Cleaning & Sanitizing in Small and Very Small Plants

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Purpose

The purpose of this presentation is to give a simplified overview of the cleaning and sanitizing processes and concepts for small and very small meat processing facilities.

Outline

- Cleaning & Sanitizing
- Materials Handling
- Equipment Design
- Facility Design
- Hygiene
- Review

Definition

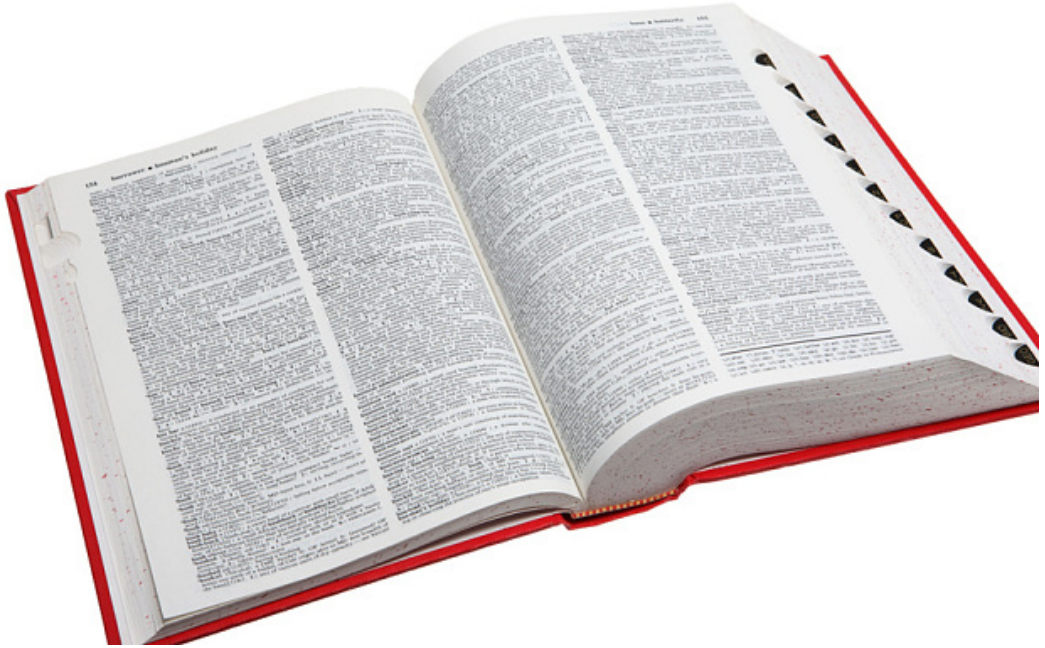
Small and Very Small Plants

Small: 10 to 499 employees.

Very Small: less than 10 employees or less than $2.5 million in annual sales.

Definition –Clean

To remove dirt, marks, etc., from something (Merriam-Webster).



Definition –Sanitize

To make (something) free from dirt, infection, etc. by cleaning it (Merriam-Webster).

Meaning of Clean

No adulterants present

- Soils
- Chemicals
- Biologicals

Nothing to support microbial growth

- Water
- Organic materials

Successfully “Cleaned”

Surfaces sparkle and appear free of all soils

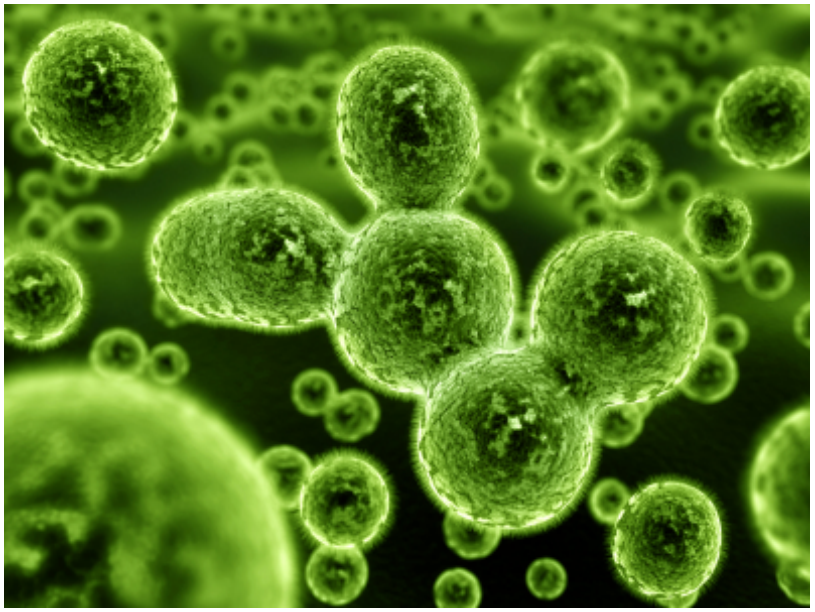
Surface is smooth to the touch

Microorganisms have no food or water for growth

Item has no objectionable odor

Meaning of Sanitize

To reduce the number of microorganisms to a safe level.



