

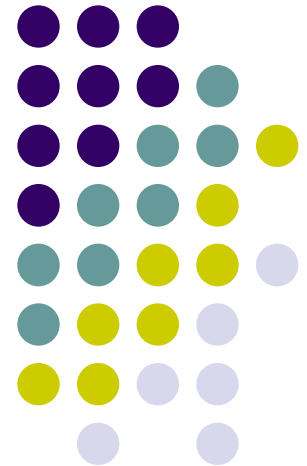
Program to Control *Listeria* *monocytogenes*

In retail and deli establishments

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Agenda

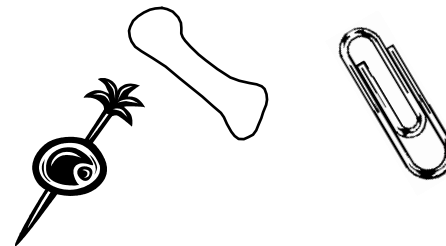


- Introduction
- Sources of (*Lm*) in retail and deli establishments
- Why are we concerned with *Listeria monocytogenes* (*Lm*)
- Factors that contribute to the presence of *Lm* in retail and deli establishments
- How to implement a program to control *Lm*
- Preventives measures and control of food hazards and *Lm* growth
- Monitoring, verification and recordkeeping
- Recall plan



Foodborne hazards

- Biological
 - bacterias, virus, parasites
- Chemical
 - Pesticides, cleaning agents, allergens
- Physical
 - Clips, paper, glass, metal fragments, paper

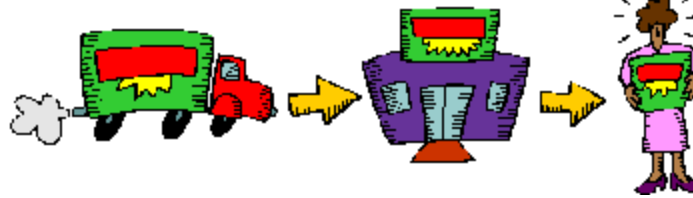
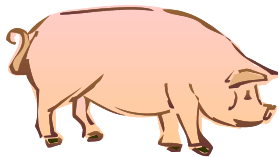


They can find their way into food in any step in the food chain



Food chain

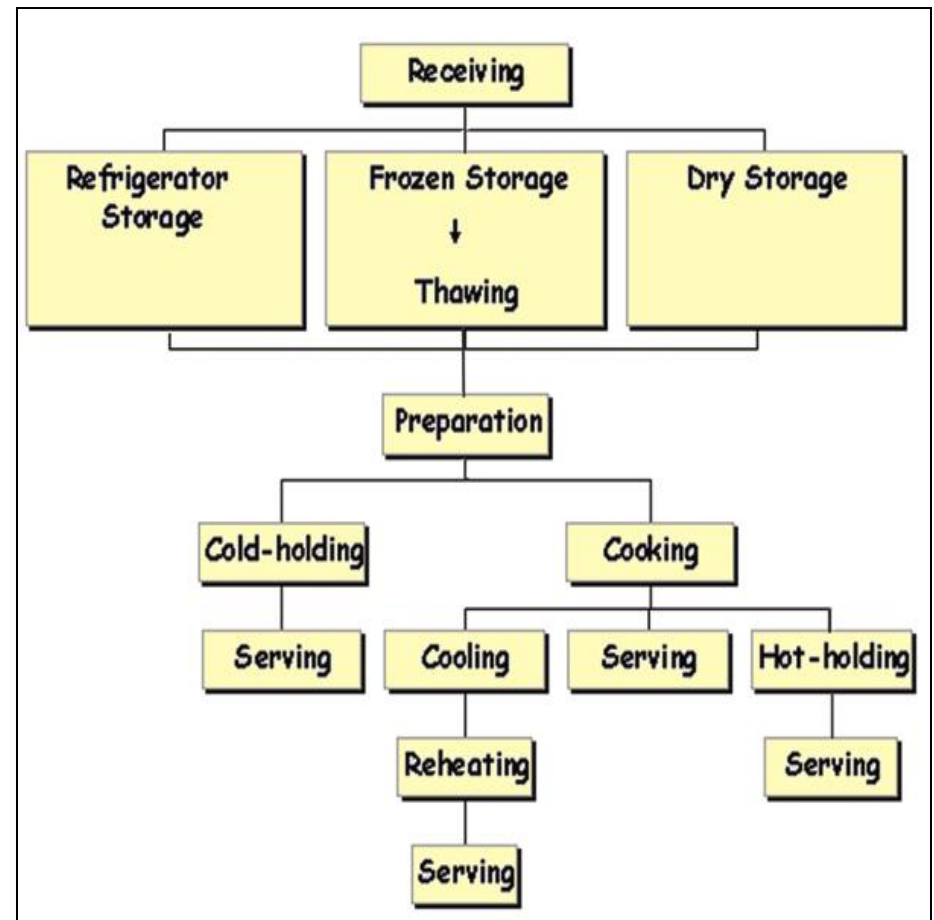
- **Food chain includes all the steps from the farmto the table**
- **Food can be contaminated in any of these steps if food hazards are not properly controlled.**



