<tr>
<td><strong>Vibrio Vulnificus Primary Septicemia</strong></td>
<td>12 hours to three days.</td>
<td><strong>Vibrio vulnificus</strong>&lt;br&gt;Incubation period: 12 hours to three days.&lt;br&gt;Symptoms: Diarrhea, vomiting, stomach cramps, nausea,</td>
<td><strong>Vibrio vulnificus</strong> is a bacterium in the same family as cholera.&lt;br&gt;It normally lives in warm seawater.</td>
<td>• Only purchase shellfish from approved sources.&lt;br&gt;• Properly cook all seafood.&lt;br&gt;• Avoid cross-contamination.</td>
</tr>
</tbody>
</table>
### FOODBORNE ILLNESSES CAUSED BY VIRUSES

<table>
<thead>
<tr>
<th>FOODBORNE ILLNESS AND DISEASE CAUSING AGENT</th>
<th>INCUBATION AND TYPICAL SYMPTOMS</th>
<th>SOURCE</th>
<th>CONTROL MEASURES</th>
</tr>
</thead>
</table>
| **Hepatitis A** *(Infectious Hepatitis)*     | Incubation period: Ten days for serious cases; one-to-two months in slowly advancing cases. | Hepatitis A is a virus passed through the feces, urine, or blood, of an infected person, or through contaminated water. | • Exclude infected worker from the food establishment.  
• Purchase from approved sources.  
• Dispose of sewage properly.  
• Practice good personal hygiene.  
• Avoid bare hand contact with ready-to-eat foods.  
• Immunize food workers. |
| **Hepatitis A virus**                       | Symptoms: Stomach pain, nausea, weakness, fever. May cause jaundice. | Main implicated foods: Ready-to-eat foods that are not heated after handling; shellfish from contaminated waters. |  |
| **Norovirus Gastroenteritis**               | Incubation period: Usually 24 to 48 hours | Norovirus is a gastrointestinal disease passed in a fecal-to-oral transmission by an infected person. | • Exclude infected worker from the food establishment.  
• Purchase from approved vendors.  
• Dispose of sewage properly.  
• Practice good personal hygiene.  
• Avoid bare hand contact with ready-to-eat foods. |
| **Norovirus**                               | Symptoms: Diarrhea, vomiting, stomach pain. May cause nausea. | Main implicated foods: Ready-to-eat foods that are not heated after handling; shellfish from contaminated waters. |  |
### Foodborne Illnesses Caused by Parasites

<table>
<thead>
<tr>
<th>Foodborne Illness and Disease Causing Agent</th>
<th>Incubation and Typical Symptoms</th>
<th>Source</th>
<th>Control Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anisakiasis</strong> &quot;Sushi Stomach&quot;**</td>
<td>Incubation period: Depending on the dosage, onset of symptoms could be from one hour to two weeks. Symptoms: Coughing up worms, severe abdominal pain, vomiting, diarrhea, nausea, tingling in throat.</td>
<td>Anisakiasis is a parasitical disease. Main implicated foods: Raw and undercooked fish.</td>
<td>• Cook fish thoroughly. • For sushi, freeze the fish at −4°F (−20°C) for 7 days; or at −31°F (−35°C) for 15 hours, or freeze at −31°F (−35°C) and store at −4°F (−20°C) for at least 24 hours.</td>
</tr>
<tr>
<td><strong>Intestinal Cryptosporidiosis</strong></td>
<td>Incubation period: Three to nine days. Symptoms: Stomach cramps, nausea, watery diarrhea, weight loss.</td>
<td>The Cryptosporidium parvum parasite is found in the feces of infected humans. Main implicated foods: Salads and raw vegetables, ready-to-eat foods, milk, unpasteurized apple cider.</td>
<td>• Practice good personal hygiene. • Thoroughly wash produce. • Use properly treated water.</td>
</tr>
<tr>
<td><strong>Giardiasis</strong> Giardia duodenalis (G. lamblia or G. intestinalis) parasite</td>
<td>Incubation period: One to three weeks. Symptoms: Initial fever, followed by stomach cramps, nausea, watery diarrhea.</td>
<td>The Giardia duodenalis parasite can be found in contaminated water and the feces of infected humans. Main implicated foods: unwashed vegetables, contaminated water and ice.</td>
<td>• Only use a sanitary water supply. • Wash raw vegetables. • Practice good personal hygiene.</td>
</tr>
</tbody>
</table>
### FOODBORNE ILLNESSES CAUSED BY SEAFOOD TOXINS