Successfully “Sanitized”

Follow an approved sanitization process, an example is given below:

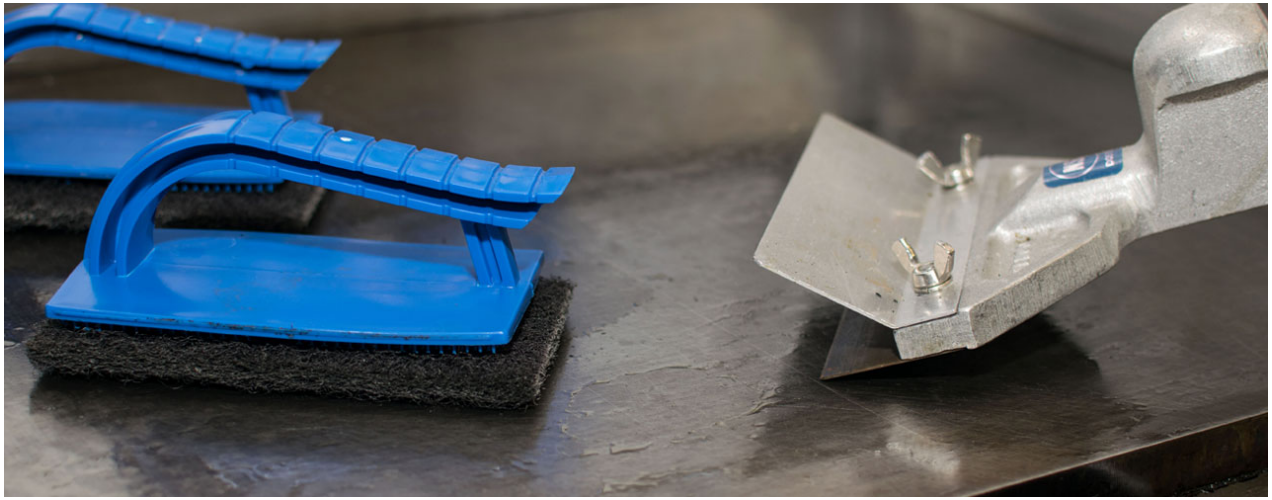
- Use a fresh sanitizer that is mixed to the proper proportions
- Apply the sanitizer to a clean surface
  - For the specified time
  - Within the specified temperature range
- Rinse

Cleaning & Sanitizing Steps

1. Remove heavy soils to trash
2. Rinse
3. Wash in hot, soapy water
4. Rinse
5. Sanitize
6. Dry
7. Inspect
8. Store/protect

Cleaning Steps

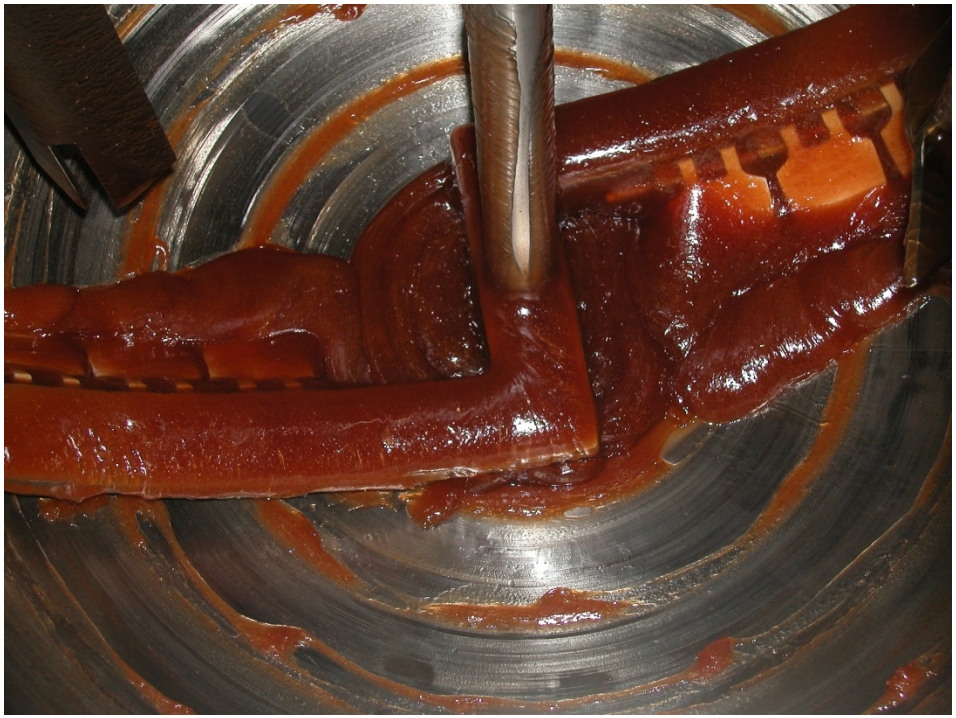
1. Remove heavy soils to trash:
   - Wipe
   - Brush
   - Scrape
   - Vacuum



