

FoodBorne Diseases, Risks and Cleaning

Proper Produce Handling

- Wash hands with hot soapy water, for at least 20 seconds, before and after handling fresh produce, or raw meat, poultry or seafood, as well as after using the bathroom, changing diapers, or handling pets.
- Wash all fresh produce under running, drinking water before peeling, cutting or eating. The wash water temperature should be 10 degrees warmer than the temperature of any produce being washed to prevent thermal shock and absorption of water and bacteria to the inside cells.
- Scrubbing with a clean brush is only recommended for produce with a tough rind or peel (such as carrots, potatoes, cucumbers and squash) that will not be bruised or scratched by the brush bristles.
- Discard outer leaves of leafy vegetables like lettuce and cabbage before washing.
- Do not wash fruits and vegetables with bleach or soaps - it can absorb into the product and change the taste.
- Wax coatings are used on some produce to keep in the moisture and keep good quality. Wax coatings are safe to eat. Remove the wax by scrubbing with a produce brush under running water.
- There are plenty of commercial Vegetable Cleaning Solutions or you can make your own. See Below:



There are Many Commercial Options. But...

How To Make Your Own Fruit and Veggie Wash

What You'll Need

1. Spray bottle
2. Measuring cup and spoons
3. Colander
4. Distilled white vinegar
5. Water
6. Lemon juice
7. Gentle scrub brush
8. Paper towels

Instructions

- **Make your solution:** To clean most fruits and vegetables, mix a solution of 1 cup vinegar to 4 cups water inside your spray bottle, then add a tablespoon of lemon juice. Shake well to combine.
- **Spray your produce:** Place your fruit or vegetable in a colander in the sink. Spray it liberally with the mixture, then let it sit for two to five minutes.
- **Rinse:** Rinse off the mixture thoroughly with cool water, using a vegetable scrub brush on thicker-skinned produce.
- **Dry:** Pat dry with paper towels.

How To Make Veggie Wash for Leafy Greens

What You'll Need

1. Glass or metal bowl
2. Measuring cup and spoons
3. Distilled white vinegar
4. Water

5. Salt
6. Colander or a salad spinner
7. Paper towels

Instructions

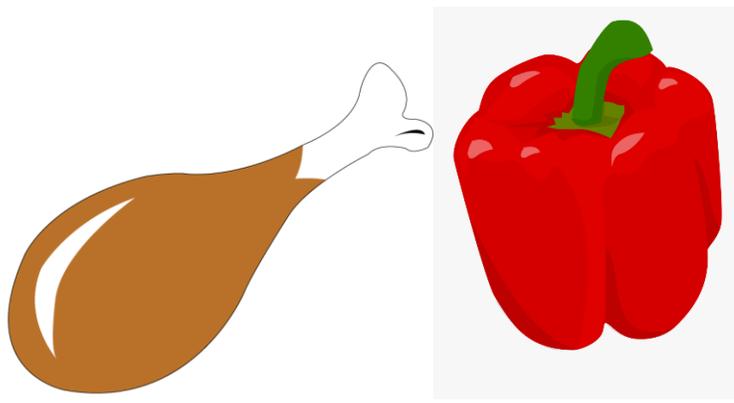
- **Make your solution:** Place your greens into a clean glass or metal bowl. Fill the bowl with a solution of 1 cup vinegar to 4 parts water, then add a tablespoon of salt.
- **Soak your greens:** Let the greens sit in the solution for two to five minutes, then remove.
- **Rinse:** Rinse off the mixture thoroughly with cold water either in a colander or the basket of a salad spinner.
- **Dry:** Dry the greens with paper towels or give them a run through a salad spinner. It's recommended to do this right before you eat the greens, since any excess moisture can lead to decay in the fridge.

