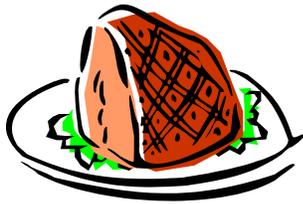


## Minimum Safe Internal Cooking Temperatures



Pork, Ham and Bacon

**NYS TEMPS**  
150°F  
(for 15 seconds)

**FEDERAL TEMPS**  
145°F  
(for 15 seconds)



Poultry, stuffed meats, and stuffed pastas

165°F  
(for 15 seconds) with  
no interruption in the  
cooking process.

165°F  
(for 15 seconds) cook  
stuffing and meat first,  
then stuff the food



Ground Beef, Ground Pork, and Sausage

158°F  
(for 1 second)

155°F  
(for 15 seconds)



Fish, eggs and all other  
potentially hazardous foods not  
listed on this page

145°F  
**Fish & Eggs**

145°F  
(for 15 seconds)

140° F  
all other foods not  
listed on this page



Beef Roasts

130°F  
(maintained for 112  
minutes)

145°F for 3 mins;  
140°F maintained for  
12 minutes; or  
130°F maintained for  
112 minutes.

Microwave cooking: Heat to a temperature of 165°F in all parts of the food and let sit 2 minutes

When meat or fish is served raw, (ie. steak tartar or sushi) the consumer is to be notified.

<CMc2012>

## Temperatures, Times and Numbers to Remember

*Match the correct answer from column B with column A*

### Column A

- \_\_\_\_\_ 1. Bi-metallic thermometer range
- \_\_\_\_\_ 2. The temperature danger zone
- \_\_\_\_\_ 3. pH range that bacteria grows well in
- \_\_\_\_\_ 4. Receiving and storing temp. for most (cold) potentially hazardous foods
- \_\_\_\_\_ 5. Ideal temperature for dry storage
- \_\_\_\_\_ 6. Cook temperature for poultry, stuffed meats or foods cooked in microwave
- \_\_\_\_\_ 7. Cook temperature for ground meat, eggs that will be held for service later, or injected meats
- \_\_\_\_\_ 8. Cook temperature for pork, beef, veal, lamb, fish, and eggs for cooked immediate service
- \_\_\_\_\_ 9. Hot holding temperature
- \_\_\_\_\_ 10. Final rinse temp for a high temp. dish machine
- \_\_\_\_\_ 11. Water temperature for hot-water immersion sanitizing ( 3-bay sink )
- \_\_\_\_\_ 12. Body temperature (ideal for bacteria growth)
- \_\_\_\_\_ 13. Cold hold temperature
- \_\_\_\_\_ 14. Sushi grade fish parasite destruction temperature (held one week)
- \_\_\_\_\_ 15. Minimum time to be spent on scrubbing hands and nails during hand washing
- \_\_\_\_\_ 16. Number of days to keep clam tags
- \_\_\_\_\_ 17. Distance off the floor that food should be stored
- \_\_\_\_\_ 18. Water activity that supports bacterial growth
- \_\_\_\_\_ 19. Recommended amount of chlorine necessary for sanitizing

### Column B

- A. 180 °F
- B. 98.6 °F
- C. 41° F or less
- D. 0-220°F
- E. 4.6 -7.5
- F. 41-135°F
- G. -4°F
- H. 90 days
- I. 155°F (for 15 seconds)
- J. 41°F or less
- K. 15 seconds
- L. 50-70°F
- M. 171°F
- N. 145°F
- O. 135°F
- P. 50 ppm
- Q. 6 inches
- R. .85 or greater
- S. 165°F

Answers: D, F, E, C, L, S, I, N, O, A, M, B, J, G, K, H, Q, R, P

# Agents that Cause Foodborne Illness

## BACTERIAL INFECTIONS

<i>Pathogen</i>	<i>Foods commonly involved</i>	<i>Typical symptoms</i>	<i>Onset</i>
<b>Salmonella*</b>	Raw poultry, eggs, raw meat, untreated milk and dairy products, fresh fruit	<i>abdominal pain, diarrhea, nausea, vomiting, fever</i>	12-36 hrs
Campylobacter	Raw poultry, raw meat, untreated milk	<i>diarrhea (often bloody) abdominal pain, nausea, fever</i>	48-60 hrs
Listeria	Untreated milk, dairy products such as soft cheeses, cooked luncheon meats and hotdogs, raw vegetables, protein based salads	<i>flu like symptoms, complications in pregnancy, stillbirths</i>	1 day to 3 wks.
<b>Shigella*</b>	Foods prepared with human contact: ready to eat salads, raw vegetables, milk and dairy products, non-potable water	<i>bacillary dysentery, diarrhea, fever, abdominal cramps, dehydration</i>	1 to 7 days
Vibrio	Raw or improperly cooked fish and shellfish	<i>headache, fever, chills, diarrhea, vomiting, dehydration</i>	2- 48 hrs.

## BACTERIAL INTOXICATION

Bacillus cereus	Rice, starchy foods, grains, cereals	<i>abdominal cramps, diarrhea, vomiting</i>	8-16hr (diarrhea) 30 mins. – 6 hrs.
Clostridium botulinum ( <i>botulism</i> )	Improperly canned food, vacuum-packed fish, garlic or onions stored in oil	<i>Double vision, difficulty breathing, and swallowing, paralysis</i>	12-36 hrs.
Staphylococcus aureus	Foods prepared with human contact: ready to eat foods luncheon meats, deli salads, ham, poultry, milk, cheese	<i>nausea, vomiting, abdominal cramps, headache</i>	1-6 hrs.