<table>
<thead>
<tr>
<th>FOODBORNE ILLNESS AND DISEASE CAUSING AGENT</th>
<th>INCUBATION AND TYPICAL SYMPTOMS</th>
<th>SOURCE</th>
<th>CONTROL MEASURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amnesic shellfish poisoning (ASP)</td>
<td>Incubation period: Gastrointestinal symptoms typically appear within 24 hours after ingestion. Neurological symptoms can take up to three days to appear.</td>
<td>Shellfish become contaminated as they filter toxic algae. People get sick when they eat contaminated shellfish.</td>
<td>Only purchase shellfish from approved vendors.</td>
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<tr>
<td>Domoic acid</td>
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<tr>
<td></td>
<td>Symptoms: Stomach pain, vomiting and diarrhea, with possible memory loss, seizures, and coma.</td>
<td>Main implicated foods: Scallops, oysters, clams, and mussels.</td>
<td></td>
</tr>
<tr>
<td>Ciguatera poisoning</td>
<td>Incubation period: Four to eight hours.</td>
<td>Ciguatoxin is produced by an algae common to certain tropical reefs in the Pacific Ocean and the Caribbean.</td>
<td>Only purchase fish from approved vendors.</td>
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<tr>
<td>Ciguatoxin</td>
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<tr>
<td></td>
<td>Symptoms: Nausea, vomiting, joint and muscle pain, nervous system disorders, hot and cold spells.</td>
<td>Main implicated foods: Several species of larger reef fish (barracuda, snapper, amberjack, grouper) that eat smaller fish that feed on these toxic algae.</td>
<td></td>
</tr>
<tr>
<td>Neurotoxic shellfish poisoning (NSP)</td>
<td>Incubation period: Symptoms can begin within minutes all the way up to 18 hours after consumption. Typical incubation period is three to four days.</td>
<td>Shellfish become contaminated as they filter toxic algae. People get sick when they eat contaminated shellfish.</td>
<td>Only purchase shellfish from approved vendors.</td>
</tr>
<tr>
<td>Brevetoxin</td>
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<tr>
<td></td>
<td>Symptoms: Vomiting and diarrhea, dizziness, hot and cold spells, tingling and numbness of</td>
<td></td>
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</tbody>
</table>
### Paralytic Shellfish Poisoning (PSP)

**Saxitoxin**

**Incubation period:** Within 15 minutes to ten hours after consumption. Symptoms typically appear within two hours.

**Symptoms:** Vomiting and diarrhea, dizziness, hot and cold spells, tingling and numbness of the lips, tongue, and throat.

**Shellfish become contaminated as they filter toxic algae. People get sick when they eat contaminated shellfish.**

**Main implicated foods:** Oysters, clams, and mussels.

**Control measures:** Only purchase shellfish from approved vendors.

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### Scombroid (Histamine) Poisoning

**Scombroid toxin**

**Incubation period:** A few minutes to two hours.

**Symptoms:** Reddening of the face and neck, burning and tingling in the mouth and throat, sweating, headache, followed by possible vomiting and diarrhea.

**The Scombroid toxin occurs in partially spoiled fish that have high amounts of histamine in their tissues.**

**Main implicated foods:** Scombroid (mackerel), tuna, mahi mahi, bonito.

- Avoid time and temperature abuse during preparation and storage.
- Only purchase fish from approved vendors.

