IDFA Presentation

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April 2018

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Presentation Agenda

- Choosing the Right Cleaner
- Choosing the Right Sanitizer
- Maximize your cleaning and sanitation program
- Do not give your enemy a place to hide. (Sanitary Design)
- Conclusion

HOW TO CHOOSE THE RIGHT CLEANER

5 Key Factors to optimize performance

- Match the cleaner to the nature of the **SOIL**
- Match the cleaner to the **WATER** properties
- Optimize compatibility with the **SURFACE**
- Be appropriate for the **METHOD** of application
- Meet **ENVIRONMENTAL** guidelines

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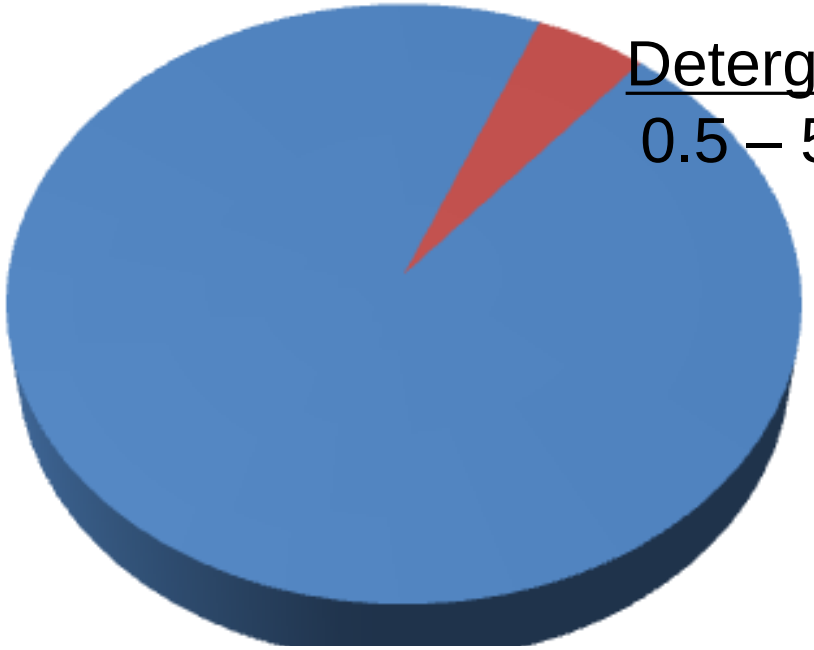
Role/Value of Water

- Solubility
- Temperature
- Mechanical Force
- Wetting/Surface Tension
- Delivers Detergent
- Removal



Detergent
0.5 – 5%

Water
95 – 99.5%

What do you know about your water quality and cleaning?

SURFACE TO BE CLEANED: SUMMARY

SURFACE

- Ensure compatibility of surface with type of cleaner
- Stainless steel
  - Passivate to maximize corrosion resistance
  - Avoid prolonged exposure to high concentration of chloride ions
  - Minimize exposure to high temperature in combination with oxidizing agents
- Soft metals
  - Use cleaning product that contains a corrosion inhibitor
  - Do not use cleaning chemicals with extremes of pH
  - Avoid prolonged exposure to high concentration of chloride ions
- Elastomers & plastic materials
  - Routine inspection and replacement required

