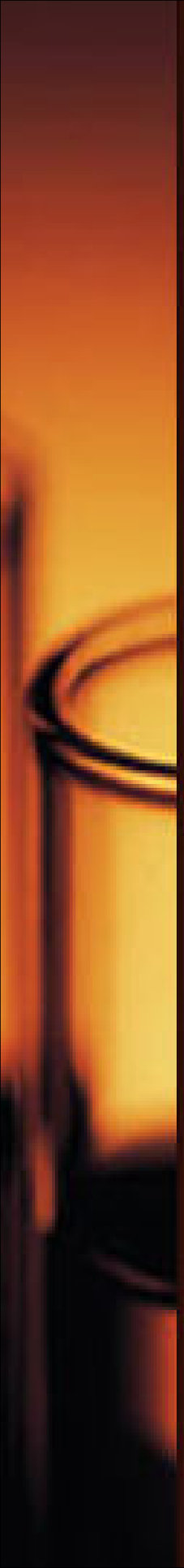
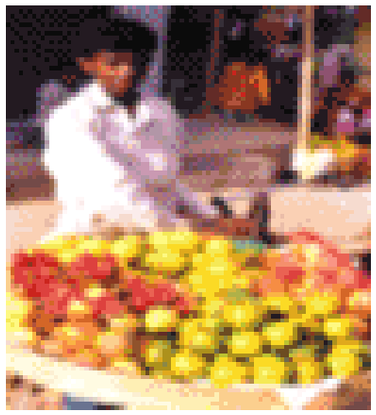
# Food Safety, It's In Your Hands



