

# SANITATION BEST PRACTICES

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# THE PERFECT SOLUTION DOESN'T EXIST

- No miracle in a drum
- No silver bullet



There are numerous factors that can affect  
your ability to efficiently clean and sanitize  
your facility

# WHY IS SANITATION IMPORTANT?

MANY food safety problems are related to sanitation:

- Directly – improper cleaning & sanitizing
- Indirectly – practices which negate any sanitation program
  - Poor housekeeping
  - Poor employee practices
  - Poor equipment sanitary design
  - Poor equipment maintenance
  - Pest attraction & harborage

**Some of this exists in every plant!**



# GOALS OF AN EFFECTIVE SANITATION PROGRAM

- Safety
  - Consumer
  - Employee
  - Reputation
- Quality
  - Fresh / wholesome
  - Consistent
  - Acceptable shelf life
  - Consumer acceptance
  - Sales / profits

- Sanitation is a fundamental expectation of GAPs and FSMA Produce Rule
- Could be considered a Prerequisite Program or Preventative Control per FSMA

# OVERVIEW

Purpose, Process, and Payoff

**Purpose:** Understanding of general sanitation best practices

**Process:**

1. Understanding the enemy
2. Factors of Cleaning
3. Factors of Sanitizers
4. Environmental Cleaning
5. Equipment

**Payoff:** A better understanding of the general sanitation best practices and the desired goal of cleaning

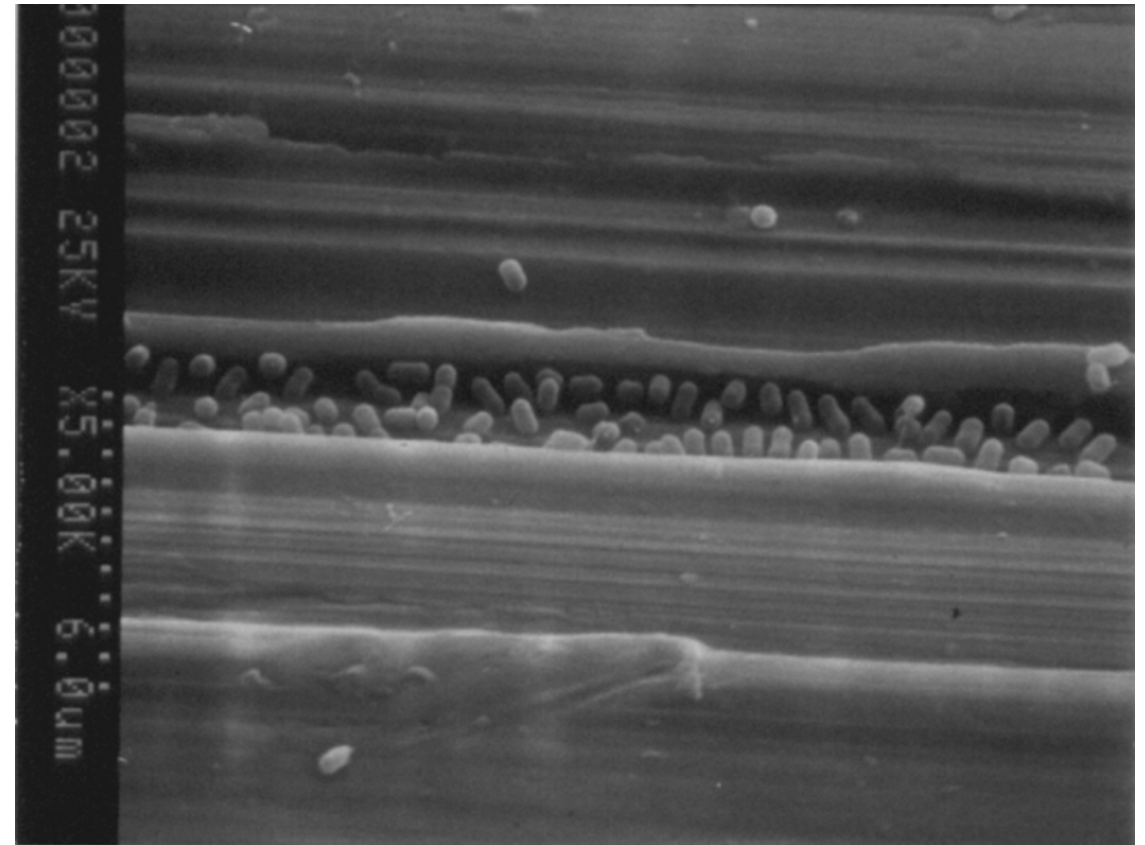
# UNDERSTANDING THE ENEMY



# UNDERSTANDING THE ENEMY

## Bacteria

- Electron microscope view of bacteria growing in a scratch on stainless steel
- Highlights Importance of:
  - Chemistry;
  - Temperature;
  - Mechanical Action; and
  - Time

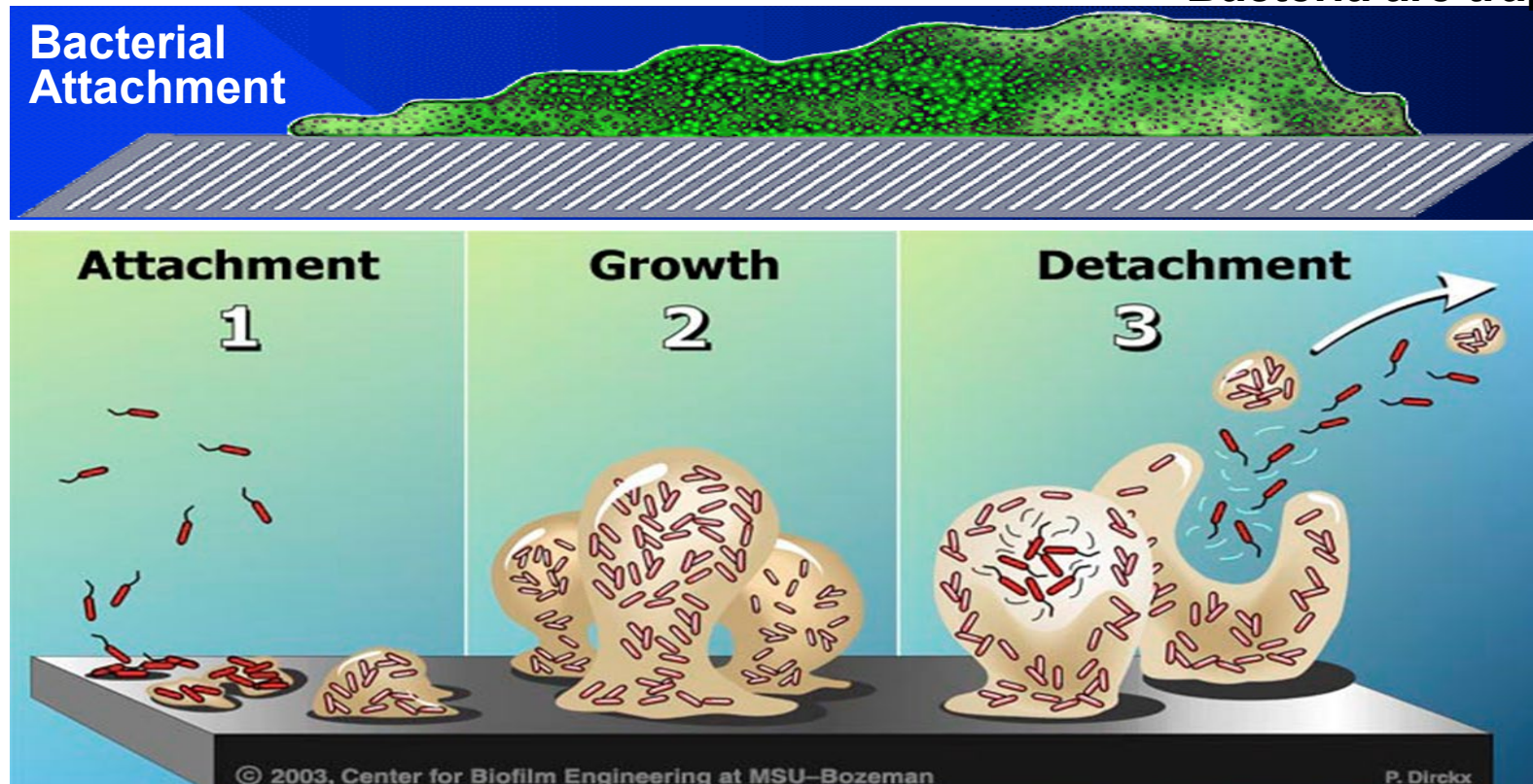


# UNDERSTANDING THE ENEMY

## Biofilm

A thin layer of growing microorganisms adhering to the surface of a structure which may be organic and/or inorganic, together with the polymers they secrete.

