FOOD SAFETY FOR SAFE AND WHOLESOME FOODS

With Dr. Jang Ho Kim, University of Idaho Extension

The webinar will begin promptly at
11:00 am Pacific / 12:00 pm Mountain

Funded by:

USDA NIFA

United States Department of Agriculture
National Institute of Food and Agriculture

University of Idaho Extension

Washington State University Extension

Cooperative Extension Service
University of Alaska Fairbanks

Oregon State University

FOOD SAFETY FOR SAFE AND WHOLESOME FOODS

With Dr. Jang Ho Kim, University of Idaho Extension

Funded by:

USDA NIFA

United States Department of Agriculture
National Institute of Food and Agriculture

University of Idaho Extension

Washington State University Extension

Cooperative Extension Service
University of Alaska Fairbanks

Oregon State University

Webinar Tips

Close all other programs running on your computer

Check your sound – problems with clarity, speed, etc. switch to the phone

Call-in number provided in the welcome email

Mute computer sound when using phone

Type in questions for speakers (or for help with viewing & sound) into question box

Handouts are available to download on your computer

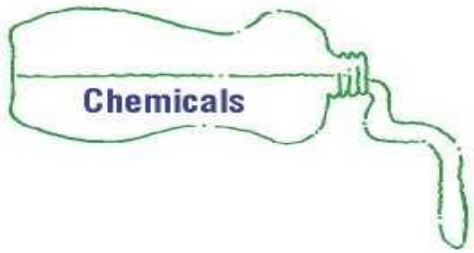
Food Poisoning

- Illness from consuming food that contains a harmful substance, harmful microorganisms or their toxins.
- Common symptoms:
  - Stomachaches
  - Vomiting
  - Diarrhea
  - Fever
- Can result in long-term diseases and death.
- Often caused by food that looks, smells and tastes normal.

Types of Hazards in Food

- Food can be contaminated by:
  - Chemical hazard
  - Physical hazard
  - Biological hazard

Chemical Hazards



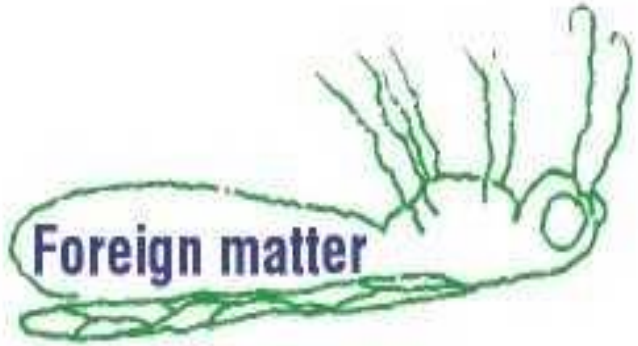
- Chemicals in the kitchen include those used:
- To clean working surfaces and equipment
- As pesticides
- Chemicals can be very harmful if they are:
- Spilt on or near food
- Mistaken for food or drink

Chemical Hazards: Natural toxins

- Toxins are poisonous substances produced by some microorganisms, plants, and animals.
- Most toxins that cause food poisoning are tasteless and remain dangerous when cooked.

Physical Hazards

- Foreign matter can:
  - Physically injure people
  - Introduce harmful bacteria into food
- Examples of foreign matter include:
  - Dead insects
  - Hair
  - Jewelry
  - Glass
  - Metal



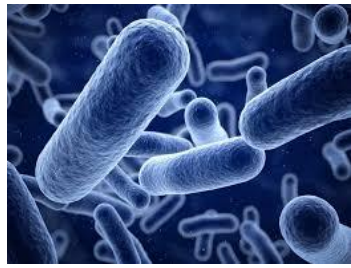
Biological Hazards

- The microorganisms that can make us sick include:
  - Virus (rotavirus, Norwalk virus..)
  - Bacteria (Salmonella, E. coli, Listeria…)
  - Parasites (Toxoplasma gondii, Trichinella spiralis..)
  - Mold (Apergillus flavus)
  - Microorganisms such as viruses and bacteria are the most common causes of food poisoning.