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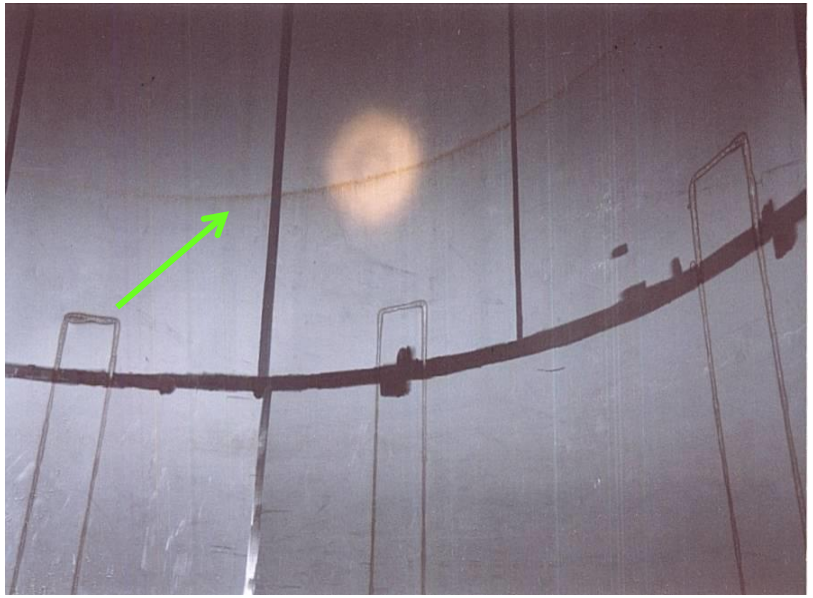
SURFACE CONSIDERATIONS

SURFACE

Welds

Stainless steel welds may be corroded or discolored

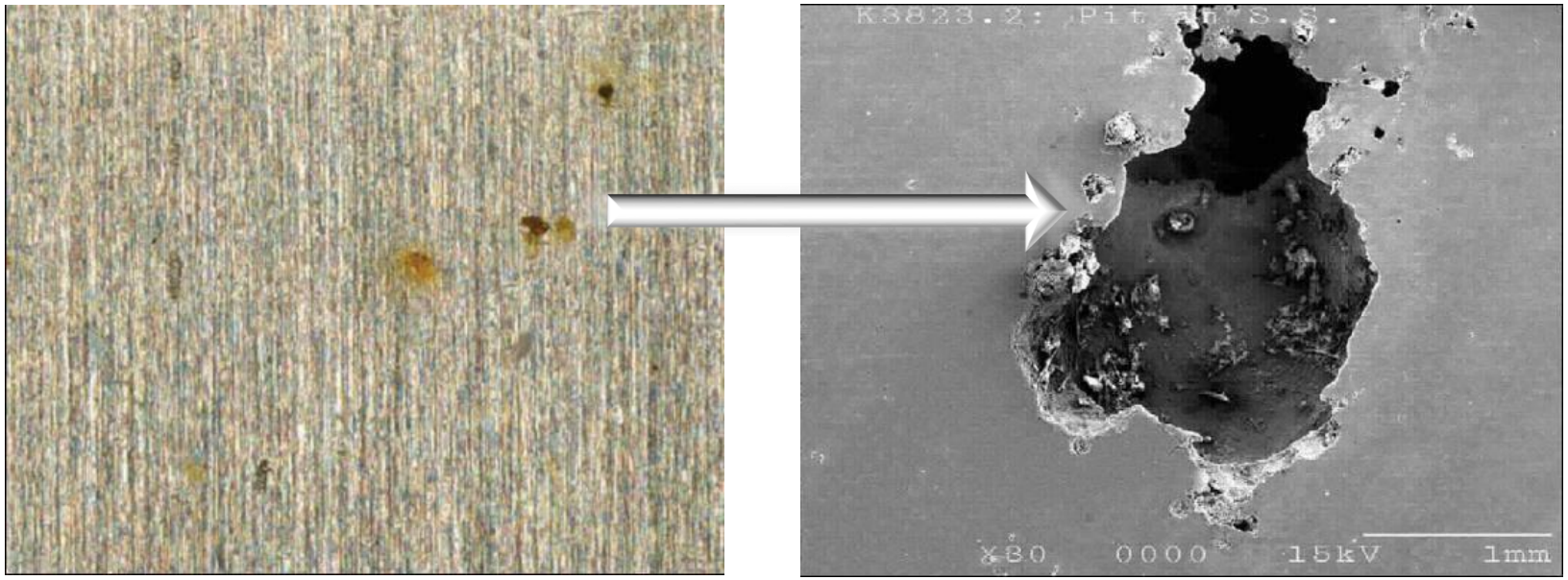


SURFACE CONSIDERATIONS

SURFACE

Pitting Corrosion

Prolonged exposure to high concentration of chloride ions can cause pitting of stainless steel