Temperature and Refrigerator Life of Common Ingredients

Cold Storage Chart	Refrigerator (4.5 C)	Freezer (-18 C)
Eggs		
Fresh in Shell	3-5 Weeks	Do Not Freeze
Raw yolks and whites	2 to 4 days	1 year
Hard Cooked	1 week	Does Not Freeze Well
Liquid Pasteurized Eggs Opened	3 days	Does Not Freeze Well
Liquid Pasteurized Eggs Unopened	10 days	1 Year
Mayonnaise, Commercial		
Refrigerate After Opening	2 Months	Do Not Freeze
Frozen Dinner and Entrees		
Keep Frozen Until Ready to Heat		3 to 4 Months
Deli & Vacuum-Packed Products		
Store-Prepared (or Homemade) egg, chicken, ham, tuna or macaroni salads	3 to 5 days	Does Not Freeze Well
Hot Dogs		
Opened Package	1 week	1 to 2 Months
Unopened Package	2 weeks	1 to 2 Months
Luncheon Meats		
Opened Package	3 to 5 days	1 to 2 Months
Unopened Package	2 weeks	1 to 2 Months
Bacon & Sausage		
Bacon	7 Days	1 Month

Sausage, raw-from chicken, turkey, pork or beef	1 to 2 Days	1 To 2 Months
Smoked Breakfast Links, patties	7 Days	1 To 2 Months
Hard Sausage – pepperoni, jerky sticks	2 to 3 Weeks	1 To 2 Months
Summer Sausage label “Keep Refrigerated”		
Opened	3 Weeks	1 To 2 Months
Unopened	3 Months	1 To 2 Months
Corned Beef		
Corned Beef, in Pouch w/ Pickling Juices	5 To 7 Days	Drained, 1 Month
Ham, Canned labeled “Keep Refrigerated”		
Opened	3 to 5 Days	1 to 2 Months
Unopened	6 to 9 Months	Do not freeze
Ham, Fully Cooked		
Vacuum Sealed at plant, Undated, unopened	2 Weeks	1 to 2 Months
Vacuum Sealed at plant Dated, unopened	“Use-by” Date on Pack	1 to 2 Months
Whole	7 Days	1 to 2 Months
Half	3 to 5 Days	1 to 2 Months
Slices	3 to 4 Days	1 to 2 Months
Hamburger, Ground and Stew Meat	1 to 2 Days	3 to 4 Months
Ground Turkey, veal, pork, lamb, & mixtures	1 to 2 Days	3 to 4 Months
Fresh Beef, Veal, Lamb, Pork		
Steaks	3 to 5 Days	6 to 12 Months
Chops	3 to 5 Days	4 to 6 Months

Roasts	3 to 5 Days	4 to 12 Months
Variety Meats – tongue, liver, heart, chitterlings	1 to 2 Days	3 to 4 Months
Pre-Stuffed, uncooked pork chops, lamb chops	1 Day	Does not freeze well
Soups & Stews, Vegetable or eat added	3 to 4 Days	2 to 3 Months
Fresh Poultry		
Chicken or turkey, whole	1 to 2 Days	1 year
Chicken or turkey, pieces	1 to 2 Days	9 Months
Cooked Meat & Poultry Leftovers		
Cooked Meat & Meat Casseroles	3 to 4 Days	2 to 3 Months
Gravy & meat broth	1 to 2 Days	2 to 3 Months
Fried Chicken	3 to 4 Days	4 Months
Cooked Poultry Casseroles	3 to 4 Days	4 to 6 Months
Poultry Pieces, plain	3 to 4 Days	4 Months
Poultry Pieces in Broth, gravy	1 to 2 Days	6 Months
Chicken Nuggets, patties	1 to 2 Days	1 to 3 Months
Other Cooked Leftovers		
Pizza, Cooked	3 to 4 Days	1 to 2 Months
Stuffing, Cooked	3 to 4 Days	1 Month



MICROORGANISMS ARE EVERYWHERE!

They can be transferred by your hands to your face or anywhere that can contaminate.

Washing your hands is an important part of food safety.