Salmonella

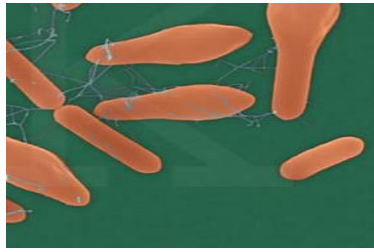
- Sources – intestines of people and carriers, animals and animal food, raw meat and poultry, raw milk, raw eggs
- Common food vehicles – undercooked or contaminated cooked meat, raw milk and eggs
- Incubation period – 6 to 72 hours to produce endotoxin in intestines
- Symptoms – abdominal pain, diarrhea, vomit, fever

Listeria monocytogenes



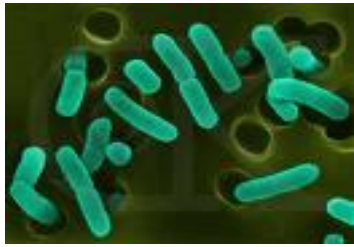
- Sources – soil and water and some animals
- Common food vehicles – unpasteurized milk and dairy products, produce, ready-to-eat products, refrigerated food products, etc.
- Incubation period – 7 to 70 hours
- Symptoms – Fever and diarrhea. Stiff neck, confusion, loss of balance, convulsions, and muscle aches. Seriously danger to pregnant women.

Clostridium botulinum



- Sources – Fish intestine, soil, and vegetables
- Common food vehicles – Low acid processed food contaminated after canning or vacuum packaging
- Incubation period – 2 hrs to 5 days. Heat resistant neurotoxin produced in foods
- Symptom – Difficulties in swallowing, talking and breathing. Double vision and paralysis
- Characteristics – Sporeformer. Spores and exotoxin will survive under normal cooking Temp.

Escherichia coli O157:H7



- Sources – Animal intestine, soil, and water
- Common food vehicles – Undercooked or raw meat, vegetables, unpasteurized milk and apple juice, contaminated water
- Incubation period – 2 to 5 days
- Symptoms – watery or bloody diarrhea, nausea, vomiting, cramps, fever
- Characteristics – Haemolytic Uremic Syndrome (HUS). Acute kidney failure in children

Staphylococcus aureus

- Sources – Human nose, mouth, skin, hands, spots, boils, septic cuts, etc
- Common food vehicles – Dairy products, cold cooked meat and poultry, etc
- Incubation period – 1 to 7 hrs. Exotoxin produced in foods
- Symptoms – Abdominal pain, diarrhea, vomiting, subnormal temperature
- Characteristics – Heat resistant toxin, salt tolerant

Bacillus cereus

- Sources – Dust and soil
- Common food vehicles – Cereals, corn flour, steamed rice, spices, etc.
- Incubation period – 1 to 5 hrs. Exotoxin produced in foods
- Symptoms – Abdominal pain, diarrhea, vomiting, subnormal temperature
- Characteristics – Sporeformer. Spores and exotoxin will survive under normal cooking temperatures

Foodborne illness causing agents

Microorganism	Source	Symptoms	Onset Time
Listeria monocytogenes	Unpasteurized food, ready-to-eat or refrigerated food	Stiff neck, confusion, loss of balance, convulsion, body aches	3-70 days
Campylobacter Jejuni	Raw or undercooked poultry, water, milk, feces	Diarrhea, abdominal cramps, fever, nausea	2-5 days
***Salomonella* spp.**	Poultry and egg, milk, beef, fruits	diarrhea, fever, cramps	12-36 hrs
***E. Coli* O157:H7**	Ground beef, fruits, vegetables, milk, water	Watery or bloody diarrhea, nausea, cramps, Hemolytic Uremic Syndrome	2-5 days
Clostridium botulinum	Raw fish and meat, Fruits and vegetables	Paralysis, diarrhea	12-36 hrs
Staphylococcus aureus	Human nose, throat, ears, skin Septic wounds, Animals and raw milk	Vomiting, Abdominal pain, Low temperature	1-7 hrs
Rota virus, Norwalk virus	Feces, vomitus Contaminated foods	Nausea, vomit, diarrhea, abdominal cramps, headache	12-48 hrs