webstaurantstore.com

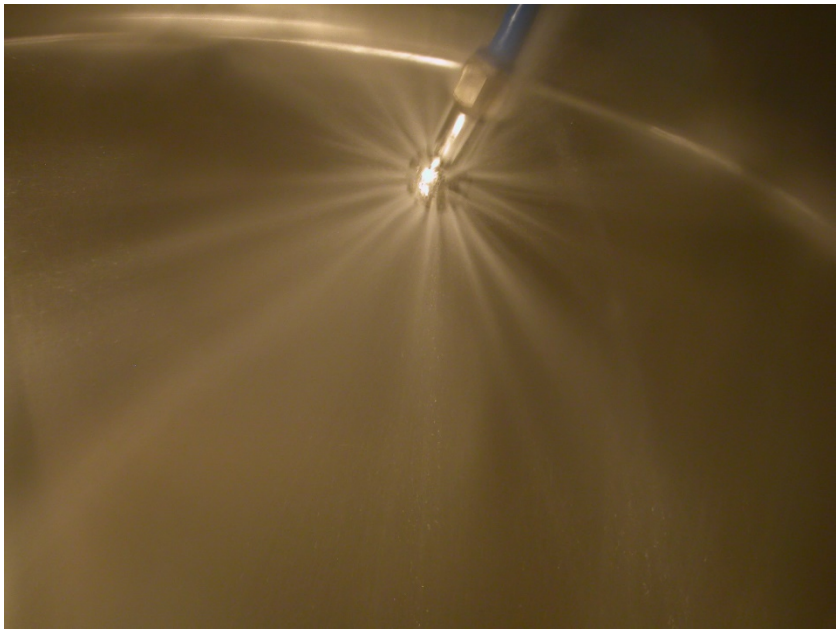
Cleaning Steps –Rinse

2. Rinse: Remove soils, chemicals, debris, etc. from surface using water. May be a dip or spray.



Cleaning Steps -Wash

3. Wash: Removes the remaining soil from the surface using physical and chemical means. The soil and bacterial are suspended, dissolved, or carried away by the wash water.



Cleaning Steps -Rinse

4. Rinse: Remove detergent and remaining soils from surface using water. May be a dip or spray.

foodservicewarehouse.com

Cleaning Steps -Sanitize

5. Apply sanitizer at the proper concentration and temperature for the recommended time.

Dry

6. Air dry in a protected environment

Dry with a clean cloth

Dry with heated air

Inspect

7. Use your senses to make certain that the article is clean:

- Visual –does it look clean?
- Touch –does it feel clean?
- Olfactory –does it smell clean?

Re-clean and sanitize if the article does not pass inspection

Store & Protect

8. Store cleaned articles in a protected environment:

- Drawer
- Enclosed cabinet
- Covered bin
- Hang in dust free area
- Cover

Sanitation

Equipment

- Boiling
- Steaming
- Chemical

Boiling Sanitation

Immerse equipment and utensils in boiling water for 5 minutes

Steaming Sanitation

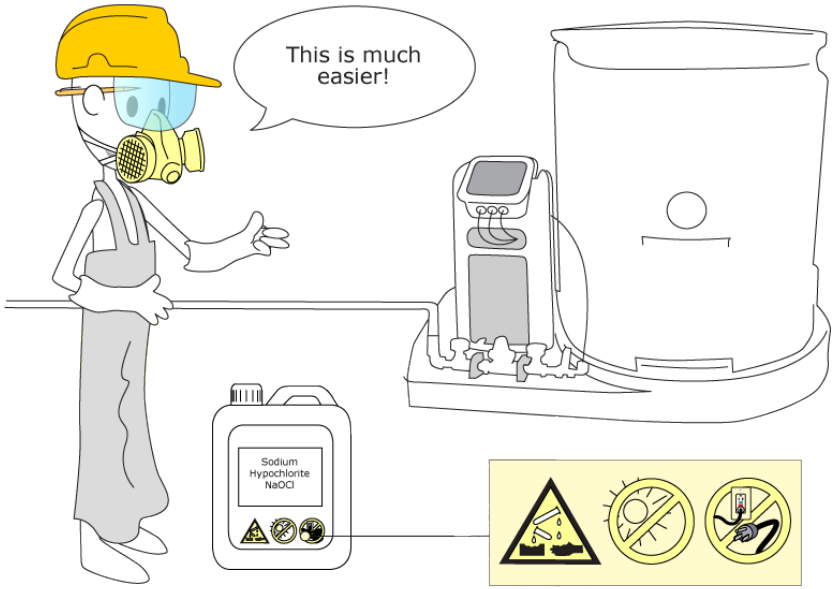
Steam equipment, parts or utensils for 5 minutes in a large kettle with about 2 inches of boiling water in the bottom and a tight lid on top

Chemical Sanitation

Example: bleach sanitation

- Sterilize with hypochlorite (bleach) solution
- Rinse with clean water

Bleach solution: 30 ml of bleach in 45 liters of water (max 200 ppm)



waterhelp.org

Other Sanitizers

Chlorine	Iodine	Quaternary Ammonia
50-100 ppm	12.5-25 ppm	100-200 ppm

ppm = parts per million
Use test strips to determine the proper strength
Each type of sanitizer requires its own test strip
Obtain from local supplier

12 Cleaning & Sanitizing Tips

1. Use softened water
2. Filter facility ventilation air keep a slight positive air pressure inside
3. Use low pressure water
4. Try a foamer for large areas
5. Use a dishmachine for equipment parts and utensils
6. Eliminate biofilms

12 Cleaning & Sanitizing Tips (cont.)

7. Switch sanitizing chemicals/methods
8. Follow the manufacturer's instructions for detergents & sanitizers
9. Periodically clean drains with foam
10. Invest in a continuous hot water heater
11. Train your staff when & how to clean & sanitize
12. Maintain cleaning tools

Softened Water

Hard water contains calcium, magnesium, and certain metal cations. A water softener removes these materials.