Stainless Steel | Non-stainless Steel | Non-metallic surfaces

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MANUAL

METHOD

FOAM

SPRAY

HAND WASH

pH range:	2-12
Rinse:	120-140˚ F
Foam and spray:	Ambient temperature
Hand wash:	Ambient – 120˚ F

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MECHANICAL

METHOD

CIP
Clean In Place

- pH range 1-13
- Max temp 180°F
- Low foam

COP
Clean Out Of Place

- pH range 2-12
- Max temp 140°F

ASC
Automated Surface Cleaning

- pH range 2-12
- Max temp 130°F

Max temperature based on employee exposure and equipment compatibility

Chemical's "Tool Box"

- Alkaline
  - Provide a source of alkalinity, provides dispersion effect, and reacts with acidic soils
  - Sodium Hydroxide, Potassium Hydroxide
- Acids
  - Remove and help prevent mineral stone/milk stone on processing equipment
  - Phosphoric, Nitric, Sulfuric and Organic acids
- Surfactants
  - Provides cleaning action and aids in rinsing and defoaming
- Water Conditioners
  - Used to treat impurities in the water – tie up calcium, magnesium and other minerals
  - Used to remove mineral scale from surfaces
- Oxidizing Agents
  - Used as a cleaning booster in alkaline detergents
  - Chlorine and Peroxide
- Others
  - Corrosion inhibitors
  - Solvents
  - Buffering agents
  - Dyes
  - Enzymes

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Choosing the Ideal Sanitizer

- Broad spectrum of activity
- Rapid Kill
- Easily prepared and soluble in water
- Stable
- Tolerant of soil, hard water, etc.
- Environmentally compatible and non-toxic
- Noncorrosive
- Economical
- Safe to use

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Definition of Key Terms

Sanitizer / Sanitize

- Reduce microbial contamination on inanimate surfaces to levels considered safe by public health codes or regulations
- Required Efficacy: 99.999% Kill in 30 seconds at 25ºC
- Two types:
  - No-rinse food contact surface sanitizer
  - Non-food contact surface sanitizer

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Sanitizer Usage Restrictions

- Must follow directions for use
  - Where to use
  - How to prepare
  - When to prepare
  - What the concentration range is
- Are you rinsing the sanitizer from the surface?
- United States Environmental Protection Agency EPA

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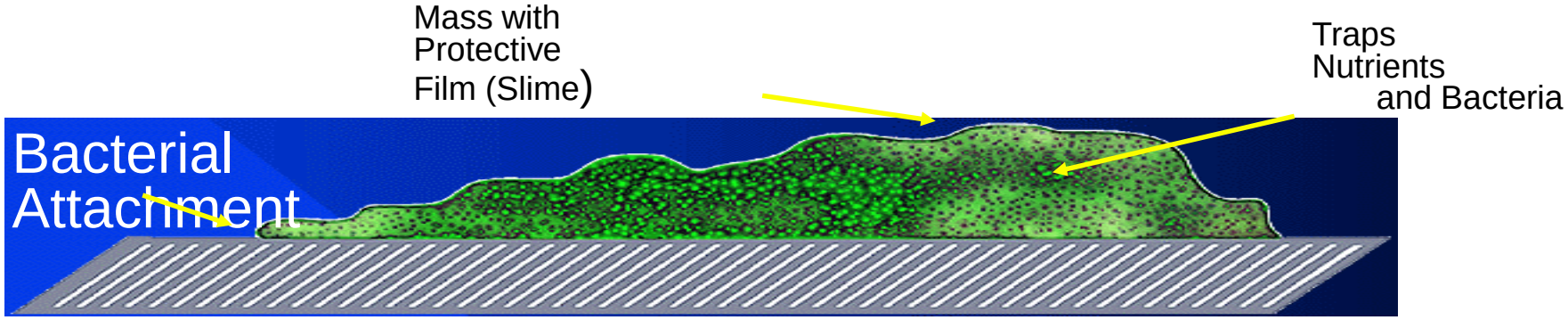
Significance of Biofilms

- Develop on food processing equipment at protected sites
- Develop on environmental surfaces that receive infrequent/inadequate cleaning
- Biofilm cells are protected from the effects of sanitizing chemicals.