Food flow in retail establishments



- Begins with the purchase and receiving
- Finishes when the customer pays and food is bagged



Sources of food borne hazards

Retail and Deli Environment



✓ People

- ✓ Food handler, vendor, customers

✓ Food-contact surfaces

- ✓ Equipment, packing material
- ✓ Cracks in preparation table

✓ Environment

- ✓ Water, air, soil, chemicals,
- ✓ Wood, plastic, glass

✓ Food products



Factors that contribute to FBI in food service and retail establishments



- **Incorrect holding time and temperature** **64.4%**
- **Inadequate food handlers hygiene** **23.5%**
 - **Sick employees working**
 - **Poor hand washing practices**
- **Improper cleaning and sanitation of equipment or food contact surfaces/protection from contamination** **23.4%**
- **Other/Chemical** **21.9%**
- **Improper cooking practices of food** **9.2%**
- **Food from unsafe source** **5.0%**

<http://www.cfsan.fda.gov/~dms/retrsk2.html>

Challenges in retail and deli environments

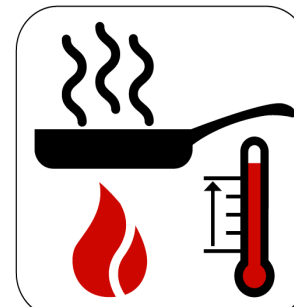


- Open to public
 - Persons are continuously coming and going
 - Clients, employees, vendors
 - Delivery personnel
- Environment difficult to control
 - Inadequate food flow
 - Food variety
- Equipments maintenance
- Floors and drains improperly cleaned

Why are we concerned with *Listeria monocytogenes* ?



- Cause of significant number of hospitalizations and deaths
- Can be found in Ready to Eat Food (RTE)
- RTE food do not require additional cooking before consumption
 - Cooking reduces the risk of *Lm* presence in food



Why are we concerned with *Listeria monocytogenes* ?



- Control de *Lm* is a challenge in retail and deli environments
- Major concern is recontamination of RTE Food
- Last decade there were more that 150 recalls due to possible presence of *Lm* in RTE food



Why are we concerned with *Listeria monocytogenes* ?



- Can be pass to food by direct contact with contaminated surfaces or equipment
- Grow at low temperatures and moist environments regularly found in retail and establishments
- Food residues found in improper clean equipment and surfaces may provide the nutrients for biofilms formation
- *Lm* is found all around us



Why are we concerned with *Listeria monocytogenes* ?



Lm is a major concern in deli and retail environments because.....

✓ Slicing and packing of cold cuts in deli counters present a significant source of <i>Lm</i>	Compliance
✓ Deli comply with the Food Code	73%
✓ Adequate time and temperature control was observed	43%
✓ Opportunity for equipment cross contamination with <i>Lm</i>	79 %

FSIS reports on Assessing the Effectiveness of the “Listeria monocytogenes” Interim Final Rule

Small plants have in place good control measures to control *Lm*



- Rigorous personal hygiene practices
 - Foot baths
 - Door ways
 - Control of food flow in process areas
 - Hand sanitation stations
 - Protective clothing
- SSOP's
- HACCP programs





THE OUTBREAK - 1998

- It was not caused by retail establishments
- However was a very important one
 - 15 deaths
 - 6 miscarriages
 - 1 million Pounds of product recalled
 - Brought new regulations to control *Lm* in small plants
 - *Ready to Eat food that may contain Lm* is consider adulterated and can not be sold
 - Zero tolerance politics in RTE Food

How to prevent Food Born Illnesses (FBI)



Key points:

- **Prevention of cross contamination**
- **Adequate cleaning and sanitization practices of food-contact surfaces and no food-contact surfaces**
- **Good personal hygiene**
- **Prevent temperature abuse by adequate controlling time and temperature**

At all steps across the food chain

Best Practices & Standard Operating Procedures (SOP)



- Terms commonly used to describe all steps to perform a job.
- They must be clearly written and explained to the employee performing the task and adequately performed.

Standard Operating Procedures



- Name of the task or process to be done
- Implementation date of the SOP
- Area or department that will use that SOP
- Detail of the activity to be realized
- Documents to verify that task are done as described
- Approval signatures

Recommendations



- ✓ Develop a training program, special attention given to hygiene practices to control *Lm*,
- ✓ Develop a written sanitation program
- ✓ Develop a program for time and temperature control, specially with high risk food
- ✓ Microbiological testing of the environment and food-contact surface.