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### Foodborne Illnesses Caused by Fungi

<table>
<thead>
<tr>
<th>Foodborne Illness and Disease Causing Agent</th>
<th>Incubation and Typical Symptoms</th>
<th>Source</th>
<th>Control Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aflatoxin</td>
<td>Incubation period: Undetermined—depending on the dose, it can be from a few days to a few weeks.</td>
<td>Aflatoxin is a toxin created by the Aspergillus mold.</td>
<td>• Aflatoxin is rare in developed countries. In the U.S., peanuts are screened for Aspergillus. • Heat food to 135°F (57°C) for 10 minutes.</td>
</tr>
<tr>
<td>Aspergillus flavus and Aspergillus parasiticus mold</td>
<td>Symptoms: Can cause liver damage.</td>
<td>Main implicated foods: Peanuts, corn, milk, cottonseed, tree nuts.</td>
<td></td>
</tr>
</tbody>
</table>
Generally, bacteria thrive in Time and Temperature Control for Safety Foods (TCS), which are often warm, moist, protein-rich, and chemically neutral, or low in acid. These conditions and related food safety controls can be remembered by the anagram F-A-T T-O-M.

**Food** -- High-protein foods are likely to enter the foodservice operation carrying bacteria, or may be easily contaminated once there.

**Acidity** -- Acidity is measured on a scale from 0 (acidic) to 14 (alkaline). A food with a pH (acidic-alkaline measurement) level of 7.0 is neutral. Potentially Hazardous Foods have a pH range between 4.6 and 7.0. Most bacteria will not grow well at pH levels below 4.6. Highly acidic foods, such as fruit, rarely allow growth of harmful bacteria. Adding vinegar or lemon juice to food items will help slow bacterial growth -- but does not guarantee prevention and should not be used as a sole protection without consistent preparation procedures and monitoring controls.

**Time** -- Time and Temperature Control for Safety Foods (TCS) should not remain in the temperature Danger Zone (see temperatures, below) for more than four hours during the entire food handling process.

**Temperature** -- The Danger Zone for Time and Temperature Control for Safety Foods (TCS) is 41 to 135°F (5 to 57°C). However, since bacteria can survive and some grow at lower temperatures, refrigeration is not absolute protection. Discard food that has remained in the Temperature Danger Zone for more than four hours.

**Oxygen** -- Some bacteria require oxygen to grow, while others require an oxygen-free environment. However, most of the bacteria that can cause foodborne illness can grow either with or without free oxygen.

**Moisture** -- The availability of water in food is expressed as water activity ($A_w$). The lowest $A_w$ in which harmful bacteria will grow is 0.85. Most Time and Temperature Control for Safety Foods (TCS) have water activity that are in a range of 0.97 to 0.99 -- values that are ideal for bacterial growth. Water activity can be reduced to safer levels by freezing, dehydrating, adding sugar or salt, or cooking. Dry foods, such as beans, rice, and pasta, become potentially hazardous when water is added.
Temperature Danger Zone

41 to 135°F (5 to 57°C)

Time and Temperature Controlled for Safety (TCS) should spend no more than a total of four hours in the Temperature Danger Zone.

“When in doubt, throw it out.”

Note: There is only one exception to this rule. If a food is removed from cold holding at 41°F or less, it may be out of temperature for up to six hours as long as the internal temperature of the food does not exceed 70°F. This exception cannot be used with a highly susceptible population.
pH Scale

pH is the unit of measurement for the hydrogen ion concentration in foods. This concentration results in foods being acidic (tart or sour), or alkaline, meaning the acids have been neutralized.

When the pH value of a food is less than 7.5, it is acidic. If the pH value of a food is more than 7.5, it is alkaline, and if the pH value is 7.5, the food is considered neutral.

<table>
<thead>
<tr>
<th>pH Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acids</td>
</tr>
<tr>
<td>0 - 1</td>
</tr>
<tr>
<td>2 - 3</td>
</tr>
<tr>
<td>4 - 6</td>
</tr>
<tr>
<td>7 - 9</td>
</tr>
<tr>
<td>10 - 14</td>
</tr>
</tbody>
</table>

Examples of acidic foods include:
- Citrus juices
- Tomatoes
- Rhubarb
- Cranberries

Examples of neutral foods include:
- Milk
- Meats
- Chicken
- Fish

Examples of alkaline foods include:
- Egg whites
- Soda crackers
- Black olives

It is important to be aware of the pH level of foods, since bacteria grow best when foods are slightly acidic, neutral, or slightly alkaline, and contain enough water for microorganisms to grow.
The Five Steps for Proper Handwashing

The basic practice of hand washing is *the single most important action* that can be taken to prevent the spread of disease. This process should take at least 20 seconds.