Some quick facts:

- The amount of bacteria on an average person's hands doubles after using the restroom.
- 1 out of 4 women and 1 out of 2 men don't wash their hands after going to the bathroom.
- Some kinds of dangerous bacteria like Salmonella can stay on objects and surfaces for a month.
- A large percentage of foodborne disease outbreaks are spread by contaminated hands.
- If you are a food worker who produces food for other people, you have a personal responsibility to keep food safe.

Discuss:

What might be some sources of dangerous microorganisms in your facility or restaurant?

WHY WASH YOUR HANDS?

For you, your family, and your friends. Studies have shown that people touch common objects and then their faces many times each hour. This is a problem because both foodborne illnesses and respiratory

illnesses like pneumonia, the cold, and the flu can be spread if you touch your face with contaminated hands.

Fortunately, proper hand washing techniques can help prevent the spread of disease. Good hand washing at work can help reduce worker absences, sick leave, and lost productivity for you and your coworkers.

- Good hand washing practices at home can help keep you and your family healthy.
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Discuss:

Can you think of any other reasons why it is important to wash your hands?

WHEN SHOULD YOU WASH YOUR HANDS?

More often than you think!

Washing your hands is the best way you can prevent dangerous microorganisms from infecting other people through the food you handle. **So when should you wash your hands?**

- Wash your hands after using the restroom. Every time!
- Wash them before entering a food production area, before putting on gloves, and if you have to change your gloves.
- Also wash your hands after touching a non-food contact surface, such as a door, wall, or piece of equipment and after touching a potentially contaminated surface such as the floor, or anything that may have touched the floor.
- Hand washing is also important after eating, smoking, chewing gum, blowing your nose, coughing or sneezing, and after touching your skin or face.

Discuss:

Are there any other times when you need to wash your hands?

SCRUB FOR 20 SECONDS!

Every part of your hand; Never work with food unless you thoroughly wash your hands first.

So how should you wash your hands?

1. First, wet your hands, and lather up by rubbing your hands together with soap.
2. Scrub your hands for at least 20 seconds.
3. Scrub your palms and the backs of your hands, between your fingers, around your cuticles, and pay special attention to your fingernails. Most bacteria on our hands is on the fingertips and under the nails. Rub them vigorously against your palms.
4. Rinse for at least 5 seconds, until all the soap is gone.
5. Finally, dry your hands using a clean towel or air dryer. Damp or wet hands are much more likely to spread bacteria than dry hands. Don't forget to dispose of used towels in the garbage can – not on the floor.

Cleaning Shelf Stable Food Storage

- These areas should be cool, clean, and dry. Poor storage areas are by the stove, under the sink, or any place that is damp with high and low temperature extremes, such as garages or basements.
 - Discard damaged cans and expired foods
 - Canned goods that are dented, rusted or bulging, should be discarded.
- Rotate canned and dry goods, using the oldest products first. As a guide to product's age, look for package "use by dates".



Food Borne Illness and Virus Contaminants

NoroVirus

Norovirus is extremely contagious causing vomiting and/or diarrhea. **Norovirus** is spread through person-to-person contact with an infected person or by touching infected surfaces such as door, toilet and faucet handles. **Norovirus** can survive on surfaces for two weeks. Cleaning and decontaminating surfaces is critical to remove and destroy the virus.

Clean up:

- Remove vomit and/or stool immediately!
- Block-off and clear individuals and pets from exposed area.
- Put on personal protective equipment (PPE) — disposable gloves, mask and plastic apron — to reduce your exposure to the virus.
- Use disposable absorbent material (paper towels, kitty litter, baking soda or disposable cloths) to soak up visible vomit and/or stool.
- Scrape up vomit and/or stool with paper plates or cardboard.
- Dispose of soiled items/waste/gloves in a plastic trash bag.
- Throw away food and packaging materials within a 25-foot circle of vomit.
- Wash hands. Put on clean gloves. Take disposable cloths soaked in soapy water and wipe up remaining vomit and/or stool. Rinse surface well with clean cloths soaked in plain water.
- Wipe area with dry paper towels and dispose of all soiled/items/waste in a plastic trash bag.
- Isolate the contaminated area for two hours as norovirus particles can remain in the air for two hours after an incident.