Recommendations



- Develop a personnel hygiene program for employees and other personnel
 - Health, Hygiene practices, dress code, training
- Program for the control of sanitary conditions in the interior or exterior of the establishment
 - Design and construction
 - Food and personnel flow
 - Drainage
- Sanitary Operations Procedures
 - General maintenance
 - Cleaning and Sanitation
 - Pest Control
- Sanitary facilities and control
 - Water, plumbing, waste disposal
- Maintenance and calibration of equipments
- Refrigerator and Freezers
 - Monitored for adequate control of temperature
 - Record keeping
- Recall Program
 - Every retail establishment should have in place a recall program
 - Conduct a mock tests to determine if the program works

Implementation of a Program to Control *Lm* involve



1. Preventing cross contamination
2. Cleaning and sanitation properly
3. Controlling of time and temperature
4. Practicing good hygiene

Program include

- Hazards Identification
- Control measures
- Monitoring
- Correctives actions
- Verification
- Records



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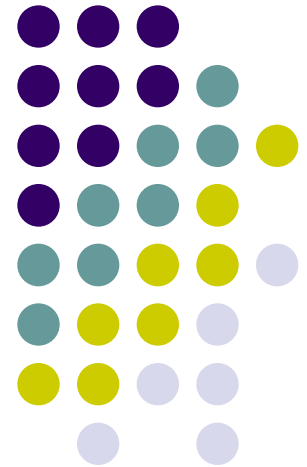
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1. Controlling Cross Contamination

Hygiene practices,
Food handling SOP
Equipment maintenance
Traffic control



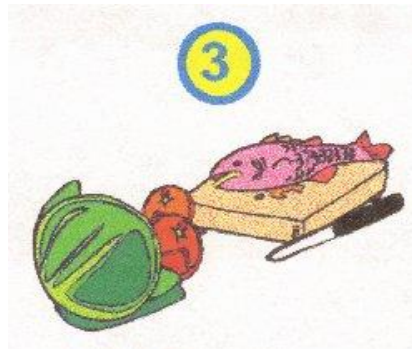
Cross Contamination, what does it mean?



Cross contamination occurs when microorganisms are unintentionally transferred from a surface to another

Sources of contamination can be:

- **Food employees hands,**
- **Raw food**
- **Dirty utensils or equipment**
- **Environment**



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How do contamination is transferred from one place to another?



- People with dirty hands, apron, gloves, cloth, shoes and/or boots
- Dirty equipment, containers or utensils
- Shopping carts or pallets used to move food within the store
- Water: Condensation or sprayed
- Dirty fans will spread the contamination
- Dirty floors and drains



How to control cross contamination?



- Proper personal hygiene and health of employees
- Separate raw and RTE products at all times
 - during preparation, storage, display
- Clean and sanitize every 4 hours contact surface
- Proper food flow
- Vendors program
- Traffic control



a. Personal hygiene and health



- Lack of personal hygiene, specially incorrect hand washing is one of the main causes of FBI.
- Correct hand washing is important to prevent that pathogens presents in the feces find their way into food.



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a. Personal Hygiene



- ✓ Food handler, employees
- ✓ Clients
- ✓ Suppliers and vendor

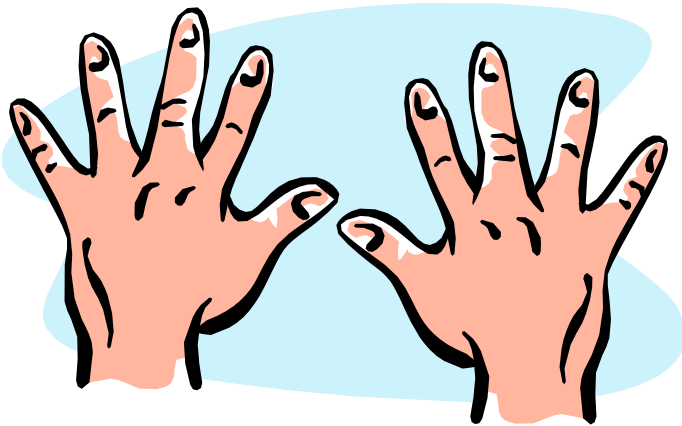
Good personal hygiene includes:

- Daily shower
- Proper dress code and use of clean apron
- Frequent hand washing
- Good Health:
 - Employees can be host of pathogens
- Adequate food handling of food products



a. Hygiene... Clean Hands

All employees should have
clean hands and exposed
arms.