1. Use warm water.

2. Wet hands and exposed arms up to the elbow.

3. Apply the proper amount of an approved hand washing soap. Rub hands and forearms briskly for 10-15 seconds.

4. Rinse thoroughly under clean, warm water.

5. Dry hands and arms by sanitary means, such as a disposable paper towel or an air-drying device.

Wash your hands:

* Before starting work
* Before putting on gloves
* After using the restroom
* After touching your hair, face, or body
* After eating, drinking, smoking, or touching gum
* Every time you enter a food preparation area
* After working with raw or ready-to-eat food
* After cleaning or taking out the garbage
* After touching anything that might contaminate your hands

After you have washed your hands, get in the habit of using a paper towel to turn off the faucets and touch the doorknobs.
Good Personal Hygiene Habits

- Bathe daily with soap and water. Use deodorant.
- Keep fingernails clean, short, and well trimmed. Do not use fake nails or nail polish.
- Wear an appropriate hairstyle, and restrain hair properly. Wear clean clothing on the job.
- Use clean, protective clothing, such as an apron, whenever necessary. Never use an apron as a hand towel.
- Limit jewelry to a plain ring band; better yet, wear none at all.
- Cover cuts or sores with a water-resistant bandage, and change bandages often. Wear plastic gloves or a finger cot if the cut or sore is on your hand.
- Do not come to work if you are ill. Stay home if you have a fever or diarrhea, if you are vomiting, or if you are sneezing and coughing.

When handling foods, DO NOT:

- Sneeze or cough.
- Scratch or touch your head, hair, skin, or mouth. Drip sweat onto equipment or food.
- Wipe sweat with your hands, or cloths that are used on food contact surfaces.
- Wear gloves away from the food preparation area.
- Engage in activities such as smoking, eating, or chewing gum, which can result in hand-to-mouth contact.

If a sneeze or cough is unavoidable, use a disposable tissue, and wash your hands.

When a cough is unavoidable and you do not have access to a tissue, cover your mouth and nose with your upper arm—never with your hands.

When handling foods, DO:

- Wear plastic gloves when preparing ready to eat foods.
- Change gloves every time you change a food preparation job, or every four hours. Wash hands and change gloves after any action that might contaminate foods, such as coughing, handling raw meat or poultry, picking up objects from the floor, or putting out trash.
# General Guidelines for the Effective Use of Chlorine, Iodine, and Quats

<table>
<thead>
<tr>
<th></th>
<th>Chlorine</th>
<th>Iodine</th>
<th>Quats</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water temperature</strong></td>
<td>≥ 100°F (38°C)</td>
<td>≥ 75°F (24°C)</td>
<td>68°F (20°C)</td>
</tr>
<tr>
<td><strong>Water pH</strong></td>
<td>≤ 10</td>
<td>≤ 8</td>
<td>≤ 5 or as per manufacturer's recommendation</td>
</tr>
<tr>
<td><strong>Water hardness</strong></td>
<td>As per manufacturer's recommendation</td>
<td>As per manufacturer's recommendation</td>
<td>500 ppm or as per manufacturer's recommendation</td>
</tr>
<tr>
<td><strong>Sanitizer concentration range</strong></td>
<td>50-99 ppm</td>
<td>50-99 ppm</td>
<td>12.5-25 ppm</td>
</tr>
<tr>
<td><strong>Sanitizer contact time</strong></td>
<td>≥ 7 sec</td>
<td>≥ 7 sec</td>
<td>≥ 30 sec</td>
</tr>
</tbody>
</table>
Basic Safety Procedures
In the Kitchen