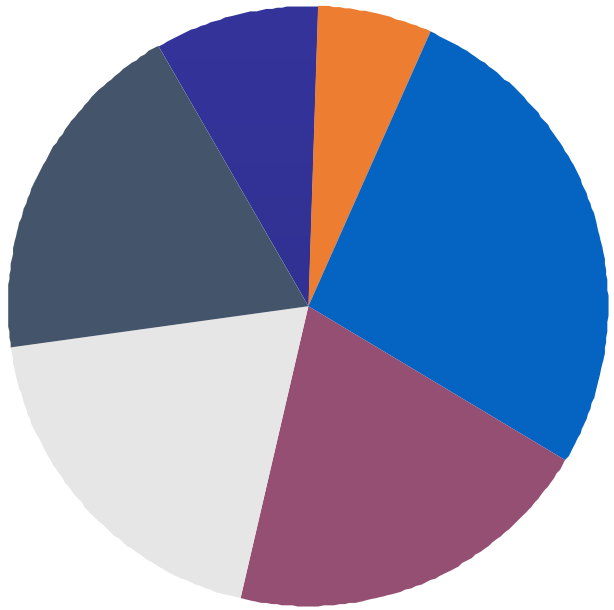
Transmission

- Contamination can occur at several points along the food chain:
  - On the farm or in the field
  - At the slaughtering house
  - During processing
  - At the point of sale
  - At home