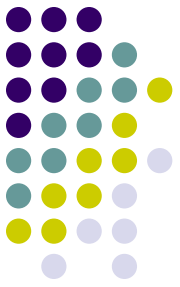
Hands are an excellent source of microorganisms
(**Cross contamination**)

a. Personal hygiene ..

When to wash



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- **Before ...**
 - **Beginning work**
 - **Handling raw PHF**
 - **Handling RTE**
 - **Handling gloves**
- **During...**
 - **Food preparation as often as needed to maintain hands clean**
- **When changing tasks...**
 - **Handling raw products and then handling RTE products**
- **After ...**
 - **Using the toilet**
 - **Touching the face, hair**
 - **Touching a contaminated surface**
 - **Using the telephone**
 - **Pick up garbage from the floor**
 - **Sneezing, coughing, smoking, eating**



Where to wash your hands

- **Not in the three compartment sink or service sink**
- **But in a hand washing station fully equipped and located in**
 - **All food preparation areas**
 - **Food dispensing areas**
 - **Ware washing areas**
 - **In or adjacent to a toilet room**
 - **Behind the bar counter**



How to wash your hands....



- ◆ Wet your hands in water at 100°F
- ◆ Apply soap from a dispenser
- ◆ Briskly rub your hands for at least 20 seconds
- ◆ Scrub between fingertips and between fingers
- ◆ Scrub exposed forearm up to the elbows
- ◆ Rinse forearms and hands
- ◆ Dry forearms and hands
- ◆ Turn off water using paper towel
- ◆ Turn doorknob and open door using paper towel
- ◆ Discard paper towel

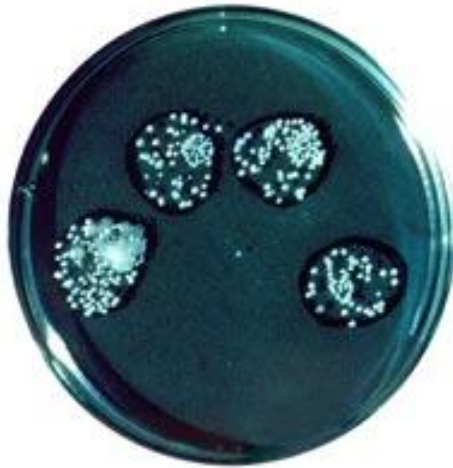
Hands



Dirty Hands



Rinsed hands



Hands washed with soap
and water for 20 sec

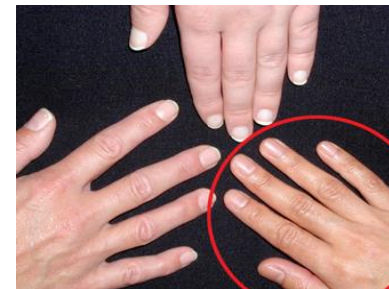


Hands washed with soap
for 20 seconds and then
sanitized.

Additional hygiene practices



- No jewels, no nail polish
- Use of hair restrainer
- Clean uniform and apron
- No eating or smoking are allowed in food preparation areas



Personal Hygiene

NO sick employees are allowed to work



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Problem: Hand contact with RTE-food, talking, coughing or sneezing during food preparation is not allowed

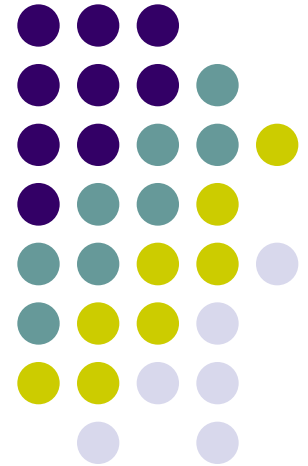
Key points:



- ☑ Are all of the food handlers being trained in food handling procedures and personal hygiene?
- ☑ Are hygiene practice part of their every day work habit?
- ☑ Do supervisors and establishment's owners follow same hygiene practices?
- ☑ Do uniforms or apron have different color to distinguish employees that work with raw food and RTE food?
- ☑ Do food workers wear disposable uniforms, aprons, gloves?
- ☑ Do food handlers take precautions to prevent contamination from the package of RTE food when open?
- ☑ Are reusable packaging materials clean and sanitized prior to use?
- ☑ Are food packing material protected from contamination?