How to Minimize Cuts

Use the right knife for the right job.
Never use knives as screwdrivers, can-openers, or box openers.
Keep knives sharp.
Use knives with built-in guards or shaped handles.
Wear protective mesh gloves and cuff guards.
Cut away from the body; never toward it.
Never reach blindly for a knife.
If you drop a knife, don’t grab for it. Get out of the way.
Store all sharp knives in a knife holder.
If stored in a drawer, place knives in a rack.
Wash all sharp tools and knives separately.
Throw out chipped and broken china, glassware, and utensils.
Replace damaged equipment.
Read the manufacturer’s instructions before operating equipment, such as a meat slicer.

How to Minimize Burns

Use dry, flameproof potholders.
Before lifting, check that pot and panhandles are sturdy.
Remove lids carefully; allow steam to escape away from face and hands.
Turn the handle of the pan inward on the stove; be sure it is not over an open flame or too near heat.
Keep doors of stoves, ovens, and broilers closed; do not touch hot edges.
Avoid hot edges of heat lamps.
Never place food items with excess moisture directly into hot shortening.
Never clean glassware, dishes, ovens, stoves, or equipment until they have cooled.
Keep stovetops and hoods free of grease.
Wear gloves and an apron for protection when changing or filtering shortening.
Keep papers and other flammable materials away from hot areas.
Read the manufacturer’s instructions before operating coffee urns and other hot beverage machines.
How to Use a Thermometer

Use thermometers to check the temperatures of:

- Incoming shipments of food products.
- Final cooking temperatures.
- Cooling temperatures.
- Food in refrigerators, freezers, and hot holding units.

When testing the temperature of food:

- Insert the clean probe into the food up to the dimple.
- Test various parts of a roast or bird, including the thickest part.
- Do not touch bones or the bottom or sides of the container.
- Test in the center of a casserole, pot, or chafing dish.
- Clean the thermometer after use.

Cleaning a thermometer:

Sanitize a thermometer with either rubbing alcohol or a sanitizing solution. The most effective sanitizing method is to dip the thermometer stem in boiling water for seven to ten seconds.

To test the temperature of vacuum-packed foods, insert the thermometer between two packages.

With other packages or bags, insert the thermometer in the fold.

Insert the thermometer into one carton or bottle to test a shipment.

To monitor the temperature of equipment, use a mounted thermometer.
### Safe Time and Internal Temperature Requirements (FDA 2013 Food Code)

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>SAFE TIME AND INTERNAL TEMPERATURE REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>All types of poultry, including ground poultry Stuffed meats, poultry, pasta, fish Stuffing that contains TCS</td>
<td>165°F for 15 seconds</td>
</tr>
<tr>
<td>Microwaved raw animal foods/eggs</td>
<td>165°F, allow cooked food to stand for at least 2 minutes.</td>
</tr>
<tr>
<td>Reheated leftovers</td>
<td>165°F for 15 seconds within two hours</td>
</tr>
<tr>
<td>Ground, minced, and chopped meats and fish Mechanically tenderized meats, flavor-injected meats, brined ham Eggs hot-held for service</td>
<td>155°F for 15 seconds</td>
</tr>
<tr>
<td>Whole roasts of beef, pork, veal, and lamb Beef, veal, pork, and lamb chops All types of seafood, including fillets and shellfish Shell eggs made to order</td>
<td>145°F for four minutes 145°F for 15 seconds</td>
</tr>
<tr>
<td>Hot held commercially processed, ready-to-eat foods Vegetables, beans, grains, and fruits</td>
<td>135°F</td>
</tr>
<tr>
<td>Rare roast beef and corned beef</td>
<td>130°F for 112 minutes</td>
</tr>
</tbody>
</table>