DO NOT STOP HERE — your work is not done! The area needs to be decontaminated!

Decontaminate surfaces

To stop the spread of norovirus, the CDC (Centers for Disease Control) recommends using either chlorine unscented bleach or EPA (Environmental Protection Agency) registered antimicrobial products effective against norovirus. Product label must specify it is effective against norovirus available online or at restaurant supply stores. **Examples include: Clorox® health care products and Comet Disinfecting Cleaner with Bleach.**

Prepare a chlorine bleach solution. Use fresh unscented bleach within six months of opening. Look at table below to determine the concentration needed to disinfect the surface.

Clean and decontaminate soiled area and surrounding area in a 25-foot circle of infected area. The norovirus can be airborne, which means it can spread through the air. Decontamination could include multiple surfaces and areas.

Air dry for a minimum of five minutes.

Table – Concentrations of Bleach and Water for Soiled, Exposed Surfaces

Bleach	Water	Amount	PPM
5.25%	3.8 litres	1-2/3 Cup	~5000
6-6.25 %	3.8 litres	1-1/2 Cup	~5000
8.25 %	3.8 litres	1 cup	~5000

Discuss:

Let's demonstrate how to wash our hands

SCRUB FOR 20 SECONDS!

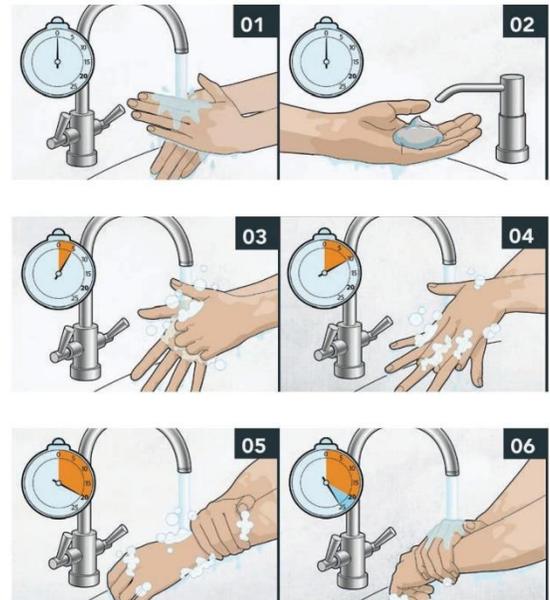
Every part of your hand

Never work with food unless you thoroughly wash your hands first. So how should you wash your hands?

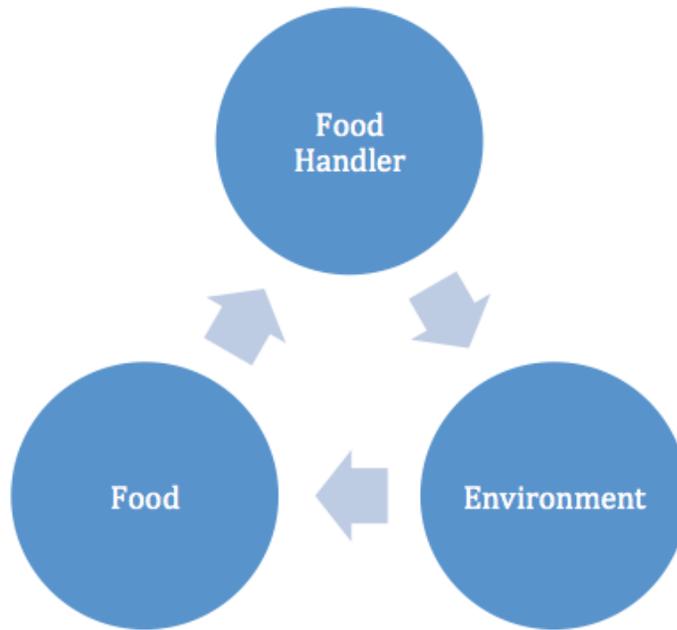
- ✓ First, wet your hands, and lather up by rubbing your hands together with soap.
- ✓ Scrub your hands for at least 20 seconds. Scrub your palms and the backs of your hands, between your fingers, around your cuticles, and pay special attention to your fingernails. Most bacteria on our hands is on the fingertips and under the nails. Rub them vigorously against your palms.
- ✓ Then, rinse for at least 5 seconds, until all the soap is gone.
- ✓ And finally, dry your hands using a clean towel or air dryer. Damp or wet hands are much more likely to spread bacteria than dry hands. Don't forget to dispose of used towels in the garbage can – not on the floor.