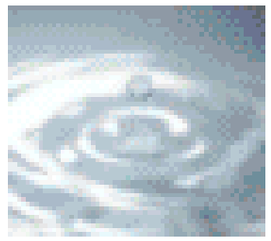
# Food Contamination

## Physical
## Chemical
## Biological

# SOURCES OF FOOD CONTAMINATION



RAW MATERIALS / INGREDIENTS



WATER

AIR / DUST

SOIL

FOOD

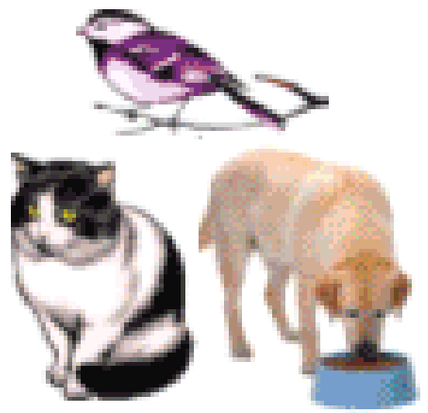
FOOD HANDLERS / MAN

PACKAGING MATERIAL

GARBAGE & SEWAGE

RODENTS

INSECTS



ANIMALS & BIRDS

Taken from: http://www.foodsafetyindia.nic.in/sourcecontamination.htm

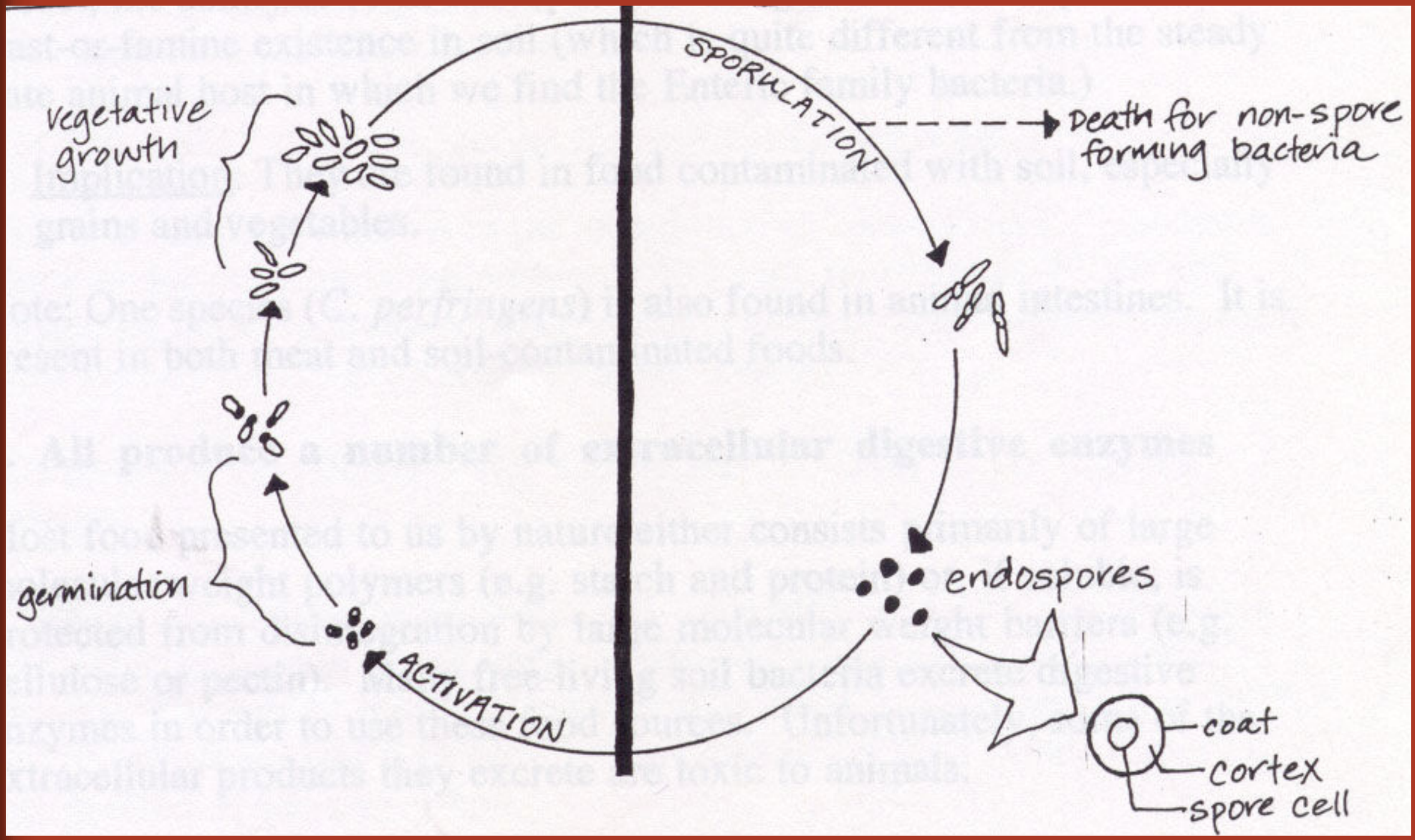
# Keeping Food Safe

http://courses.washington.edu/z490/gmo/gmo.jpg

- Consider FAT TOM to control food born illness
  - F. Food
  - A. Acidity
  - T. Temperature

  - T. Time
  - O. Oxygen
  - M. Moisture

# Bacteria




Taken from: Barrett, 1998: FST 104 Course Syllabus, Dept of Food Science & Technology, UC Davis

# Proper handling of food


1. *Clean* – Wash hands and surfaces often
2. *Separate* – Don't cross contaminate
3. *Cook* – Cook to proper temperatures
4. *Chill* – Refrigerate promptly