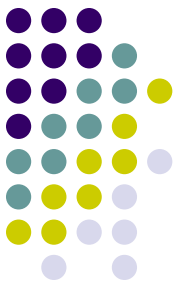
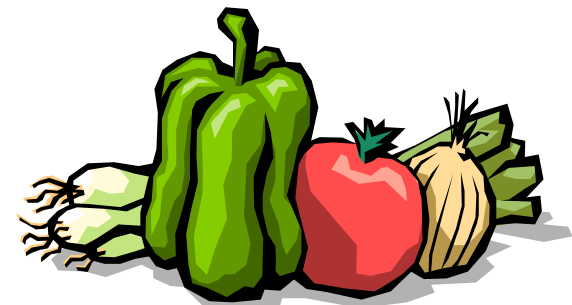
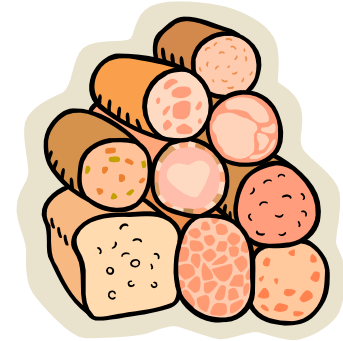
Control of Cross Contamination

b. Food and Environment



High risk food

- Deli meat and cold cuts
- Hot dogs that are not cooked
- Pate and meat spreads
- Smoked seafood
- Soft cheeses and without aged
- Raw or unpasteurized milk
- Food that grow near the soil
- Contaminated food
- RTE crustaceans



Listeria monocytogenes

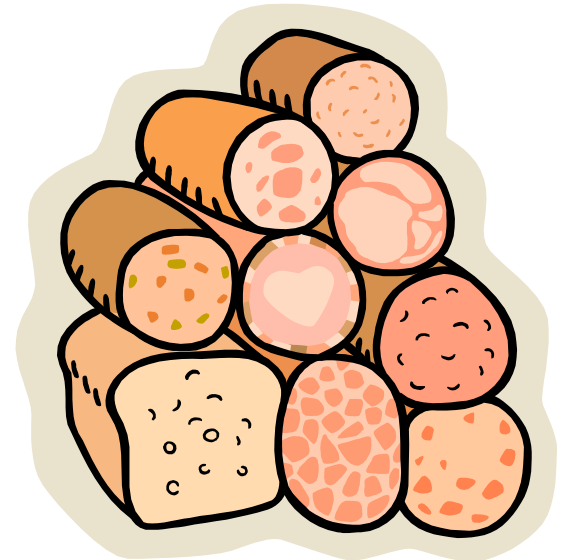
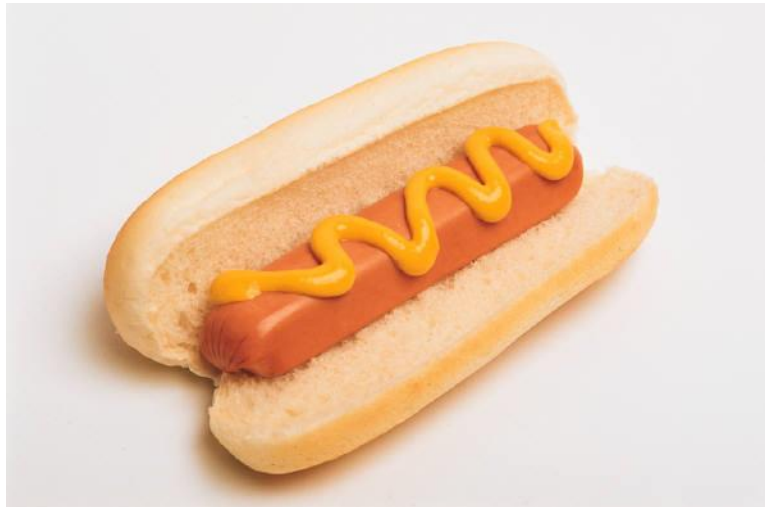


- Resistant to cold temperatures
- Resistant to salt, nitrite and acid
- Grows at temperatures between 33°F – 113°F
 - Refrigeration temperatures

Study conducted in 2000-2001 found that

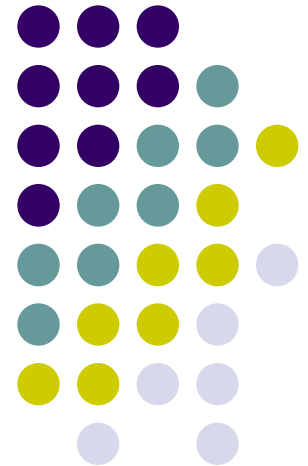


A risk analysis of 20 Categories of RTE was done and it was found that deli meats have a higher risk while hot dogs has a moderate risk to public health.



High risk food

Do you sell or handle any of this food in your establishment?