Discussion

Let's demonstrate how to wash our hands.



The **Cycle of Bacterial Transmission** goes from food handler to environment to food and back to the food handler.



Proper Personal Hygiene is critical in any food service premises.
Personal Hygiene includes:

- Showering and bathing regularly
- Keep hair clean and covered or tied back
- Keeping clean clothing and footwear that is used only at work
- Handwashing regularly
- Using clean utensils for tasting food
- Using separate cloths for cleaning and wiping plates

Dishes serve as the receptacle in which your food is served, stored and held. Making sure that these dishes, glasses and storage containers are cleaned properly and sanitized will help keep everyone safe.

Dishwashing Procedures

Effective dishwashing ensures that all equipment is sanitary and ready for use when required. Using soiled or dirty china is not only dangerous, but will tell customers that the operator has no regard for customer safety. Below are proper procedures for manual and automatic dishwashing.

Before dishwashing, scrape dishes and pre-soak any items with hard to remove residue. Depending on whether you are using a high or low temperature dishwasher or you are washing dishes manually.



Step	Manual High Temp	Low Temp
Wash: Use commercial detergent and 45 C (113 F)	Wash Cycle must reach at least 60 C(140 F)	Wash Cycle must reach at least 60 C(140 F)
Rinse: Clean Hot Water	Hot Rinse Cycle	Warm or Cold with sanitizer
Sanitize: Sanitize for 2 minutes with solution	Rinse Cycle must reach at least 82 C (180 F) for at least 10 seconds	Final Rinse must have concentration of 50

50 ppm chlorine or 12.5 ppm iodine		ppm Chlorine or 12.5 ppm iodine
Dry	Sloped For Drainage	Sloped for Drainage

Never Towel Dry!

Replace dishcloths often

The dishcloth is the most common cleaning tool in kitchens. If not used properly, it can be a source of contamination. If you've used a dishcloth to wipe up raw meat or raw poultry juices, or soil from fresh produce, you should replace it immediately with a clean one. A contaminated dishcloth can produce millions of bacteria in just a few hours.

- Keep a supply of clean, machine laundered dishcloths handy. Start out each morning with a fresh, dry dishcloth. At the end of the day, air dry and toss into the laundry for future hot-water machine washing and drying.
- Use paper towels for high-bacteria clean up
- The best choice for high-bacteria kitchen clean up is using paper towels and then throw them away immediately.

Salmonella

Salmonella infection (salmonellosis) is a common bacterial disease that affects the intestinal tract. Salmonella bacteria typically live in animal and human intestines and are shed through feces. Humans become infected most frequently through contaminated water or food.

Typically, people with salmonella infection have no symptoms. Others develop diarrhea, fever and abdominal cramps within eight to 72 hours. Most healthy people recover within a few days without specific treatment.

How does Salmonella infect eggs?

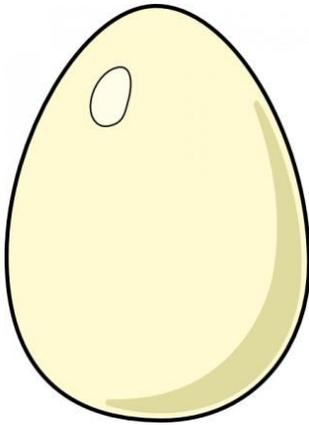
Bacteria can be inside an uncracked, whole egg. Contamination of eggs may be due to bacteria within the hen's ovary or oviduct before the shell forms around the yolk and white. Salmonella doesn't make the hen sick. Eggs are washed and sanitized at the processing plant. The Centers for Disease Control estimates that 1 in every 20,000 eggs are contaminated with Salmonella. Persons infected with Salmonella may experience diarrhea, fever, abdominal cramps, headache, nausea and vomiting.