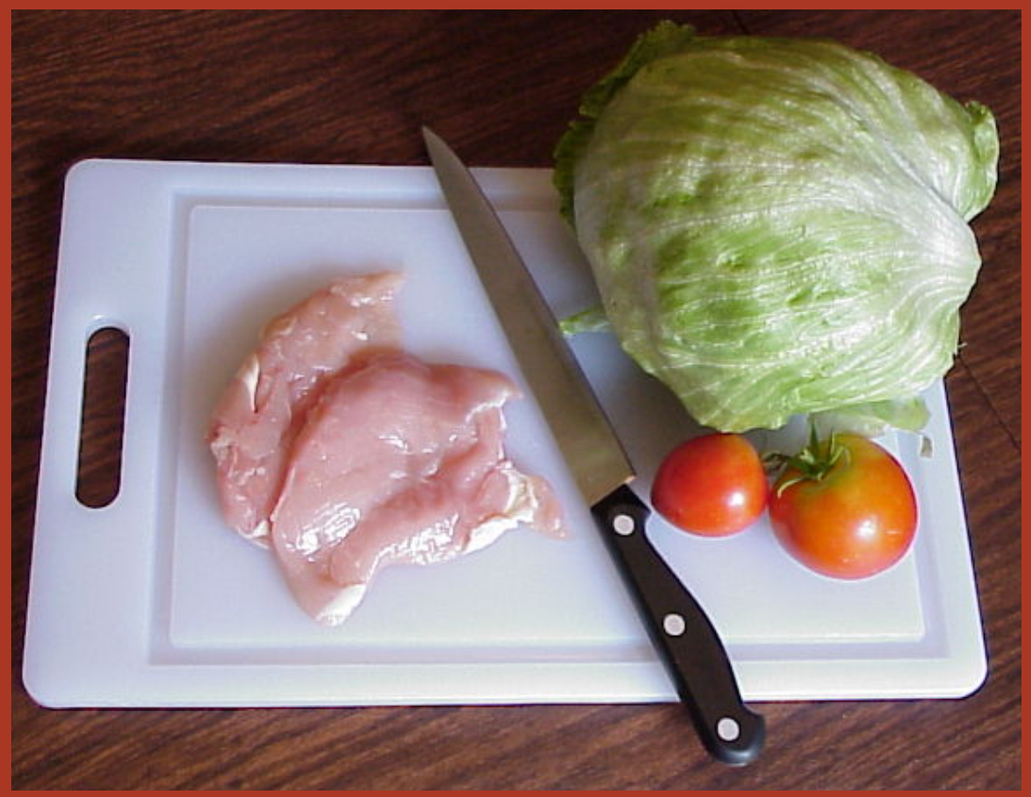
Taken from: http://vm.cfsan.fda.gov/~dms/ftt-15.gif

# 1. Wash hands & surfaces

- Wash hands, put bandages, wear gloves
- Hot running water, soap, scrub 20 sec (ABC's) to clean under nails
- Clean work surfaces, dishes, and equipments