**Partial Cooking for Later Service:**

Initial cooking time is no longer than 60 minutes. Cool food immediately after cooking. Then freeze, or refrigerate at 41°F or cooler. Reheat food to 165°F before serving.
<table>
<thead>
<tr>
<th>OPERATIONAL STEP</th>
<th>SAFE FOOD TEMPERATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receiving</td>
<td>Refrigerated foods 41°F or below</td>
</tr>
<tr>
<td>Storing</td>
<td>Refrigerated foods 41°F or below&lt;br&gt;Frozen foods 0°F or below</td>
</tr>
<tr>
<td>Holding</td>
<td>Cold foods at 41°F or below&lt;br&gt;Hot foods at 135°F or above</td>
</tr>
<tr>
<td>Serving</td>
<td>Cold foods below 41°F&lt;br&gt;Hot foods above 135°F</td>
</tr>
<tr>
<td>Reheating</td>
<td>165°F for 15 seconds within two hours</td>
</tr>
<tr>
<td>Transporting</td>
<td>Cold foods 41°F or below&lt;br&gt;Hot foods 135°F or above</td>
</tr>
</tbody>
</table>

**TWO-STAGE COOL DOWN PROCESS**

Cool food as quickly as possible. The FDA FOOD CODE requires that foods be cooled:

From 135°F to 70°F within 2 hours
From 70°F to 41°F within an additional 4 hours

If food is not cooled from 135°F to 70°F within 2 hours, the food must be reheated to 165°F for 15 seconds, and the cooling process must start again.

Take actions to speed the cooling process, such as dividing food into smaller portions, use ice water baths, and ice paddles to stir foods.
HACCP System and Forms

There are seven steps to the HACCP system:

1. Conduct a Hazard Analysis
2. Determine Critical Control Points (CCP's)
3. Establish Critical Limits
4. Establish Monitoring Procedures
5. Establish Corrective Actions
6. Establish Verification Procedures
7. Establish Record-keeping and Documentation Procedures

The following sample HACCP forms are included with this program. Customize them to meet the needs of your establishment, and use them to implement your own HACCP plan.

Hazard Analysis Critical Control Point Flowchart Worksheet

Hazard Analysis Critical Control Point Monitor Worksheet

Hazard Analysis Critical Control Point Monitoring Procedure Report
Point Flowchart Worksheet

<table>
<thead>
<tr>
<th>Date:</th>
<th>Time Started:</th>
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<tbody>
<tr>
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</table>

<table>
<thead>
<tr>
<th>Product:</th>
<th>Time Ended:</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

Ingredients:

<table>
<thead>
<tr>
<th>Steps</th>
<th>Problem/Hazard</th>
<th>CCP</th>
<th>Control/Solution</th>
</tr>
</thead>
<tbody>
<tr>
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Comments:

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<th>Comments:</th>
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Signature:

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<th>Signature:</th>
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</table>
# Point Monitor Worksheet

**Product:** 

**Ingredients:** 

<table>
<thead>
<tr>
<th>Date:</th>
<th>Time Start:</th>
<th>Time End:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Temperature</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

**Time/Temperature (°F) Chart**

Time in Hours

Signatures of observers:

______________________________

______________________________

______________________________
<table>
<thead>
<tr>
<th>PROCESS (STEP)</th>
<th>CRITERIA FOR CONTROL</th>
<th>MONITORING PROCEDURE OR WHAT TO LOOK FOR</th>
<th>ACTIONS TO TAKE WHEN CRITERIA NOT MET</th>
</tr>
</thead>
</table>
| RECEIVING/STORING | □ Approved sources (inspected)  
□ Shellfish tag  
□ Raw/Cooked/Separated in storage  
□ Refrigerate at less than or equal to 45°F | □ Shellfish tags available  
□ Shellfish tags complete  
□ Measure food temperature  
□ No raw foods stored above cooked or ready to eat foods | □ Discard food  
□ Return food  
□ Separate raw and cooked food  
□ Discard cooked food contaminated by raw food  
□ Food temperature: More than 45°F more than 2 hours, discard food  
□ More than 70°F, discard food |
| THAWING | □ Under refrigeration  
□ Under running water less than 70°F  
□ Microwave  
□ Less than 3 lbs., cooked  
□ Frozen  
□ More than 3 lbs., do not cook until thawed | Observe method  
Measure food temperature | Food temperature: More than or equal to 70°F, discard  
More than 45°F for more than two hours, discard |
| PROCESSING PRIOR TO COOKING | Food temperature less than or equal to 45°F | Observe quantity of food at room temperature  
Observe time food held at room temperature | Food temperature: More than 45°F for more than 2 hours, discard food  
More than 70°F discard food |
| COOKING | Temperature to kill pathogens  
Food temperature at thickest part more than or equal to ______°F | Measure food temperature at thickest part | Continue cooking until food temperature at thickest part is more than or equal to ______°F |
| HOT HOLDING | Food temperature at thickest part more than or equal to ______°F | Measure food at thickest part during hot holding every _____ minutes | Food temperature:  
135°F - 120°F  
More than or equal to 2 hours, discard; less than 2 hours, reheat to 165°F and hold at 135°F  
120°F - 45°F  
More than or equal to 2 hours, discard; less than 2 hours, reheat to 165°F and hold at 135°F |
## Hazard Analysis Critical Control Point Monitoring Procedure Report (pg. 2)