- Prevents Antimicrobial Action
- Effective Cleaning Required

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Maximizing Sanitizer Effectiveness

- Clean Surface
- Intimate Contact
- Temperature
- Concentration
- Contact Time
- pH
- Composition of Makeup Water
- Type of Microorganism
- Number of Microorganisms

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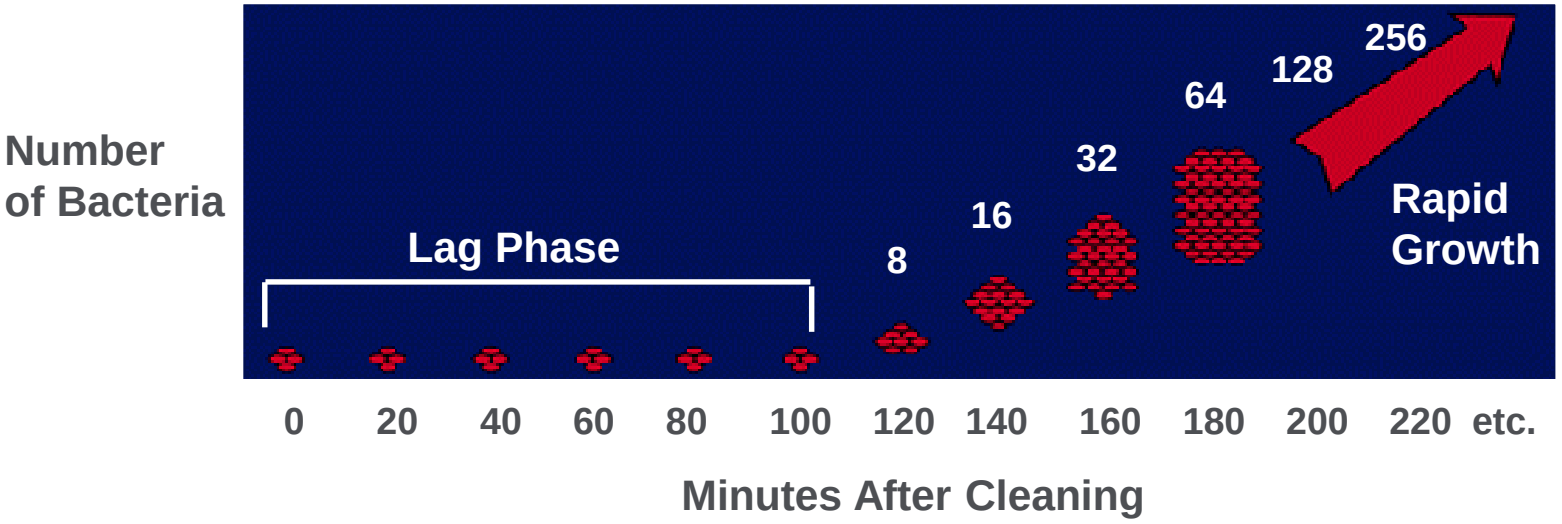
Sanitizer Application

- Spray
- Circulate
- Flood
- Foam

General Guideline for Sanitizer Application

1. Sanitizer applied as the final step in the cleaning program

2. Resanitize if time between completion of sanitizer program and startup exceeds four hours



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Why Should Cleaning & Sanitizing Be Carried Out As Two Steps?

- The presence of any residual soil can chemically or physically impair the efficacy of sanitizers
- Soil may shield microorganisms from the necessary direct contact with the sanitizers

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What can you do to maximize your Cleaning and Sanitation Program ?

- ✓GMPs
- ✓General Sanitation
- ✓COP Best Practices
- ✓Ice Cream Equipment C&S Best Practices
- ✓Control and Validation

Look at Entire Process

Identify & List All Contributing Factors

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Employee Best Practices

Employee awareness and training are critical

Employee Program Components

- Hand hygiene
- Outer garments / uniforms
- Personal cleanliness
- Foreign objects, jewelry, cosmetics
- Gloves, hairnets
- Food, beverages, tobacco
- Disease control

Who must comply?