## BACTERIAL TOXIN-MEDIATED INFECTION

Clostridium perfringens	Improperly cooled foods, especially gravy and meats	<i>abdominal pain and severe diarrhea</i>	12-18 hrs.
<b>Escherichia coli* (E.coli 0157)</b>	Raw or undercooked red meat (especially ground beef), improperly pasteurized milk, unpasteurized apple cider, lettuce and other leafy greens	<i>bloody diarrhea followed by kidney failure and hemolytic uremic syndrome (HUS) in severe cases</i>	12-72 hrs.

## VIRUSES

<b>Hepatitis A*</b>	Raw or lightly cooked seafood harvested from polluted waters, ready to eat foods prepared by bare hands	<i>fever, nausea, vomiting, jaundice, liver disease, fatigue</i>	15 to 50 days
<b>Norovirus* (Cruise Ship Illness)</b>	Contaminated water, salad, raw clams, oysters; foods contaminated by infected food workers	<i>nausea, projectile vomiting, diarrhea, low grade fever, headache</i>	24-48 hrs.
Rotovirus	Contaminated water, raw vegetables, salads, seafood	<i>vomiting, diarrhea, dehydration</i>	24-36 hrs.

## PARASITES

Anisakis	Raw or undercooked seafood	<i>coughing, vomiting, pain, fever</i>	1hr to 2 weeks
Cryptosporidium parvum	Contaminated water or food	<i>diarrhea</i>	Within 1 week
Giardia lamblia	Contaminated water or food	<i>watery diarrhea</i>	Within 1 week
Trichina Spiralis	Pork and wild game meat	<i>nausea, abdominal pain, vomiting diarrhea, muscle pain, fever</i>	2-28 days

## TOXINS

Ciguatoxin	Warm-water fish	<i>vertigo, nausea, hot/cold flashes, diarrhea, vomiting, shortness of breath</i>	30 min. to 6hrs.
Shellfish toxins PSD, DSP DAP, NSP	Contaminated mussels, oysters, clams, scallops	<i>numbness of lips, tongue, arms, legs neck; lack of muscle coordination</i>	10 to 60 mins.
Mycotoxins	Moldy grains: corn, corn products, peanuts, pecans walnuts, and milk	Acute onset: severe bleeding, fluid <i>build-up, possible death</i> Chronic: cancer from small doses over time	Varies

\* denotes reportable diagnosis

The person in charge (owner or manager) shall notify the Regulatory Agency (local or state Health Department) when a food employee is

- (1) Jaundice
- (2) Diagnosis with a reportable disease



## Technical Word Review

1. **Sanitize**: reduce microbes to a safe level (99% destruction)
2. **Sterilize**: is a term referring to any process that eliminates (removes) or kills all forms of life, including transmissible agents (such as [fungi](#), [bacteria](#), [viruses](#), spore forms, etc.) present on a surface.
3. **Pasteurize**: a heat treatment used to destroy disease causing organisms (milk, liquid eggs, juices)
4. **Botulism** (toxin): a type of food intoxication caused by C. Botulinum (canned or sealed foods)
5. **Chlorine** (bleach): chemical sanitizer
6. **Quaternary ammonium** (quat): a chemical sanitizer that is relatively safe for contact with skin
7. **Iodine**: a water soluble disinfectant, non-corrosive, kills microbes quickly, may stain equipment
8. **Antiseptic**: (hand sanitizers) any substance that prevents or decreases the growth of microorganisms
9. **Spore**: an inactive or dormant state of some rod-shaped bacteria
10. **Microbes/ Microorganisms**: bacteria, viruses, molds and other tiny organisms that are too small to be seen without a microscope
11. **Aerobic**: requiring oxygen
12. **Anerobic**: no oxygen required or can only live without oxygen
13. **Toxins**: a poisonous substance that is capable of causing disease (not killed by cooking)
14. **Allergens**: a substance that causes the human body to produce histamines/ an allergic reaction. (milk, peanuts, shellfish, tree nuts, eggs, fish, soy, wheat)
15. **Cross Connections**: any physical link that can cause contamination to the potable water supply
16. **Cross Contamination**: transfer of harmful organisms between items by direct or indirect contact
17. **Cross Contact**: refers to crossing allergens from one surface to another
18. **Aseptic**: a method in which food is sterilized and then placed in a sterilized container
19. **Hermetically sealed**: a container completely sealed by heat against the entry of bacteria, molds, yeast and other filth as long as the seal stays intact
20. **Sewage**: liquid waste matter
21. **Hept. A Virus**: a foodborne virus that causes a foodborne illness (causes jaundice and affects the liver)
22. **Noro Virus**: a common foodborne virus. "Cruise Ship Illness"
23. **Rodent**: mouse or rat
24. **Thaw**: to change from a frozen solid state to a cold state; melt
25. **Potable**: fit to drink; drinkable water



## **FOOD SAFETY ACRONYMS**

<b>HACCP</b>	Hazard Analysis Critical Control Point
<b>CCP</b>	Critical Control Point
<b>PHF</b>	Potentially Hazardous Food
<b>TCS</b>	Time & Temperature Controlled for Safety
<b>RTE</b>	Ready to Eat
<b>IPM</b>	Integrated Pest Management
<b>FIFO</b>	First in First Out
<b>MSDS</b>	Material Safety Data Sheets
<b>PPM</b>	Parts per Million
<b>MAP</b>	Modified Atmosphere Packaging
<b>ROP</b>	Reduced Oxygen Packaging
<b>NSF</b>	National Safety Foundation
<b>FDA</b>	Food and Drug Administration
<b>USDA</b>	United States Department of Agriculture
<b>FAT TOM</b>	Food Acidity Time Temperature Oxygen Moisture