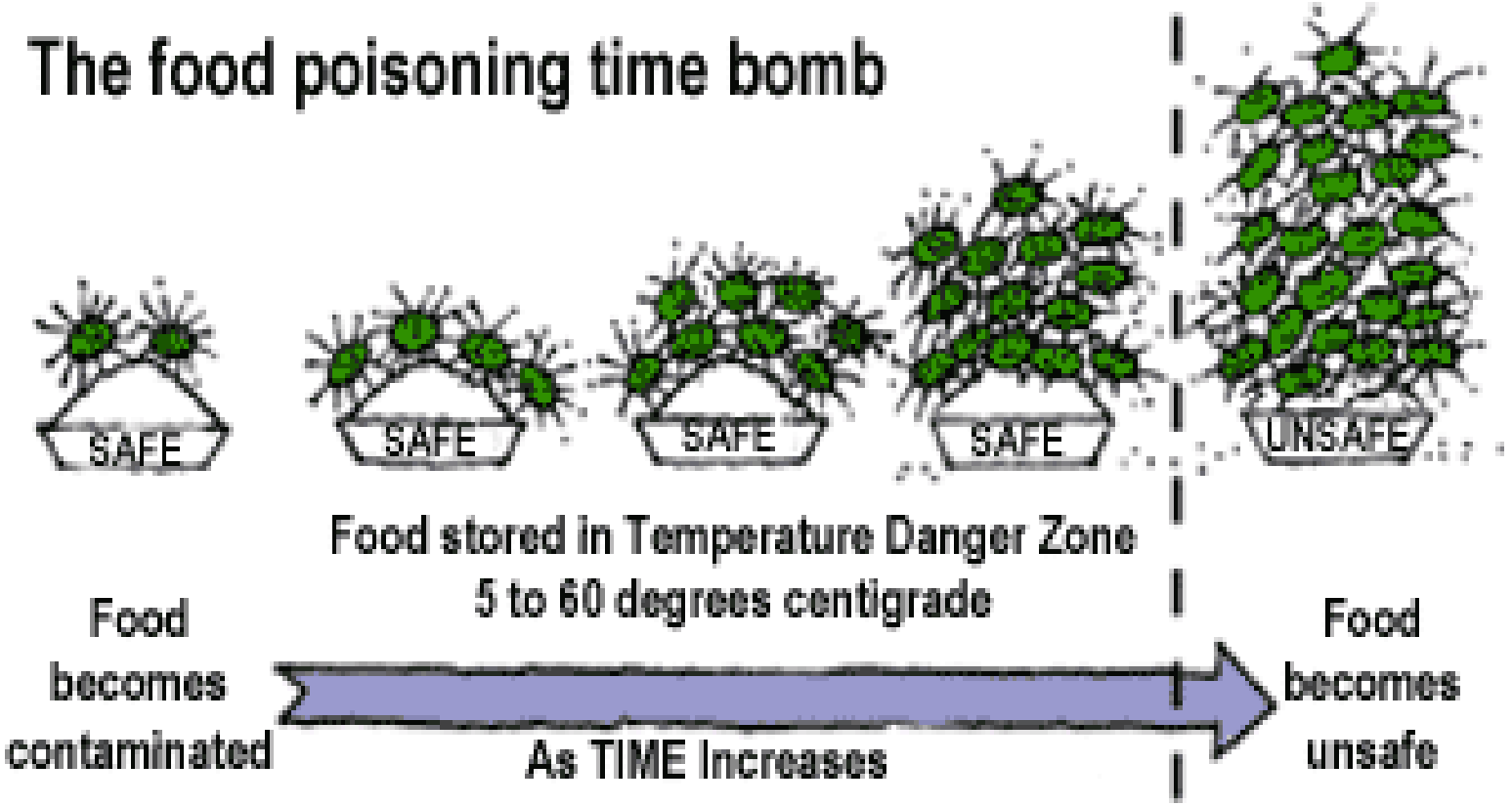
Risks in produce processing

Event	Contamination Source
Production and harvest	
- Growing, picking, bundling	Irrigation water, manure, poor filed sanitation
Initial Processing	
- Washing, waxing, sorting, packaging	Washing water, handling
Distribution	
- Transportation	Ice, transportation vehicle
Final Processing	
- Slicing, squeezing, shredding, peeling, canning	Washing water, handling, cross-contamination

Factors contributing to food poisoning outbreaks



Food Poisoning Time Bomb



Strategies to prevent food poisoning

To ensure food does not become contaminated:

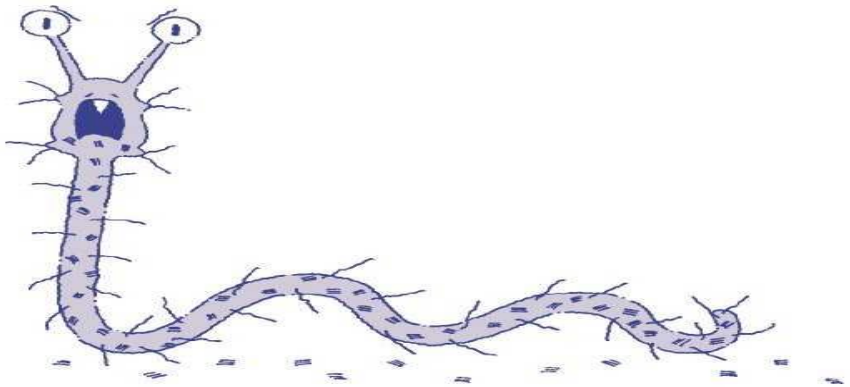
1. Keep hands and nails clean
2. Keep the kitchen clean
3. Handle food safely.

To kill or slow down the growth of micro organisms:

4. Cook high-risk foods thoroughly
5. Keep hot food hot and cold food cold.

Keeping hands and nails clean

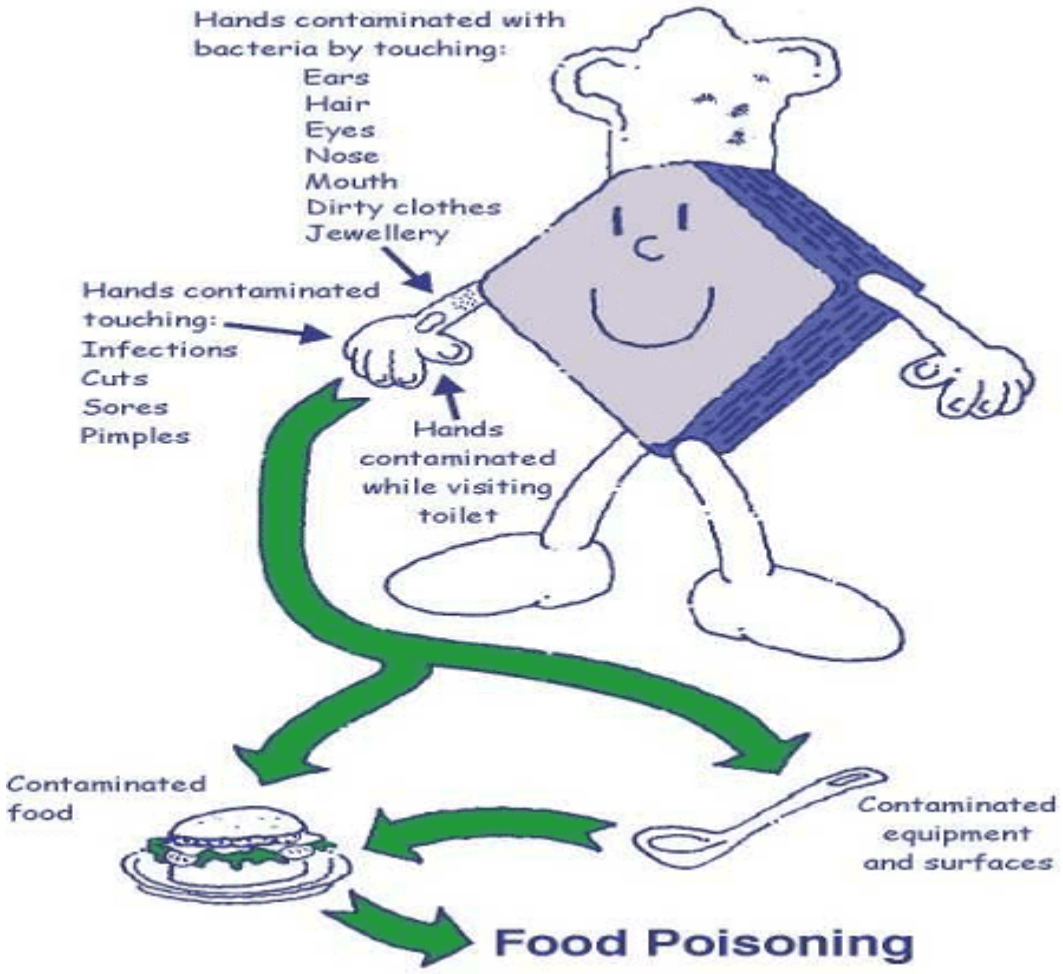
- We need to:
  - wash hands and nails thoroughly with warm, running water and soap
  - dry hands thoroughly
  - cover cuts and infections on hands