Softened water makes soaps and detergents:

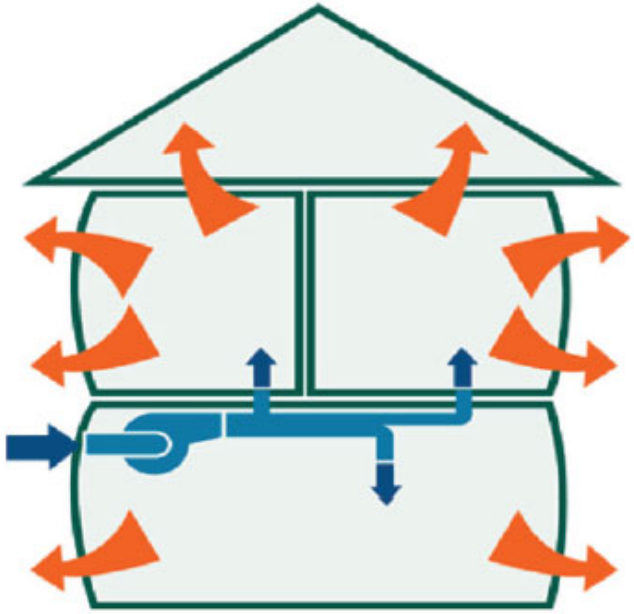
- Last longer
- More effective

culligan.com

Filter Facility Air

Buildings are ventilated using outdoor air. Filter this air to remove dust and bacteria.

A slight positive air pressure within the facility will help to prevent unfiltered air from entering.



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Water Pressure

Low pressure is better

- Splashing spreads bacteria and soils
- Overspray can make microorganisms “fly”

hotsyab.com

Foamer

Use a foamer for large surface areas

foamit.com

Dishmachine

Use a dishmachine as a parts cleaner/sanitizer

Food-equipment.com

jesrestaurantequipment.com

Eliminate Biofilms

Use cleaners and sanitizers with enzymes

The enzymes will attack the film

ecolab.com

Switch Cleaning Chemicals

Bacteria can get accustomed to your methods. Switch up your strategy to make it more difficult for bacteria to adapt.

Follow the Instructions

Follow the manufacture's instructions for use of cleaning chemicals and sanitizers.

- More is often not better
- Temperatures and times are often critical
- Read and follow safety instructions

Clean Drains

Periodically clean drains

- Uses dedicated brushes
- Use a foaming detergent with sanitizer
- Beware of cross-contamination from splashing and brush surface
- Use low-pressure water rinse to avoid splashing and aerosolizing

Continuous Hot-Water Heater

A continuous supply of hot water at a fixed temperature is critical for cleaning and sanitizing. A continuous hot-water heater can serve the entire facility or a portion of it.

rheem.com

Training on How & When to Clean

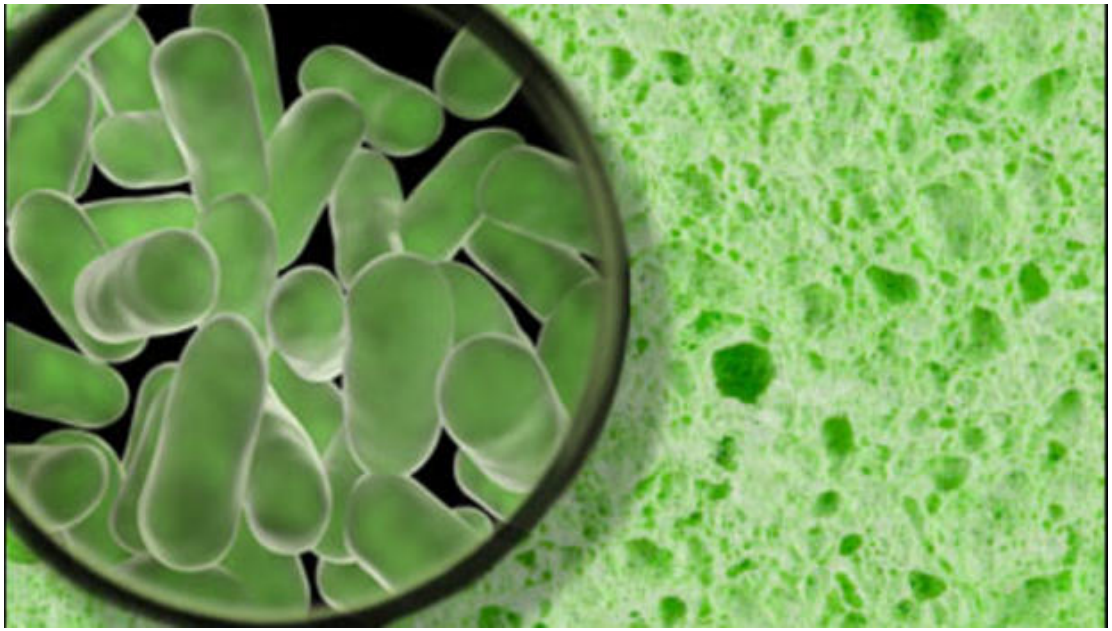
- Set high standards and expectations
- Assign and train backup workers
- Assess training effectiveness
- Reward successful training

Maintain Cleaning Tools

- Mops
- Green pads
- Cloths
- Brushes
- Sponges
- Buckets

Two Views of Cleaning Tools

1. Aids for cleaning
2. Source of bacteria for cross-contamination



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Keep Cleaning Tools Clean

- Develop a standard procedure for use
- Dedicate for a particular use or area
- Dispose after use if appropriate
- Use a specific storage container if reusable
- Remove solids
- Sanitize

Equipment Design

Equipment design is critical to good cleaning and sanitation practices. The design of a machine can result in cleaning/operation nightmares or stress-free cleanups.