- Employees – both production and maintenance
- Management
- Visitors
- *Anyone* who has the potential to come in contact with food, surfaces or packaging materials

Entryway sanitizing systems

Help to reduce cross-contamination between areas

- **Focus on passageways between areas sensitive to micro contamination:**
  - **And less critical areas of the plant:**
- **Placement is critical**
- **Multiple ways to apply**
- **Result is a reduction in environmental contamination**

General Sanitation

- Keep food equipment and environment clean, sanitary and in good condition
- During clean-up, place all cleaned equipment parts, lines, cleaning aids, etc. at places specified
  - Never place clean parts on the floor
  - Clean product contact surfaces, raw and processed and non-contact parts separately
- Avoid excessive use of lubricants on equipment to prevent product contamination
  - All lubricants must be food grade

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General Sanitation

- Follow cleaning procedures (SSOP's) explicitly
  - Safety procedure instructions when handling all chemicals
    - Wear the recommended personal protective equipment
      - Eye protection - goggles/face shields
      - Gloves
      - Boots
      - Chemical resistant apron
- Remove from area, cover or protect all food and packaging materials to prevent contamination during sanitation process
- Clean or replace product contact gaskets on equipment as needed

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General Sanitation

- Cleaning Equipment Aids
  - Do not use cleaning equipment aids with wooden handles or other absorbent materials
  - Clean all tools and equipment frequently
  - Use and store cleaning equipment for processed product contact surfaces separately from raw and environmental cleaning equipment such as floor.
  - Equipment used for cleaning drains should be separate, identified and stored in an isolated area
- Do not drag cleaned equipment across floor
- When not in use water hoses must be neatly coiled and stored on hangers
  - Do not permit water hoses to continue to run when not in use

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Clean - Out Of – Place (COP)

- Concerns:
  - **No flow restrictions**
    - Proper parts baskets
    - Parts completely disassembled
    - Proper tank sizing - Equipment must fit in tank

★ **Need to overflow tank to prevent re-deposition of soil that is removed**

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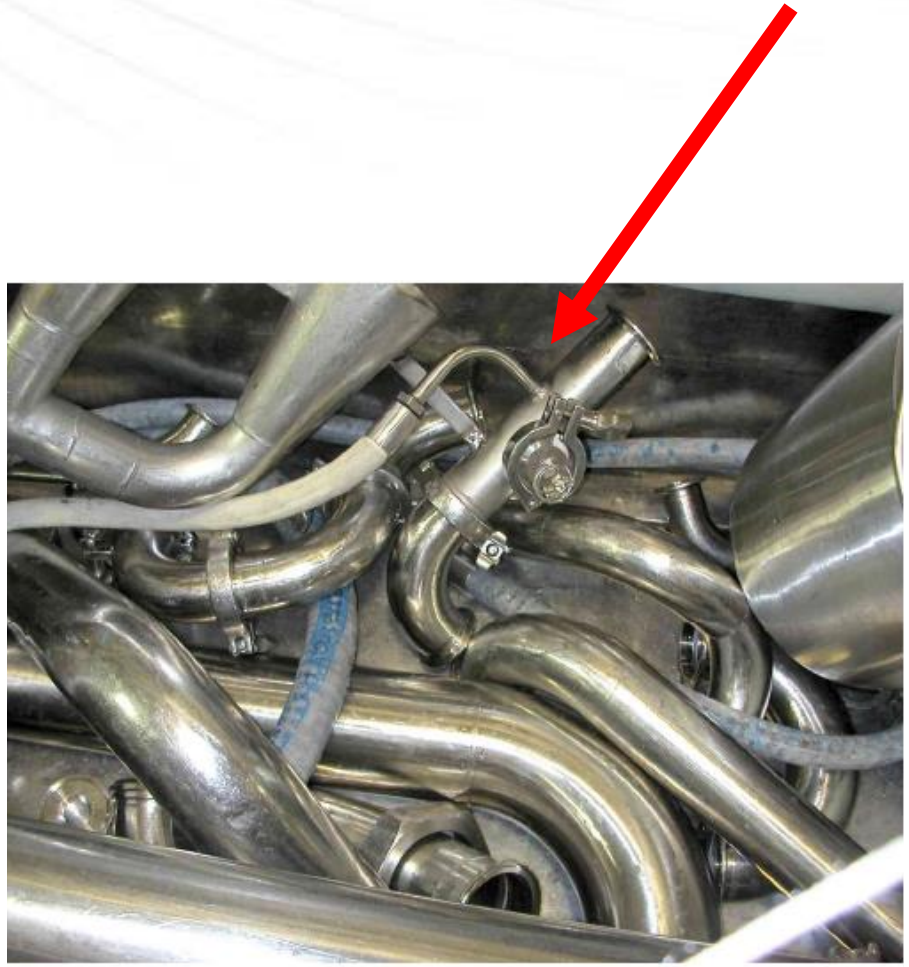
Place parts in proper baskets in an orderly fashion for effective COP cleaning.