<table>
<thead>
<tr>
<th>Process</th>
<th>Description</th>
<th>Measure temperature during ___ minutes</th>
<th>Food temperature:</th>
<th>If yes to the following, discard:</th>
</tr>
</thead>
<tbody>
<tr>
<td>COOLING</td>
<td>Food 120°F to 70°F in 2 hours: 70°F to 45°F in 4 additional hours by the following methods: (check all that apply)</td>
<td>□ Food depth</td>
<td>120°F - 70°F More than 2 hours, discard food</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Product depth less than or equal to 4&quot;</td>
<td>□ Food iced</td>
<td>70°F - 45°F More than 4 hours, discard</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Ice water bath and stirring</td>
<td>□ Food stirred</td>
<td>45°F or less but cooled too slowly, discard food</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Solid piece less than or equal to 6 lbs.</td>
<td>□ Food size</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Rapid chill refrigeration unit</td>
<td>□ Food placed in rapid chill refrigeration unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- No covers until cold</td>
<td>□ Food uncovered</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processes</td>
<td>Prevent contamination by: Ill workers not working Worker hands not touching ready to eat foods Worker hands washed</td>
<td>□ Cold Time and Temperature Control for Safety Foods (TCS) at temperature less than or equal to 45°F</td>
<td>If yes to the following, discard: Ill worker is working Direct hand contact with ready to eat food observed Cold potentially hazardous food: more than 45°F; more than or equal to 2 hours, discard; more than 70°F, discard Hot potentially hazardous food: 135°F - 120°F More than or equal to 2 hours, discard; less than 2 hours, reheat to 165°F and hold at 135°F 120°F - 45°F More than or equal to 2 hours, discard; less than 2 hours, reheat to 165°F and hold at 135°F</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cold Time and Temperature Control for Safety Foods (TCS) at temperature more than or equal to 135°F</td>
<td>□ Hot potentially hazardous food: 135°F to 120°F More than or equal to 2 hours, discard; less than 2 hours, reheat to 165°F, and hold at 135°F 120°F to 45°F More than or equal to 2 hours, discard; less than 2 hours, reheat to 165°F and hold at 135°F</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Equipment and utensils clean and sanitized</td>
<td>□ Cold potentially hazardous food: 45°F to 70°F More than or equal to 2 hours, discard; less than 2 hours, serve or refrigerate</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Meal temperature during holding every ___ minutes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>REHEATING</td>
<td>Food temperatures at thickest part more than or equal to 165°F</td>
<td>Measure food temperature during reheating</td>
<td>Food temperature less than 165°F, continue reheating</td>
<td></td>
</tr>
<tr>
<td>HOLDING FOOD, HOT/COLD TRANSPORTING FOOD</td>
<td>Food temperature</td>
<td>Measured food temperature during holding every ___ minutes</td>
<td></td>
<td>□ Hot holding potentially hazardous food: 135°F to 120°F More than or equal to 2 hours, discard; less than 2 hours, reheat to 165°F, and hold at 135°F 120°F to 45°F More than or equal to 2 hours, discard; less than 2 hours, reheat to 165°F and hold at 135°F</td>
</tr>
</tbody>
</table>

I have read the above food preparation procedures and agree to follow and monitor the critical control points and to take appropriate corrective action when needed. If I want to make any changes, I will notify the Health Department prior to such a change.