Program to control *Lm*



- Do not allow contaminated products into retail environment by:
 - Purchasing only from reputable suppliers that operate under HACCP
 - Requiring letters of guarantee or certificates of analysis that indicate they are free of pathogens
 - Written specifications

Control of Cross Contamination



- Use different utensils for RTE and Raw meat and poultry
 - Color code knives and cutting board helps
- Protect packing material
- Establish a cleaning and sanitation program



Controlling cross contamination



- Have a central kitchen for salads that are distributed in smaller volumes to each store
- Train employees on proper personal hygiene with emphasis on hand washing, gloving and no direct hand contact with RTE food.

c. Traffic or food flow design



- Separate raw and RTE food during
 - Preparation
 - Storage
 - Display
- Minimize the number of times a food is handled and length of time it is in the danger zone
 - Slicing, reworking, repacked
- If possible, assign the task of working with RTE food to specific employee



Lm and Construction

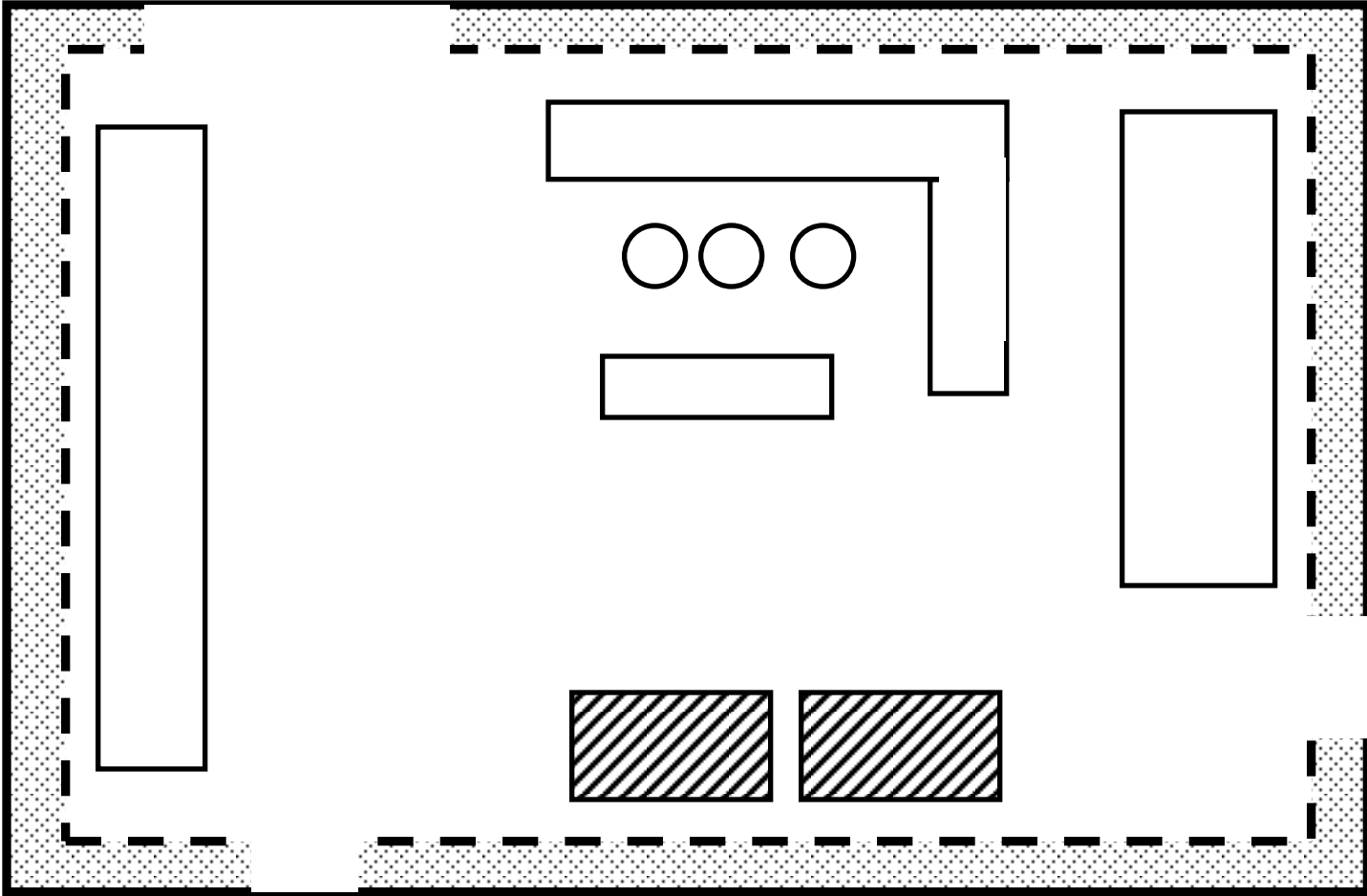
- Remodeling or even minor constructions on going in a establishment generate a lot of dirt in the air and contaminates the food-surface contacts
- It is recommended to increase monitoring product and frequency of sanitation activities on food-contact surfaces **during and after** these disruptive events.