5 Equipment Selection Tips

1. Function
2. Durable materials of construction
3. Cleanability
4. Access
5. Maintenance

Function

The machine should have adequate capacity and capability for the job.

profoodmachines.com

Materials

Materials that contact food:

Smooth, impervious, non porous, non reactive, durable, nontoxic, and cleanable.

- Stainless steel
- Food-grade rubber and plastic

premiumsiloconetubing.com

Cleanability


advancetabco.com

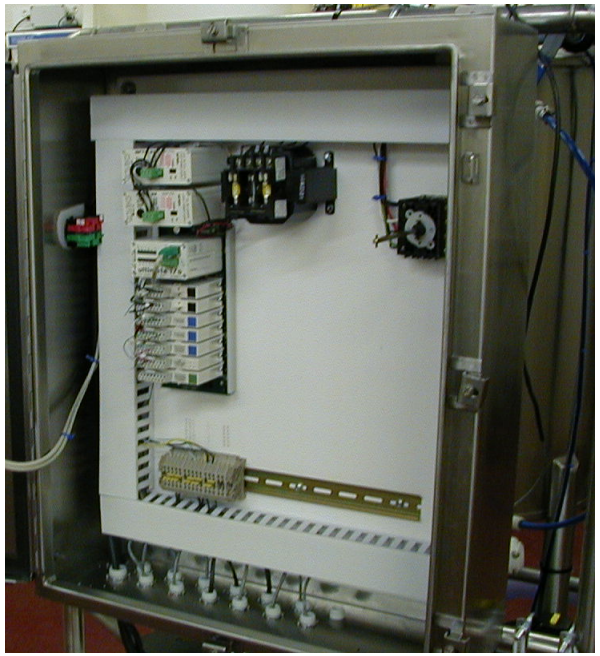
- Manual
- Automatic
- Quick disassembly (for cleaning & inspection)
- Drainage
- High polish (surface finish)
- Smooth curves (clean lines, no sharp corners)
- Support structure does not accumulate soils

Access

- Materials flow
- Inspection
- Cleaning
- Maintenance
- Utilities

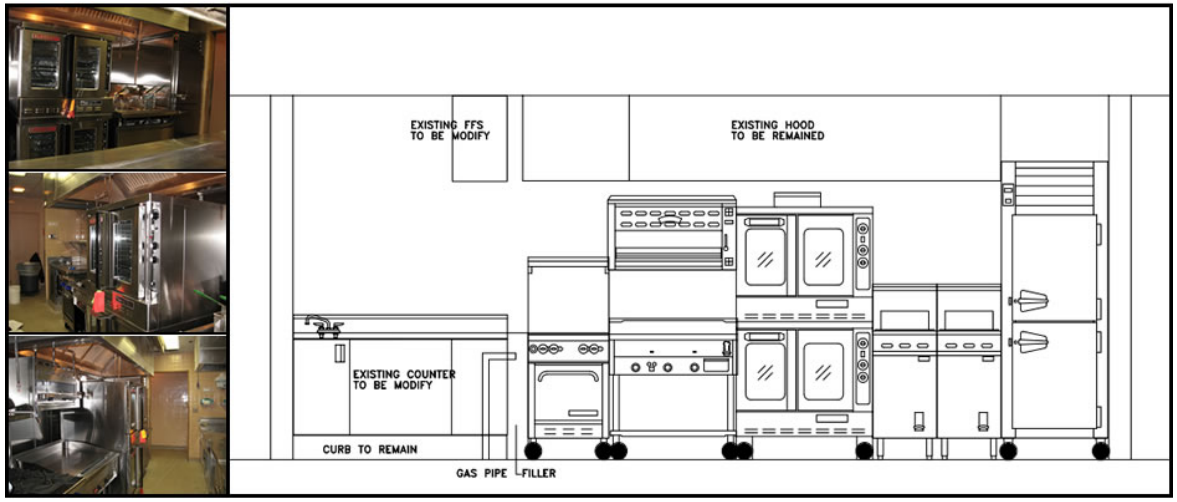
Maintenance

- Quick-change parts
- Modular replacement
- Spare parts availability
- Complete labels and drawings
- Accessible



Facility Layout & Design

Facility layout and design are critical to good cleaning and sanitation practices. The design and layout of a facility can result in cleaning/ operation nightmares or stress-free cleanups.



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6 Facility Layout & Design Tips

1. Surfaces
2. Work & materials flow
3. Employee welfare
4. Utilities
5. Pest proof
6. Maintenance

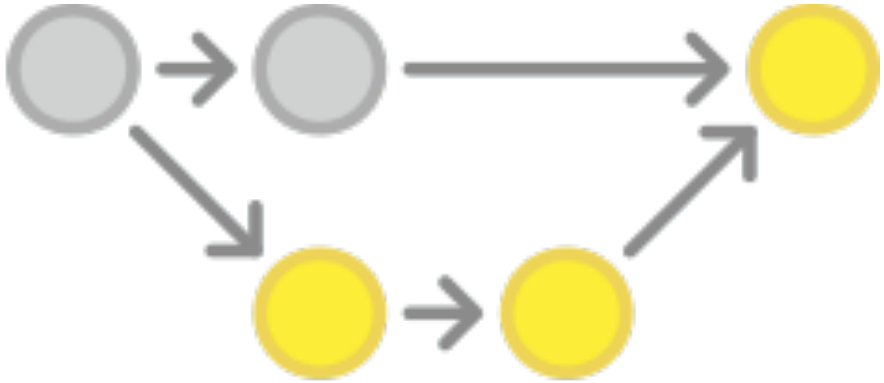
Facility Surfaces

- All surfaces should be easy to clean
- Floors and work areas sloped to drains (no standing water)
- Non-porous walls and ceilings
- Windows and doors sealed
- Fly screens in open windows/doors
- Smooth transitions
- Rounded corners