# 2. Don’t cross contaminate

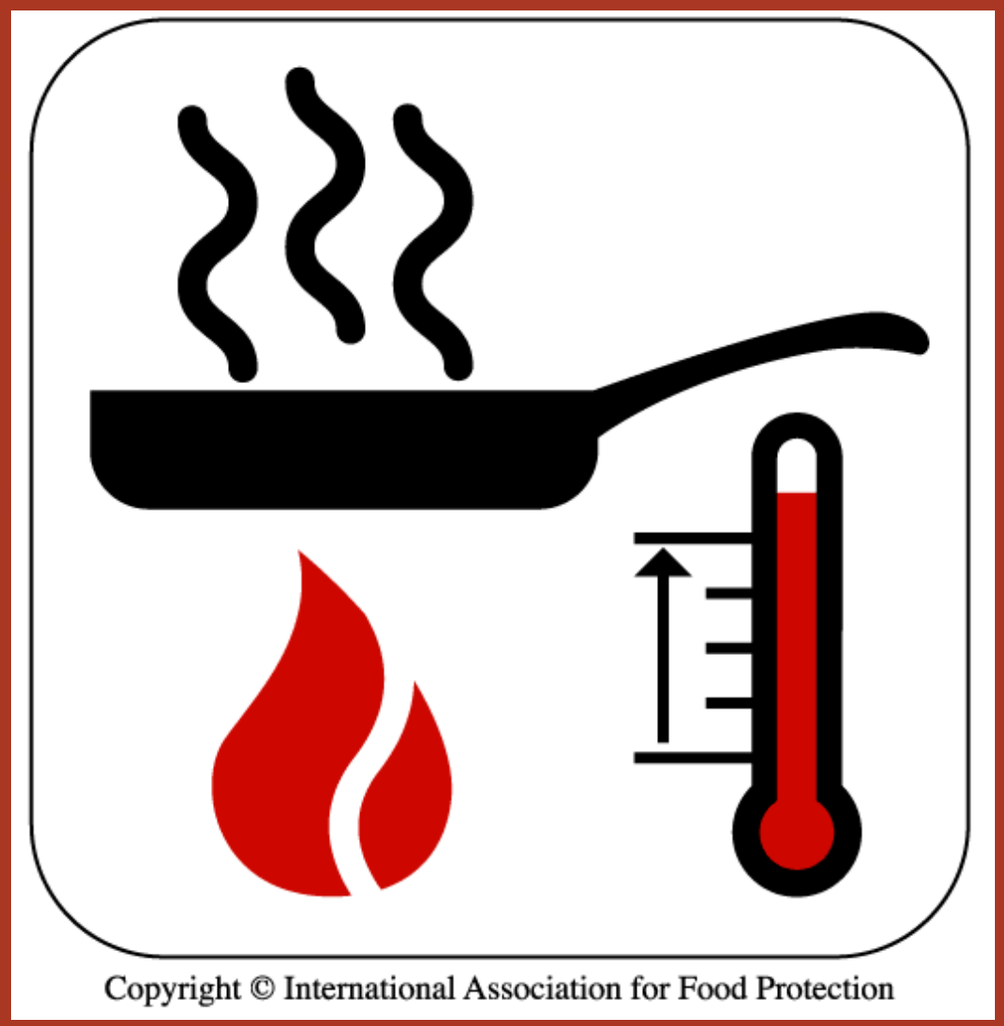
- Dirty cloth, unclean surfaces, contaminated cutting boards, dirty hands, poor storage
- Store ready-to-eat food above raw ingredients