Space and storage space is important



18" between interior wall and equipment and equipment and stored material



Environmental Factors



Nonfood-contact surfaces

- Floor, walls, drains
- Wheel of carts
- Pallets
- Rodent bait stations
- Pest control equipment
- Air fan
- Waste container
- Cleaning and Sanitation equipment and materials
- Wet areas
- Equipment surfaces
- Condensation

Food-contact surfaces

- Equipment difficult to clean
- Cracks in preparation table or cutting boards
- Ice machine
- Packing machine
- Dirty display units
 - Air vents, condensation
- Balances
- Knives
- Gloves

- There is a lack of information of the incidence *Lm* in retail establishments



Maintenance program

- Equipment maintenance program
 - Replace equipment and food contact surface as needed
- Access
- Prevent contamination
- Training in cleaning and sanitizing procedures, monitoring, verification and record keeping.

Monitoring and Verification of Hygiene Practices



Is hand washing required?

Is it monitored?

Do employees report if they are sick?

Do they change gloves and apron when they are dirty or change task such as raw food preparation and then RTE food preparation?

Is the environment and equipment in sanitary conditions?

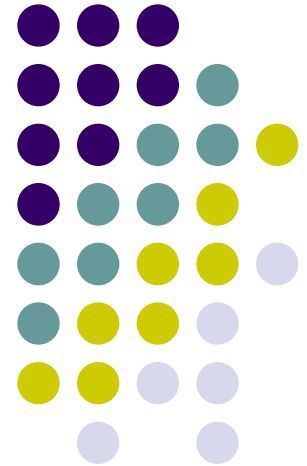
**Prevention of
Cross
Contamination**

2. Cleaning and disinfection



The person in charge or managers should implement an effective cleaning and disinfection program for the environment, food-contact and non-food contact surfaces.

This topic was presented previously.



Cleaning and disinfection



Key points

- *Lm* can grow if cleaning and sanitation is not done properly
- Should be a written program
- Equipment and materials used for this purpose should be clean and kept in a place where they do not contaminate food, food-contact and nonfood contact surfaces.
- Prevent the formation of biofilms
 - They form in wet surfaces
- An effective sanitation program increase the durability of the equipment and requires less maintenance



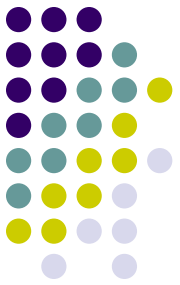
Cleaning and disinfection

Remember that:

- Dirt is not always visible.
- Any surface that have not been sanitized should be considered dirty.
- Cleaning program include fans, displays, slicer, light, locks, etc

Key controls are:

- Purchase proper and easily cleanable equipment and materials
- Select the proper type of detergent and sanitizer for the surface and water.
- Adequate concentration, temperature and exposure time
- Monitor the program
- Train the employees on what does clean and sanitize means
- Equipment should be free of cracks, accessible
- Clean and sanitize food-contact surface at least every 4 hours



Pest Control



- Integrated Pest Management
- Certified Operator



Integrated Pest Management and Control Program...



Based upon the following:

- Inspection
- Identification and sampling
- Exclusion
- Control measures with chemicals
- Control measures without chemicals
- Records
- Communication



Cleaning and Disinfection Program to Control *Lm*



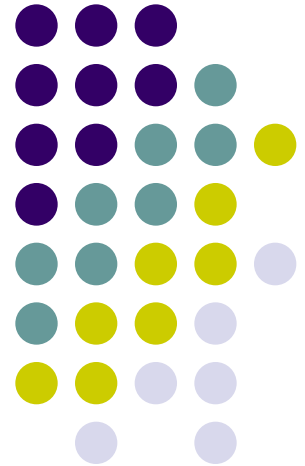
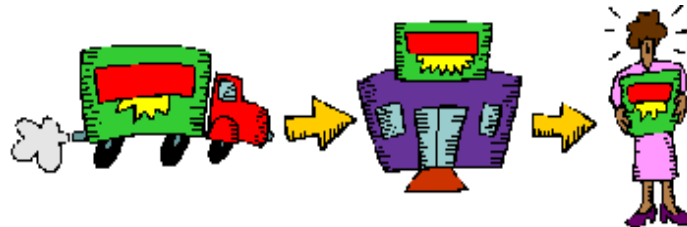
- Verify that controls are effective
- An environmental testing program can be a means of verification



Controlling Time and Temperature

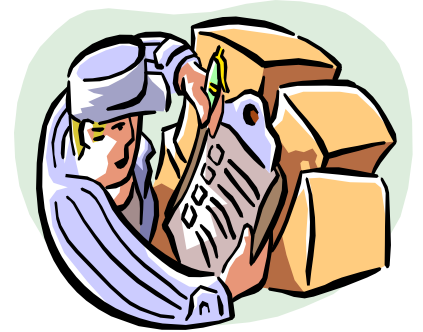


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- Receiving cold food, cold, at 41 F or colder
- Maintain internal temperature of cold food at 41 F or colder
- Maintain refrigeration units at 39°F or colder to be able to maintain food at proper temperature
- Monitor the temperature at of the refrigeration units and food products using calibrated and sanitized thermometers
- Record the temperature during receiving, storage and display of food products.
- Describe corrective actions