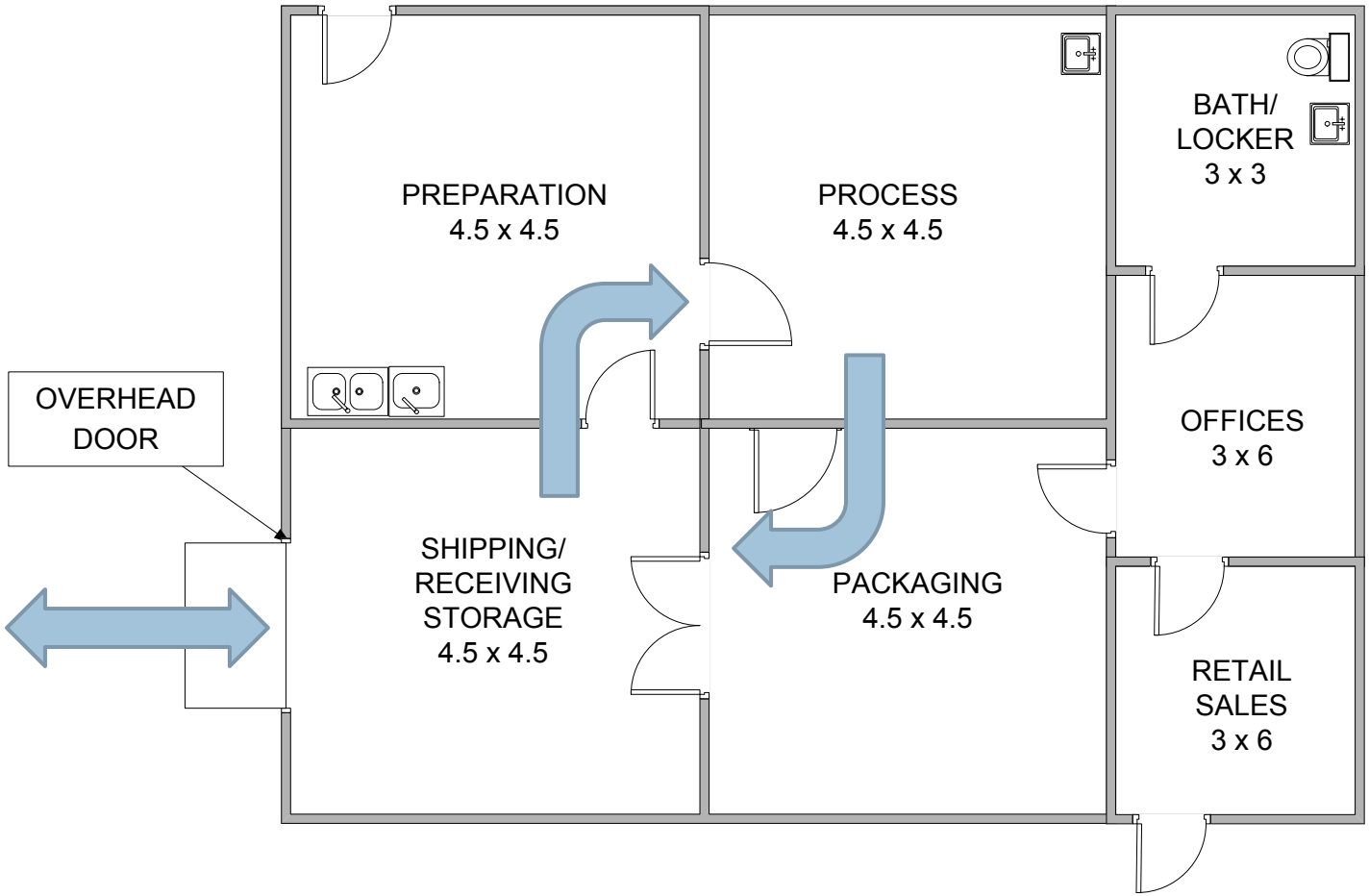
Work and Material Flow

Manage work flow:

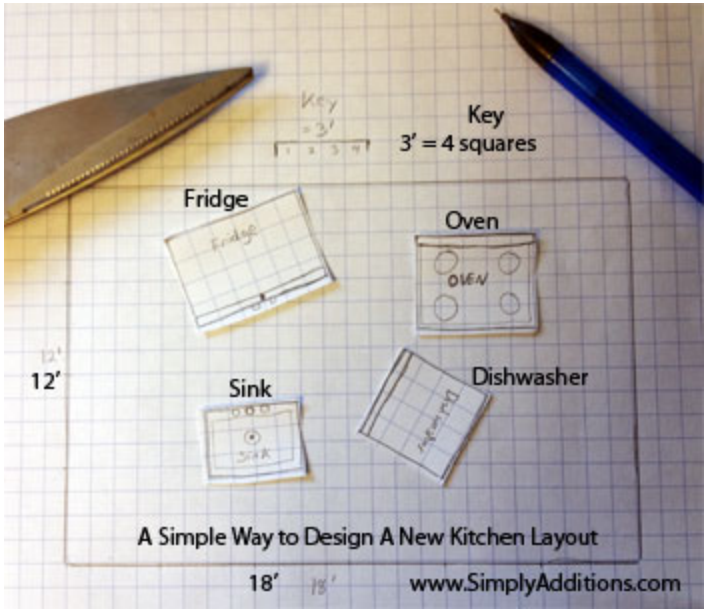
- Straight line
- Circular
- U –shape
- Use gravity to your advantage
- Eliminate cross-contamination



Example Facility Flow



Draft of a Room Layout



- Paper cut-outs were used in this example
- Rooms are sized approximately to need and arranged on a background
- Trial and error process
- Requires extensive discussion and review

Limit Foot Traffic

- Designated persons only
- Eliminate the passage of materials not used in a particular area.
- Exclude consumers

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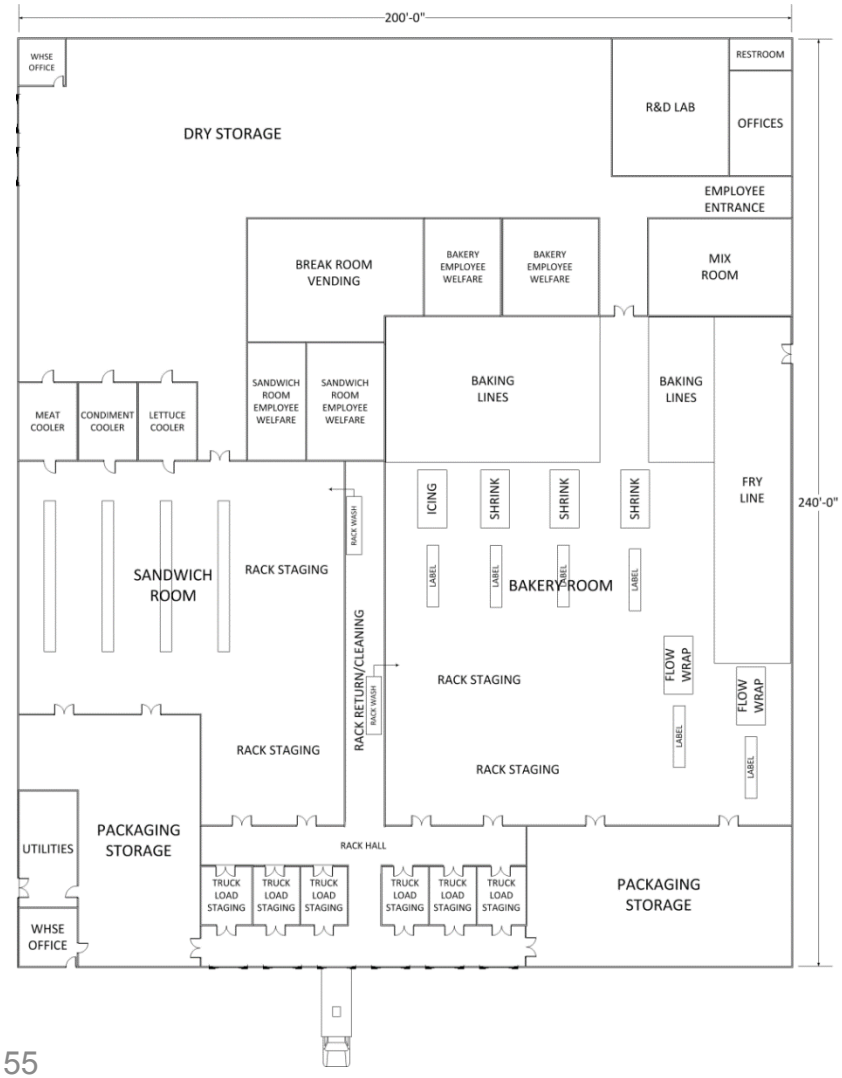
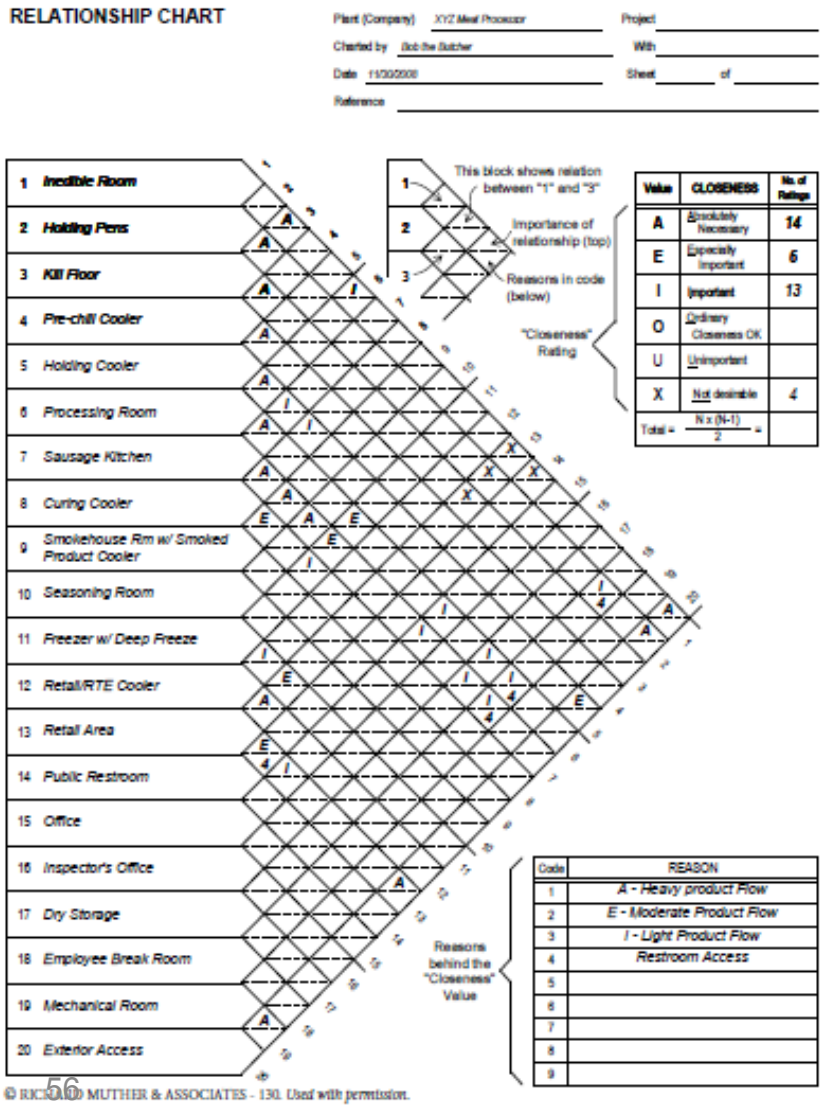
Example Facility Layout