Picture taken from: http://foodsci.k-state.edu/whatsnew/cutting.jpg

# 3. Cook to proper temperature

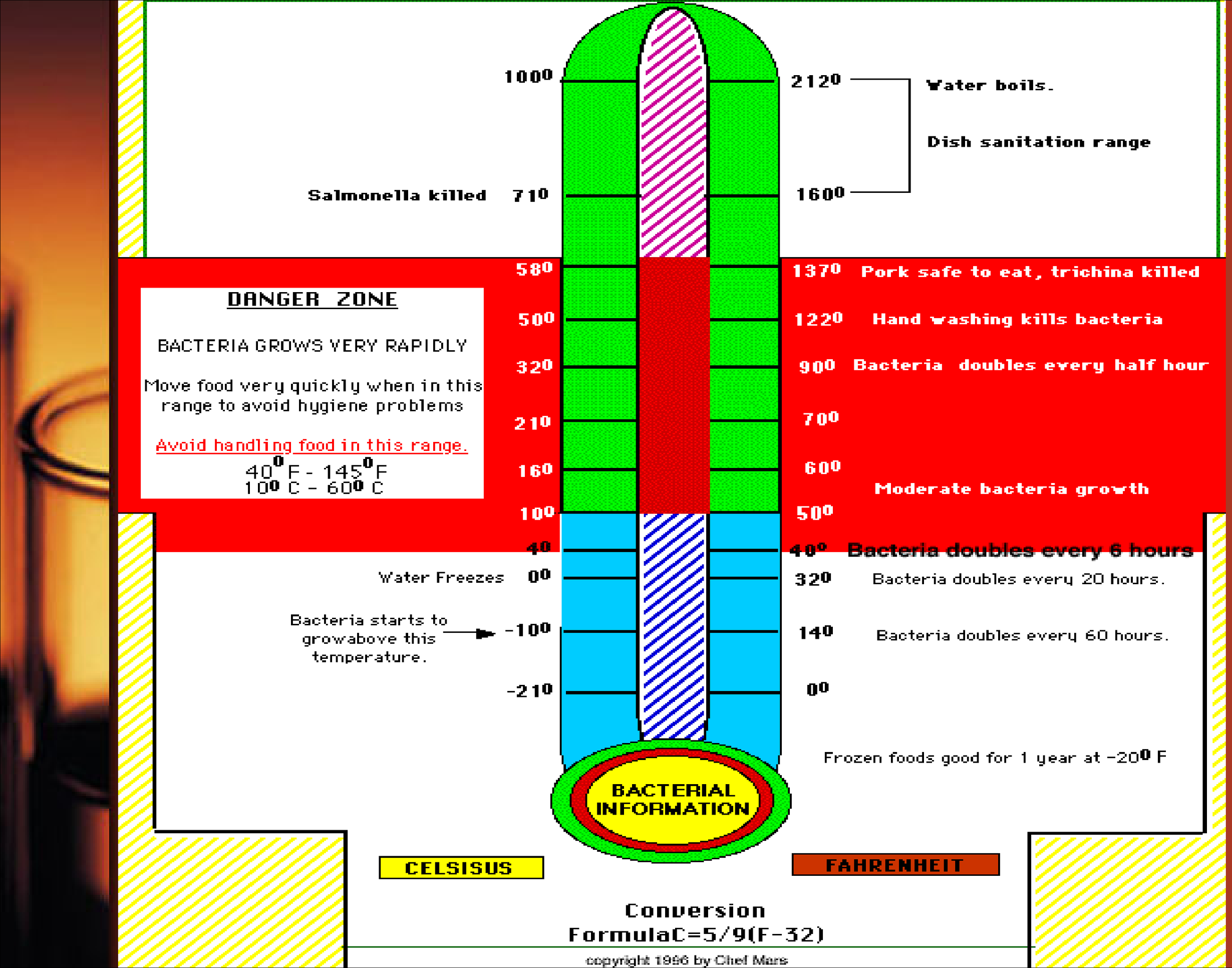



- Improve sensory and kill pathogens
- “Color” is not a good indicator for meat

- Trust your thermometer? CALIBRATE

# 4. Refrigerate promptly

- Danger zone: 40 – 140° F
- “Keep hot food hot and cold food cold”
- Preparation + service + cooling < 4 hours
- Refrigerator: at or below 38°F
- *Rapid cooling*:
  - Cut or separate into smaller portion
  - Use shallow container, less than 2 inches deep
  - Put in refrigerator promptly



# Remember, keep your food safe:  Protect your guests.

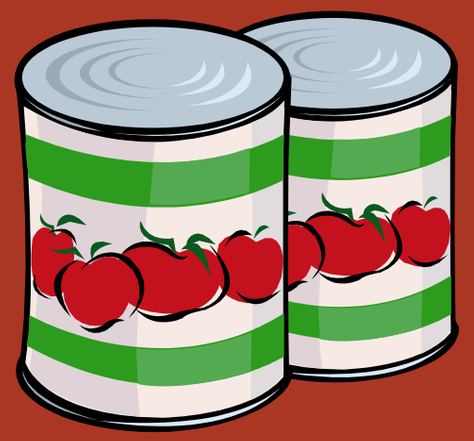
http://courses.washington.edu/z490/gmo/gmo.jpg

# Food Preservation

- Prevent or delay microbial decomposition
  - Keeping microorganisms out (asepsis)
  - Hinder growth & activity by manipulation of pH, T, $A_w$, anaerobic, chemicals
  - Kill the microorganisms

- Prevent or delay self-decomposition
  - Destroy or inactivate enzyme by manipulation of pH, T, Aw
  - Prevent or delay chemical reaction by antioxidant, edible coating, packaging

# Methods of Preservation



- Temperature control
  - High temperature: destroy microbes & enzymes
  - Low temperature: control growth of microbes
- Moisture control
  - Drying, freezing, sugaring, salting
- Preservative
  - Acid, antioxidants, propionates, etc
- Ionizing radiation