Signature of person in charge ________________________________

Signature of inspector _________________________________

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You may want to start a resource file with laws, codes, and materials that provide useful information on food safety. The following contacts can help you get started and answer any of your questions.

FEDERAL REGULATORY AGENCIES

Regulation by federal government agencies focus on the sources of food and protection of the products until they are purchased, processed, and consumed by the public.

Centers for Disease Control and Prevention (CDC)

The CDC is charged with protecting the public health through the prevention and control of diseases, and responding to public health emergencies. The CDC monitors foodborne illness, and is located in Atlanta, Georgia. This agency is responsible for determining how outbreaks occur, and publishes statistical information about the incidence and severity of illnesses. The CDC also supplies educational materials about sanitation.

http://www.cdc.gov/
1600 Clifton Rd
Atlanta, GA 30333

24 hours, 7 days a week:
800-232-4636
TTY: (888) 232-6348
Environmental Protection Agency (EPA)

The mission of this agency is to control and battle pollution related to the air, water, solid waste, pesticides, radiation, and toxic substances. The agency works with state and local governments to wage a coordinated attack on environmental pollution. It conducts research and monitoring activities, sets standards, and enforces anti-pollution activities.

http://www.epa.gov/
401 M Street SW
Washington, DC 2046

Food and Drug Administration (FDA)

The activities of the FDA are directed at protecting consumers against impure and unsafe foods, drugs, cosmetics, and other potential hazards. The FDA develops and enforces regulations for the safety, composition, quality, nutritional content, and labeling of foods, food additives, colors, cosmetics, drugs, and medical devices. It also enforces mandatory provisions and regulations concerning food service operations by interstate carriers.

The FDA is a resource for state and local agencies that require assistance in formulating local codes and regulations. This agency publishes documents on food service sanitation, lists of food additives and the amounts allowed in food products. It also publishes the Food Code, in cooperation with the Department of Health and Human Services, which provides guidance for the food service industry.

http://www.fda.gov/
10903 New Hampshire Avenue
Silver Springs, MD 20993
1-888-463-6332

The Milk Safety Branch, HFF-346, provides the IMS List Sanitation Compliance and Enforcement Ratings of Interstate Milk Shippers.

The Shellfish Sanitation Branch, HFF0513, provides the Interstate Certified Shellfish Shippers List.
Occupational Safety and Health Administration (OSHA)

OSHA was established after the Occupational Safety and Health Act of 1970. The agency develops and promotes occupational safety and health standards, develops and issues regulations, conducts investigations and inspections, and issues citations. It also proposes penalties for non-compliance with safety and health standards and regulations.

Employers are required by OSHA to provide employees with safe working conditions. OSHA sets safety standards for a hazard-free working environment, safe equipment, and job procedures.

http://www.osha.gov/
200 Constitution Avenue, N.W.
Washington, DC 20210
800-321-6742
TTY:  877-889-5627

U.S. Department of Agriculture (USDA)

Through its inspection and grading services, the USDA works to provide safeguards that ensure standards of quality in our daily food supply, and it also protects the soil, water, forests, and other natural resources. The agency works to improve food production and eliminate malnutrition.

Inspection of food processing plants and supervision of labeling practices is shared by the USDA and the FDA. The USDA inspects meat, meat products, poultry, poultry products, eggs, egg products, dairy products, fruits, and vegetables.

Food Safety and Inspection Service Information Office
http://www.usda.gov/
South Agriculture Building
Independence Avenue S.W.
Washington, DC  20250
(202) 720-8732

USDA Food Safety and Inspection Service
USDA Meat and Poultry Hotline
Monday - Friday, 10:00am to 4:00pm ET
1-888-674-6854
Or send email to:  mphotline.fsis@usda.gov