Washing Hands and Nails Thoroughly!

- We should wash our hands:
  - before eating, preparing or handling food
  - between handling raw meat, poultry and seafood, and handling cooked food or food that will be eaten raw
  - after coughing and sneezing, using a handkerchief etc
  - after going to the toilet
  - after handling rubbish
  - after touching animals
  - after handling chemicals (e.g. cleaning products).

Transfer of Microorganisms by Hands



Keeping Kitchen Clean

- When cleaning plates and equipment, we need to:
  - scrape and rinse off surface food.
  - wash in clean, soapy water.
  - rinse in clean water.
  - air dry where possible.
  - if drying immediately, use only a clean, dry towel.

Keeping Kitchen Clean: Pest and Animal Control

- We need to:
  - stop pests such as cockroaches and mice coming into the area where food is kept.
  - discourage pests by not leaving food or dirty dishes out on the benches.
  - keep animals out of the kitchen.

Handling Food Safety

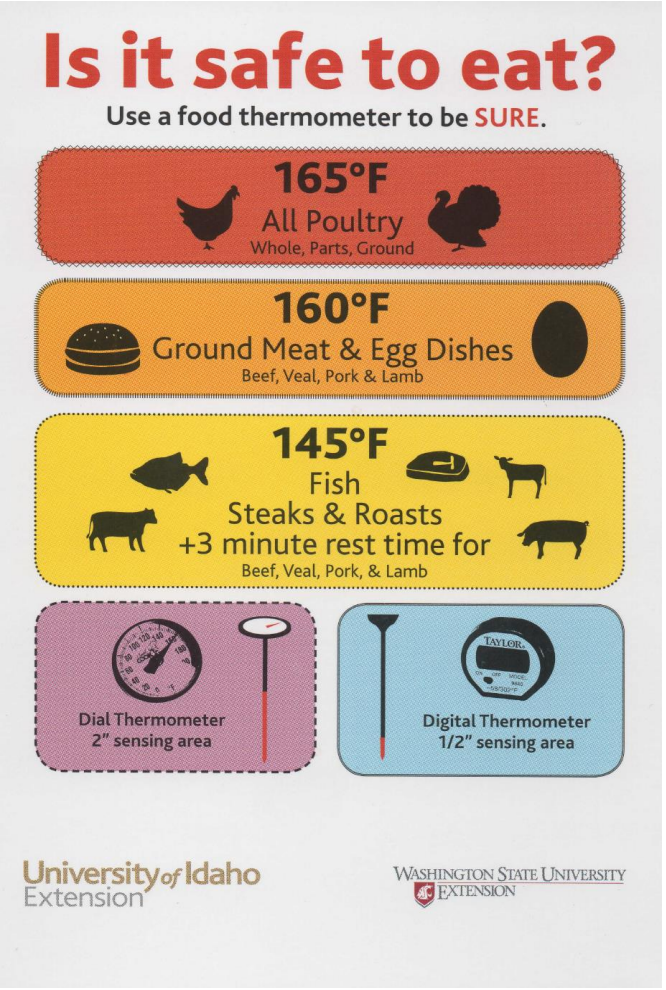
- We need to:
  - avoid preparing food when sick or feeling unwell.
  - keep raw meats, poultry and seafood separated from cooked food and food to be eaten raw.
  - protect food in the refrigerator by placing in covered containers or covering with plastic wrap.
  - use clean equipment, plates or containers to prevent contamination of cooked food (or food that will be eaten raw) with traces of raw food.

