

## CHILDREN'S ENVIRONMENTAL HEALTH CENTER OF THE HUDSON VALLEY

### PROTECTING CHILDREN AGAINST ENVIRONMENTAL THREATS

[www.ChildrensEnvironment.org](http://www.ChildrensEnvironment.org)

#### Aug 2018: Children's Health Advisory Microbial Contamination



#### **What is Microbial Contamination?**

Microbial contamination occurs when microbes such as bacteria, parasites and viruses get into the food supply causing food poisoning. Zoonoses are pathogens that are transferred from animals to humans through direct contact, indirect environmental contact, or through food.

According to the CDC, the most common germs that cause illness are:

**Norovirus:** often found in fruits, vegetables and shellfish.

**Salmonella:** found in beef, pork, poultry, eggs, fruits, vegetables, spices, nuts and sprouts.

**Clostridium perfringens:** found in cooked meat, poultry (foods left for hours at room temperature).

**E.Coli:** found in beef (especially ground), unpasteurized milk and juice, raw fruits and vegetables.

**Campylobacter:** found in raw milk, undercooked poultry.

**Listeria:** found in raw milk, soft cheeses, raw sprouts, melon.

**Staphylococcus Aureus:** found in foods that are not cooked after handling, such as sliced meats, puddings, pastries, and sandwiches.

**Vibrio**, a less common pathogen and a water organism, is increasing due to climate change. Vibrio infects shellfish such as oysters and multiplies in warmer temperatures.

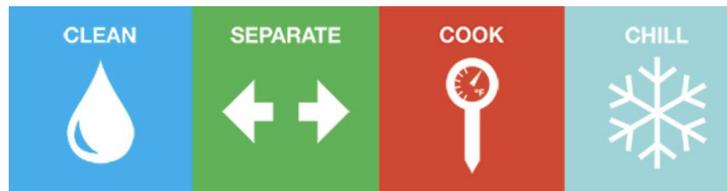
#### **What are the Health Effects?**

Symptoms of food poisoning include fever, upset stomach, stomach cramps, nausea, vomiting and diarrhea. Depending on the pathogen, symptoms typically appear within 24 hours of intake and can last from 1-10 days. Some cases of food poisoning, such as salmonellosis, can reside for up to 7 weeks. In children under the age of 10, a rare disease called hemolytic uremic syndrome that destroys red blood cells can develop from E. coli infection. Infections transmitted by food can result in long term illness such as chronic arthritis, brain and nerve damage. Those at highest risk for infection are children younger than 5, pregnant women, adults older than 65 and people with weakened immune systems.

### What you can do:

To protect yourself from foodborne pathogens, follow this four step process:

- 1) Clean
- 2) Separate
- 3) Cook
- 4) Chill



**Clean:** Wash hands and surfaces often. Hands should be washed for 20 seconds with soap and water before, during and after food preparation. Fruits and vegetables must be washed thoroughly before eating. Washing techniques include washing produce with cold water for about 1 minute, without using any soap. Products that are not labeled as organic should use a produce wash as well as water. Utensils, cutting boards should be washed with hot, soapy water. Lastly, in order to ensure safe eating, the refrigerator and freezer should also be cleaned every couple of months.

**Separate:** To avoid cross-contamination, fruits, vegetables, raw meat, and cooked meat should be stored in separate containers. Different cutting boards, knives, and other utensils should be used for cooked and uncooked meats and must be washed with soap and hot water after handling raw meat.

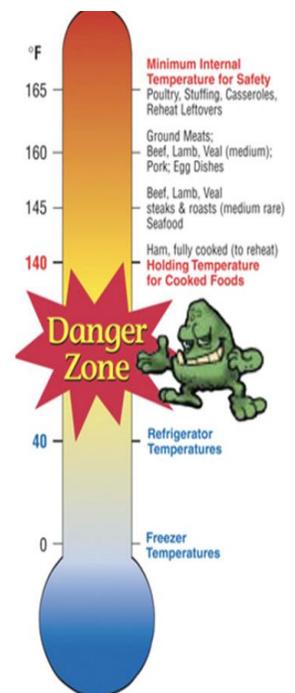
**Cook:** Food is safely cooked when the internal temperature is high enough to kill the pathogens that may cause illness. Use a food thermometer to make sure foods are cooked to the proper internal temperature:

- 145°F for whole cuts of beef, pork, veal, and lamb (then allow the meat to rest for 3 minutes before carving or eating)
- 160°F for ground meats, such as beef and pork
- 165°F for all poultry, including ground chicken and turkey
- 165°F for leftovers and casseroles
- 145°F for fresh ham (raw)
- 145°F for fin fish or cook until flesh is opaque.

**Chill:** Foods that remain in the time-temperature danger zone between 41° F and 140° F for more than four hours can begin harboring pathogenic microorganisms. Refrigerate foods immediately when they get home from the market. Defrost foods in the refrigerator in advance, in cold water or in the microwave, not on the countertop. Fruits and vegetables should be stored in the refrigerator and eaten within a week of purchase. Cooked meats should be stored in the refrigerator within 2 hours of cooking. Uncooked frozen meats can be stored for about 3 months before going bad while cooked meats should be eaten within 3-5 days. For more information:

<https://www.foodsafety.gov/keep/charts/storagetimes.html>

**Purchase locally sourced foods:** Because food from local sources has a much shorter transit time than supermarket produce, it stays fresh longer and is less likely to carry foodborne pathogens.



**References:**

<https://www.cdc.gov/foodsafety/foodborne-germs.html>

<https://www.foodsafety.gov/keep/charts/mintemp.html>

<http://jfoodprotection.org/doi/pdfplus/10.4315/0362-028X-68.7.1421?code=fopr-site>

<http://www.mdpi.com/1660-4601/15/5/863>     <https://www.ncbi.nlm.nih.gov/pubmed/14672828>

<https://www.ncbi.nlm.nih.gov/pubmed/26346329>

<https://www.metergroup.com/food/articles/how-water-activity-and-ph-work-together-to-control-microbial-growth/>

<http://jfoodprotection.org/doi/pdf/10.4315/0362-028X-68.5.1054?code=fopr-site>

<https://www.ncbi.nlm.nih.gov/pubmed/24020255>

<https://www.tandfonline->

<com.ezproxy.holycross.edu/doi/pdf/10.1080/10408398.2012.657808?needAccess=true>