Receiving



- Use your senses
 - Look, touch, smell for signs of deterioration
 - Putrid smell, sticky texture, discolorations,
 - Signs of temperature abuse such as freeze-thaw

Preparation



- In a product prepared with several ingredients with different expiration date the expiration date is based in the ingredient with shorter shelf life.
- Prepare small portions for immediate service.
- Label with the use by date or opened date.

Cooking - Hot food



- Cook food to recommended internal temperature
- Keep hot food hot, above 135 F (58 C)
- Monitor and record the final product temperature, exhibition and stem table temperatures

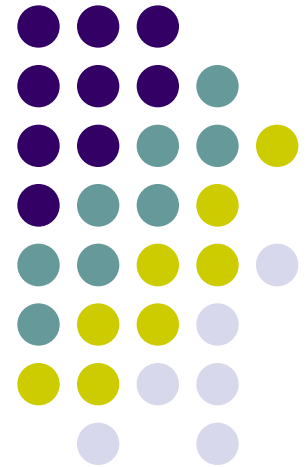


Storage



- Rotate food: First in first out for RTE products.
- Do not exceed expiration dates, or use by date.
- Potentially hazardous foods held at refrigerated temperature of 41 F or below in retail establishment and food service, once opened or prepared should be used or discarded within 7 days (Food Code).

Verification and Records



Verify that the program works



In house audits

- Direct observations
- Evaluating records
- Talking with employee



Evaluate each employee performance

- Tasks are easy to implement and are part of the regular duties
 - Use of correct hygiene practices
 - Provide proper recognition for work well done

Verify that the program works



- Verify critical factors process and records
 - Receiving, storing, preparation, exhibition
- Verify purchasing process and records
 - Letters of guarantee or certificate of analysis when applies
- Verify record keeping
- Third party auditing
- Microbial testing
 - Discussed in the next presentation

External or third party audits



- Unbiased and objective evaluation that tasks are performed as specified and food safety program is working as expect.

Record keeping



- Examine the records or log books
 - Monitoring systems for temperatures
 - Calibration of thermometer and other equipments
 - Jobs are properly done and completed
 - Records of temperatures do not exceed critical limits
 - Cleaning and Sanitation is conducted with the required frequency
 - Laboratories tests
 - Do they show a tendency?
 - Pest control program

Maintaining the *Listeria monocytogenes* Control Program



- Maintain a record keeping system
- Conduct internal and third party audits
- Assign employee time to maintain the food safety system
- Develop a recall plan
- Implement microbial testing

Maintaining a *Lm* control program



- Ongoing
 - Good retail practices
 - Employee continuous training
 - Review *Lm* control program if...
 - Changes in vendors or suppliers
 - Changes in facilities and equipment, new process
 - Internal and external audits are not satisfactory
 - New regulations or strategies
 - Check with local Health Department or regulatory agencies
 - Microbial testing
- Recall program in place



Recall: Defined by USDA/FSIS as....



- A firm voluntary removal of distributed meat or poultry products from the commerce when there is a reason to believe that such products are adulterated or misbranded under the provisions of the Federal Meat Inspection Act (FMIA) or the poultry products inspection act (PPIA).
- A recall is conducted to protect consumer health.

Basic elements of a recall plan



- Form a recall management team
 - Names, contact information, responsibilities
- Complaint records
- Recall contact list
- Communication strategy
- Traceability of the products
 - Coding and records
 - Production amounts (lots size)
 - Distribution records
- Recall products records
- Recall procedures
- Recall effectiveness records-
 - monitoring and log book
- Recall mock
 - Assemble recall team
 - Choose an item
 - Run the recall plan
 - Record all actions taken
 - Make changes if necessary

Summary: Implementation of a *Lm* Control Program requires



1. Identify possible hazards
 - Potential sources of *Lm*
 - How to prevent it
 - Establish control measures
2. Identify control points to
 - Prevent cross contamination
 - Prevent temperature abuse
 - Sanitary Standards Operating Procedures
 - Prevent growth of *Lm*

Summary: Implementation of a *Lm* Control Program requires



3. Establish critical limits
4. Establish monitoring for each control point
5. Establish corrective actions for each control point
6. Establish verification program
7. Maintaining a record keeping system

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**Remember....
That whatever you
prepare today can be
consumed by your family
tomorrow**



Food Safety is our
responsibility, and
is YOUR
responsibility