- Large facilities are fairly complex
- Area and room layout are not obvious
- Cross-contamination and process flow are important

Relationship Chart



Use a relationship chart to help identify process flow and important relationships between rooms or areas in the facility

Iowa State University

https://store.extension.iastate.edu/Product/Guide-to-Designing-a-Small-Red-Meat-Plant

Employee Welfare

- Restrooms
- Lockers
- Break room
- Training room
- Hand wash stations
- Gowning/anteroom areas
- Boot wash stations

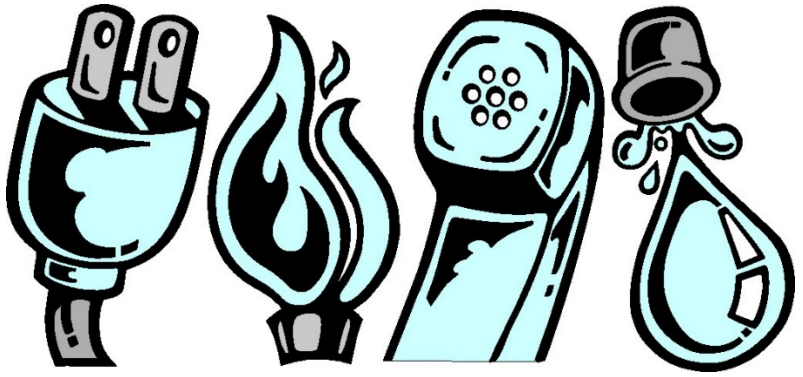
Employee Welfare

Ample sinks:

- Separate sinks for hand washing and cleaning product or equipment (Food Code 2-301.15 and 4-501.16)
- Hot water available at sinks
- Soap and towels available

Utilities

- Hot water
- Electricity
- Chilled water
- Ice
- Steam
- Compressed air
- Waste disposal



Pest Proof

- Close all areas of entrance
- Area around plant clean and clear of harborages for pests and animals

Maintenance

- Keep track of tools
- Keep tools clean
- Maintain cleanable surfaces for food processing
- Maintain roof and ceiling –clean and water tight

Maintenance

- Keep equipment up to date with replacement parts
- Do not cross-contaminate areas
- Work as much as possible in gray-area or shop

Personal Hygiene

Definition:

Conditions or practices (as of cleanliness) conductive to health.

4 Personal Hygiene Tips

1. Encourage good habits
2. PPE
3. SOPs
4. Training

cleaning-matters.co.uk

Encourage Good Hygiene Habits

- Promote good hygiene at every opportunity
- Foster ownership of personal and company hygiene
- Provide time and facilities
- Educate everyone on the advantages of good hygiene
- Embrace continuous improvement

PPE Personal Protective Equipment

Make PPE available, useful and required:

- Clean coverall or apron
- Hat covering hair
- Rubber boots (kept clean)
- Hearing protection
- Eye protection
- Gloves

Personal Hygiene SOPs

Examples:

- Wear gloves or use utensils
- Train employees in safe food handling (Food Code 2-102.11)
- Wash hands (Food Code 2-301.14)
- Keep illness at home (Food Code 2-201.11)

Personal Hygiene Training

Don’t take anything for granted:

- Hand wash
- Personal cleanliness
- Maintaining a neat work area
- Prevention of Cross-contamination
- Restroom and breakroom etiquette

Review

- Clean & Sanitize
- Materials Handling
- Equipment Design
- Facility Design
- Hygiene
- Conclusions

Questions?

References

FSIS Best Practices Guidance for Controlling *Listeria monocytogenes* (Lm) in Retail Delicatessens, June 2015.

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Thank You!

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