Disassemble all parts before putting in COP tank.



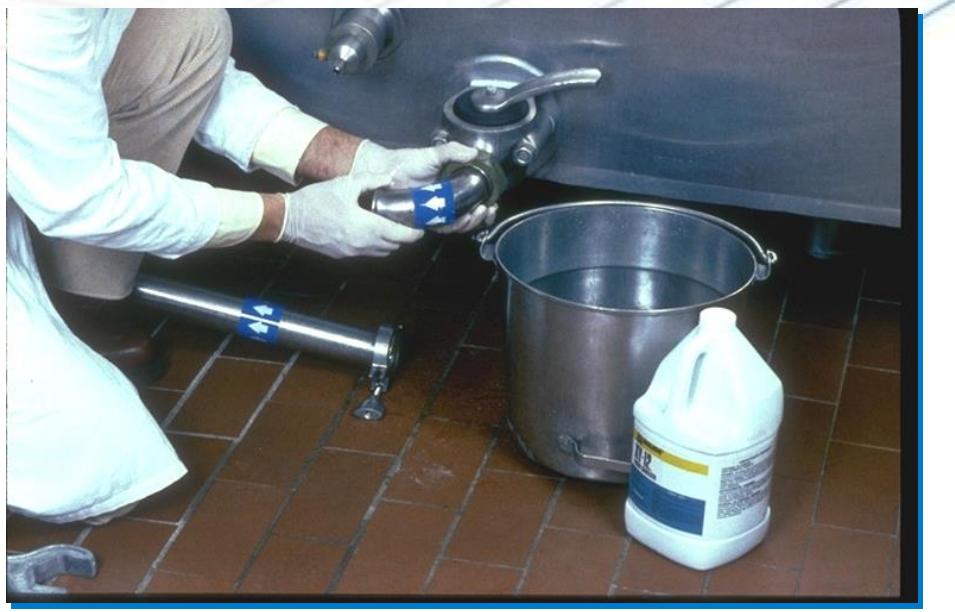
Ensure that the COP tank is sized properly - equipment must fit into the COP tank.

Equipment must fit into the COP Tank!

At the end of the detergent wash overflow the COP Tank to prevent redeposition of removed soils.

Provide proper storage for parts.

When reassembling equipment



Do not put parts on the floor.
Use a bucket of sanitizer.

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Freezer Sanitation (Manual)

- Turn off refrigeration immediately after production
- Rinse with cold water, gradually raise to 140□F
- Dismantle freezer and lines
- For COP, completely dismantle parts including gaskets, O-rings, small parts

Freezer Sanitation - COP

- Brush wash all pipes in alkaline detergent (COP)
- COP @ 160□F, 3500-5000 ppm alkaline chemical, 20 minutes
- Rinse
- Acid rinse, cold water
- Sanitize with 2500 - 3500 Peracetic acid

Freezer Sanitation - CIP

- Turn off Refrigeration
- Prepare system for CIP
- Rinse with warm water (110 - 120□F)
- Establish circulation
- Alkaline wash, 3500-5000 ppm alkalinity, 145□□F, 25-30 minutes
- Rinse with warm water