Handling Food Safety (continued)

- We need to:
  - use clean equipment, rather than hands, to pick up food.
  - wear clean clothes or a clean apron.
  - wash fruit and vegetables to be eaten raw under running water.

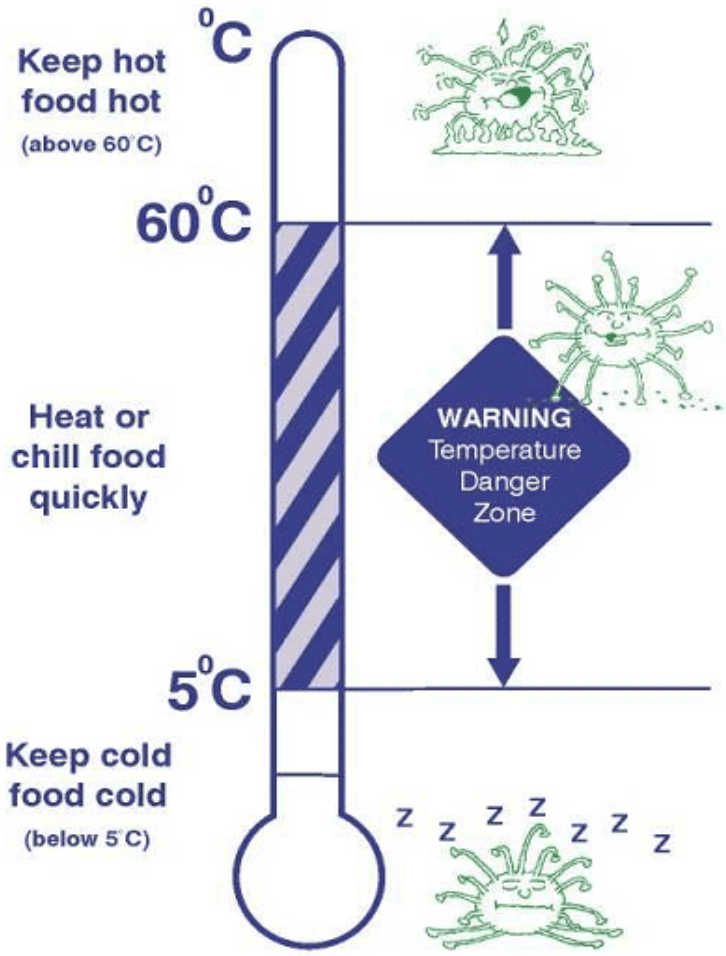
Cooking high-risk foods thoroughly

- We need to cook thoroughly food such as:
  - Mince
  - Burger patties
  - Sausages
  - Rolled roasts
  - Stuffed meats
  - Rabbit
  - Seafood
  - Poultry