Who is at risk of illness?

No one should eat foods containing raw eggs. This includes "health food" milk shakes made with raw eggs, Caesar salad, Hollandaise sauce and any other foods like homemade mayonnaise, ice cream or eggnog made from recipes in which the egg ingredients are not cooked.

Salmonella can cause intestinal infections that can be serious (or even fatal). Young children, elderly and those who have a weakened immune system are at an especially high risk of foodborne illness.

- Wash hands with warm, soapy water for 20 seconds before and after handling uncooked eggs, or raw meat, poultry, and seafood and their juices.
- Wash utensils, cutting boards, dishes, and countertops with hot, soapy water after preparing each food item and before you go on to prepare the next item.



What should I look for when buying eggs?

- Be sure eggs are clean and uncracked.
- Buy eggs that have been refrigerated. If there is any bacteria in the eggs, it will grow rapidly at room temperature.

How do you store shell eggs?

- Store in the refrigerator set at 40 F or below. Keep them in their carton and place them inside the refrigerator, not in the door. The refrigerator door is the warmest area of your refrigerator.
- Don't wash eggs because you remove the protective mineral oil coating and increase the potential for bacteria on the shell to enter the egg.
- Use eggs within 4 to 5 weeks from the day they are placed in the refrigerator. The "sell-by" date will usually expire during that length of time, but the eggs are safe to use.
- Don't keep eggs out of refrigeration. If eggs are left at room temperature for more than 2 hours, throw them out.

Campylobacter

Campylobacter is a bacteria that infects the intestinal tract, and very rarely can also infect the blood stream. When a person gets sick from this infection it is called campylobacteriosis. Campylobacter is a common cause of diarrhea worldwide and is the most commonly reported enteric (intestinal) disease in B.C.

Campylobacter can be found in the gut and faeces (poo) of animals and is commonly found in or on raw poultry. You become infected with Campylobacter by taking in the bacteria through your mouth. This can be by: eating contaminated, undercooked meat, especially chicken.

- Use separate cutting boards and clean them properly.
- Use one cutting board for raw meat (including poultry, seafood, and beef)
- Use another cutting board for fresh fruits and vegetables, and other foods.
- Clean all cutting boards, countertops, and utensils with soap and hot water after preparing any type of raw meat.
- Sanitize with a mild bleach solution – 5ml (1 teaspoon) of bleach in 1 litre (4 ¼ cups) of water.

Campylobacter infection may cause a variety of symptoms, including:

- mild to severe diarrhea.
- bloody diarrhea.
- stomach pain.
- cramps.
- nausea and/or vomiting.
- fever.
- headache, and.
- muscle pain.

Listeria

Listeria infection is a foodborne bacterial illness that can be very serious for pregnant women, people older than 65 and people with weakened immune systems. It's most commonly caused by eating improperly processed deli meats and unpasteurized milk products.

A person with listeriosis has fever, muscle aches, and sometimes gastrointestinal symptoms such as nausea or diarrhea. If infection spreads to the nervous system, symptoms such as headache, stiff neck, confusion, loss of balance, or convulsions can occur.

Listeria can spread from one surface to another. Thoroughly wash food preparation surfaces with warm, soapy water. As an added precaution you should sanitize clean surfaces by using any of the kitchen surface sanitizer products available from grocery stores, being careful to follow label directions.

Clostridium perfringens (C. perfringens)

Clostridium perfringens (*C. perfringens*) is a spore-forming gram-positive bacterium that is found in many environmental sources as well as in the intestines of humans and animals. *C. perfringens* is commonly found on raw meat and poultry.

Foodborne Illnesses