Freezer Sanitation - CIP

- Remove freezer heads to allow barrels to drain
- Sanitize prior to production, 100 ppm available chlorine, or Quat (Foams).
- Weekly: dismantle freezer and manually brush wash parts with acid @ 125□□F
- **DO NOT acid wash barrels**

Freezer Sanitation - Fillers

- Rinse with cold water
- Dismantle all removable parts including gaskets & O-rings
- Brush wash all surfaces (including carton former) with 3500-4500 ppm alkaline chemical, 125□F. Rinse.
- Acid rinse, cold water, air dry.
- Sanitize with 2500 - 3500 ppm Peracetic Acid

Sanitation - Fruit Feeder

- Manually cleaned, bypass CIP
- Rinse with cold water
- Completely dismantle feeder, agitators, pump rotators and mixer
- Brush wash like filler
- Rinse with warm water (110□F)
- Sanitize with 2500 - 3500 ppm Peracetic Acid

Flavor Vat Sanitation

- Rinse with warm water (110□F)
- Brush wash, pay attention to outlet valves, vat covers, vent, agitators, fill pipe, thermometers and all small parts
- Wash interior of parts and vat exterior
- Rinse with cold water
- Sanitize with 2500 - 3500 ppm Peracetic Acid if vats are cleaned alone. If washed with the freezers, sanitize with Quat or Chlorine. (No acid in Freezer barrels)

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Inspection

- Use flashlight to verify cleaning
- A bright flashlight must have
  - Charged batteries
  - Functional bulb (not burned out)
- 100% free of soils, hazes or water beads
- Utilize 4 of your 5 senses:
  - SEE, FEEL, SMELL, HEAR

Definitions

Validation

- Determine if the intervention when properly applied, will effectively control the hazards.
- Will the control measures work?
- Scientific proof that your C&S program is effective in your plant.
  - Chemical, tools, process and personnel are suitable to control the hazard.

Verification

- Demonstrating that the system is operating as designed
- Are the control measures being followed?
- Proof that your C&S program is being carried out in your plant as designed
  - Proof that it is being done consistently

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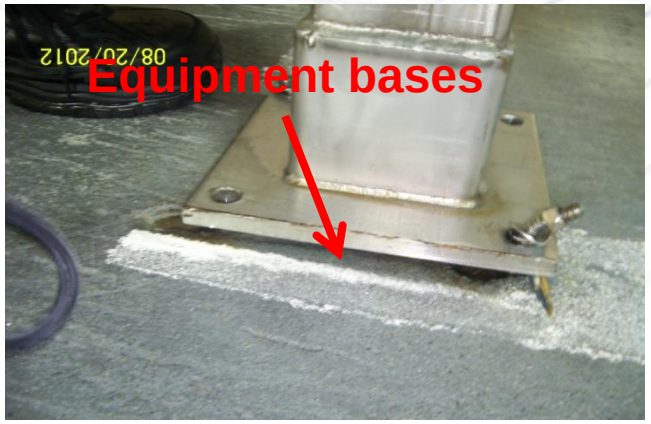
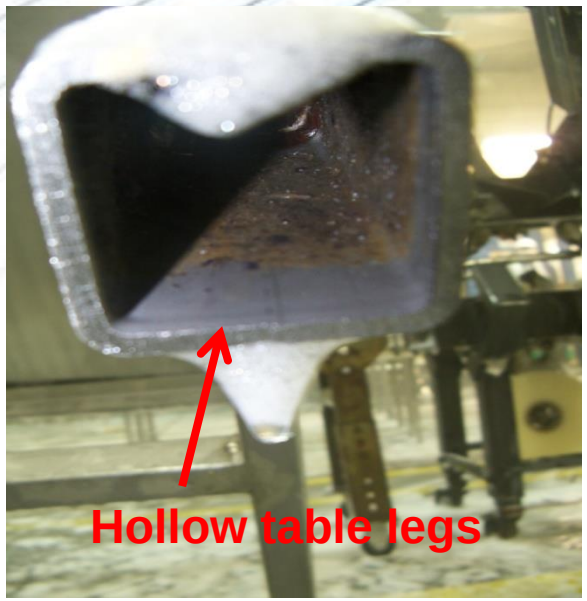
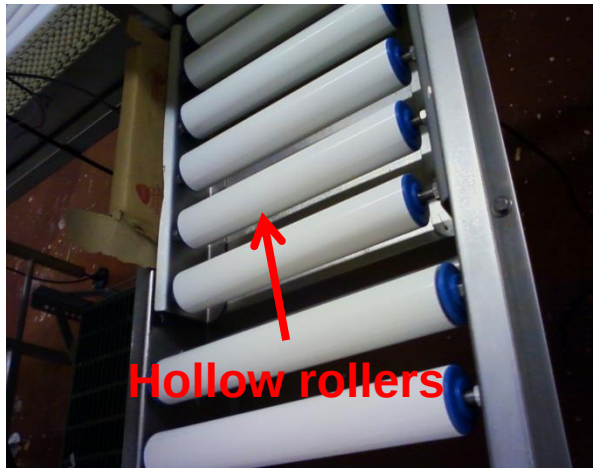
Bacteria Harborage Points