Keeping Hot Food Hot and Cold Food Cold

Avoid keeping food in the temperature danger zone of
5℃ - 60℃



Bacteria die

Bacteria grow

Bacteria stop growing

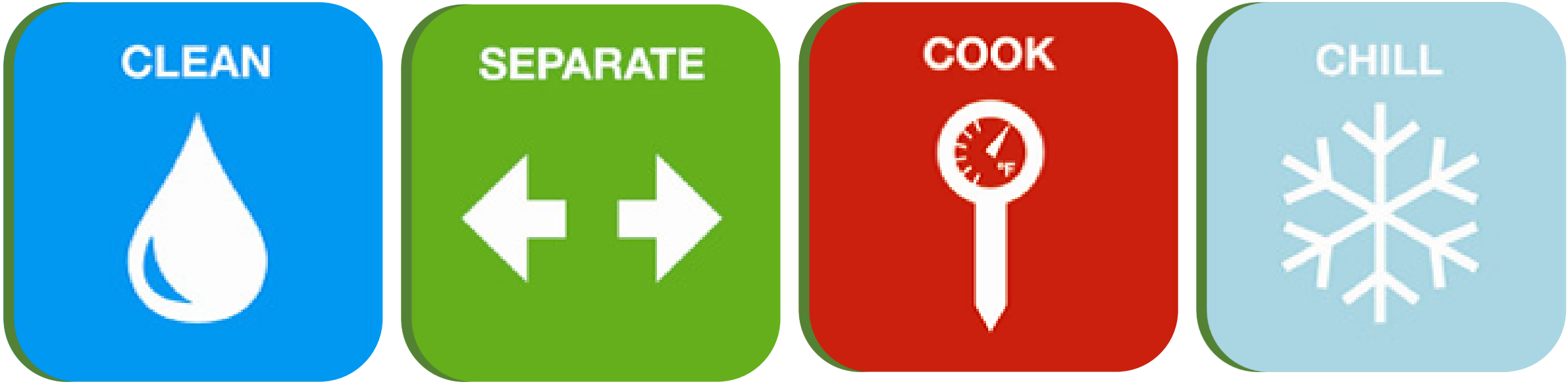
Keeping Hot Food Hot

- We need to:
  - keep cooked food at 60°C or above until served.
  - refrigerate or freeze food that is to be prepared well in advance and reheat until steaming hot before serving.
  - cook or reheat packaged food strictly in accordance with any directions on the label.

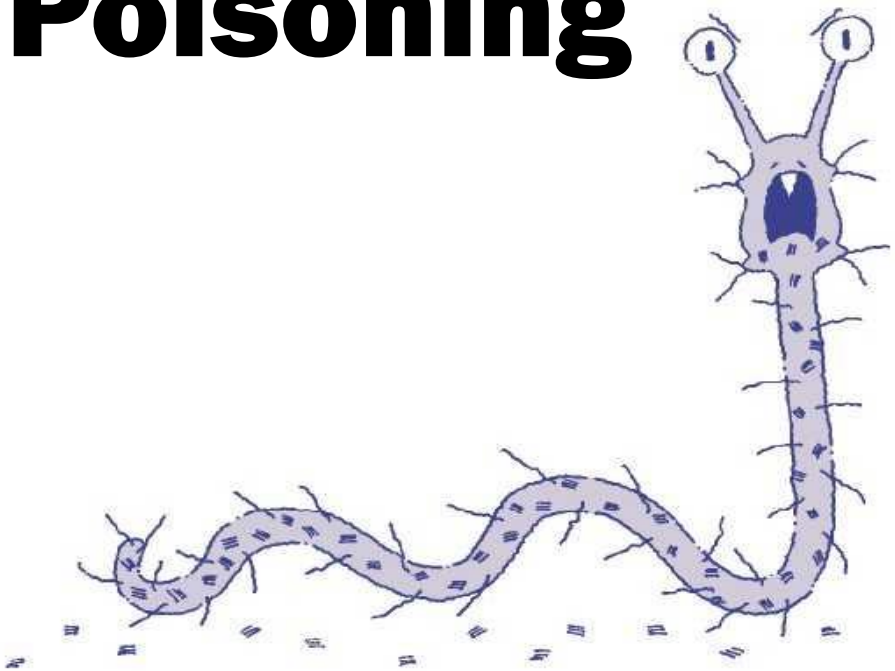
Keeping Cold Food Cold

- We need to:
  - take cold groceries home to the refrigerator quickly as possible.
  - keep chilled and frozen food cold if it will be a long time before it can be placed in a refrigerator or freezer.
  - store cold food at 4°C or less.
  - keep cold food in the refrigerator as much as possible.
  - thaw frozen food in the refrigerator or microwave.
  - store and handle cold food according to any directions on the label.
  - check the temperature of the refrigerator regularly.

4 Simple Steps to Keep your Food Safe



Summary: Prevent Food Poisoning



We need to:

- keep hands and nails clean.
- keep the kitchen clean.
- handle food safely.
- cook high-risk foods thoroughly.
- keep hot food hot and cold food cold.

Questions?