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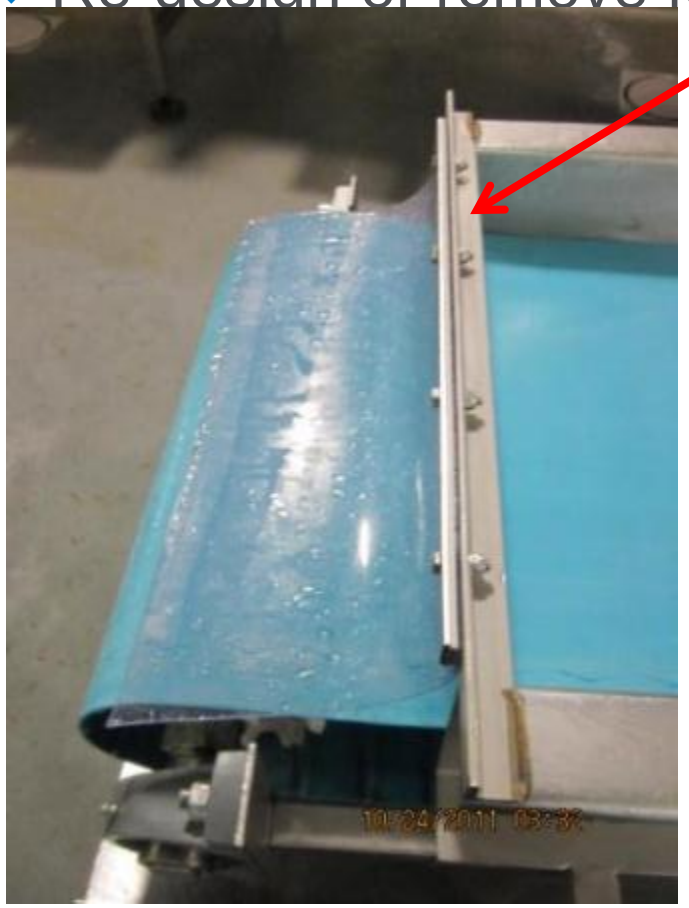
Conveyor Sanitary Design Issues

- Some conveyor flaps bolted lapped surfaces trapping soils and creating potential micro niches
- Re-design or remove for cleaning daily



Freezer Sanitary Design Deficiencies

- Freezer entrance windows - examples
- Unsealed flashing, gutters, seams, holes in outer walls above product zones

Freezer Curbing Harborage

- Unsealed curbing
- Missing caulk
- Lapped metals unsealed

The Sanitation Process

- Without a **Good Facility, Good Processing Equipment, Good GMP's, Good Handling Practices, and a Good Sanitation Program**, an effective balanced program will not exist.
- "Deadly Results"
  - **Consumer:** People DIE
  - **Business:** Lost Sales / Costly Recalls
  - **You:** Plant Closes
- Everyone's Job - 100% Commitment
  - Safe / Quality Foods
  - Safe Environment for:
    - Food Production / Worker / The Environment -"Earth"

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CLEANER
SAFER
HEALTHIER

Thank You!

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