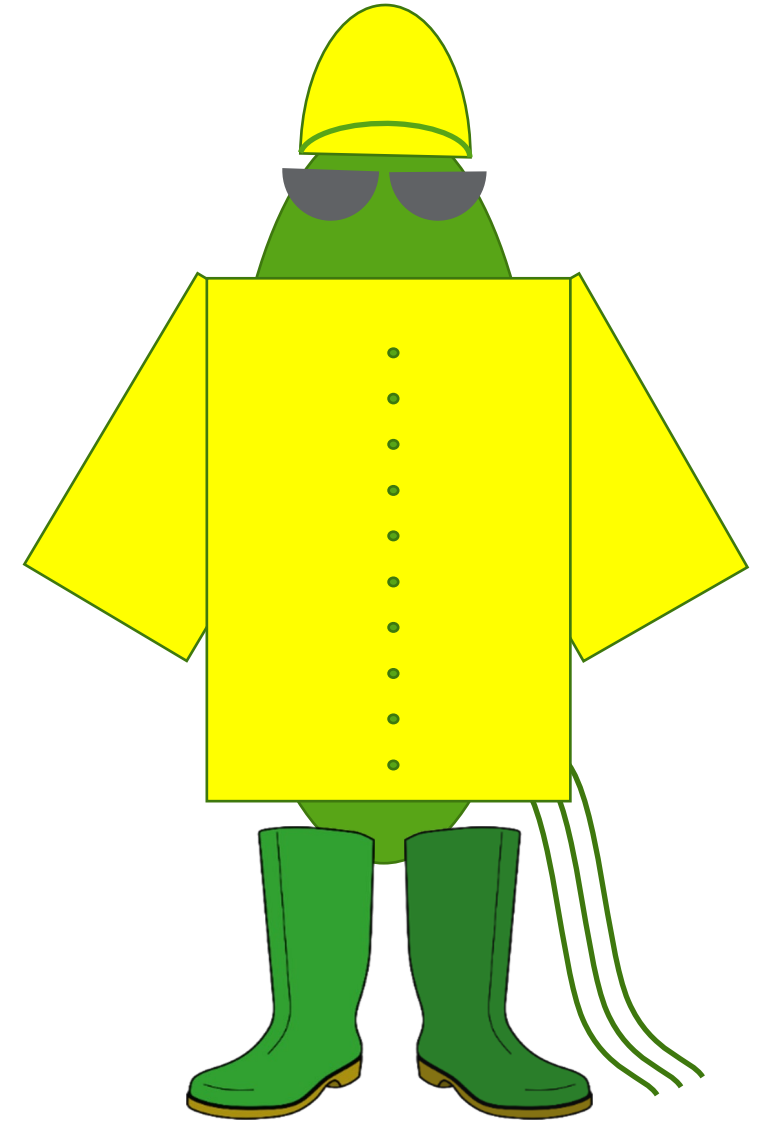
**Nutrients and  
Bacteria are trapped**



# UNDERSTANDING THE ENEMY

## Biofilm

- Biofilm Architect - Pseudomonas
- Biofilm is a bacteria's personal protection equipment!
- Protects from chemical exposure
  - Shields from chemical contact
  - Inactivates chemical compounds
- Helps resist physical removal
  - Aids in attachment
  - Unifies colony
- Insulates from heat exposure
- Protects from dehydration
- Helps bacteria remain viable



# FACTORS OF CLEANING



# FACTORS OF CLEANING

## Understanding Processing Water

- 95 – 99.9% of the cleaning solution is water
- What is in it?
  - Water Hardness (Calcium, Magnesium and Carbonates)
  - pH
  - Iron
  - Chlorides
  - Silica



# FACTORS OF CLEANING

## Understanding the Soil

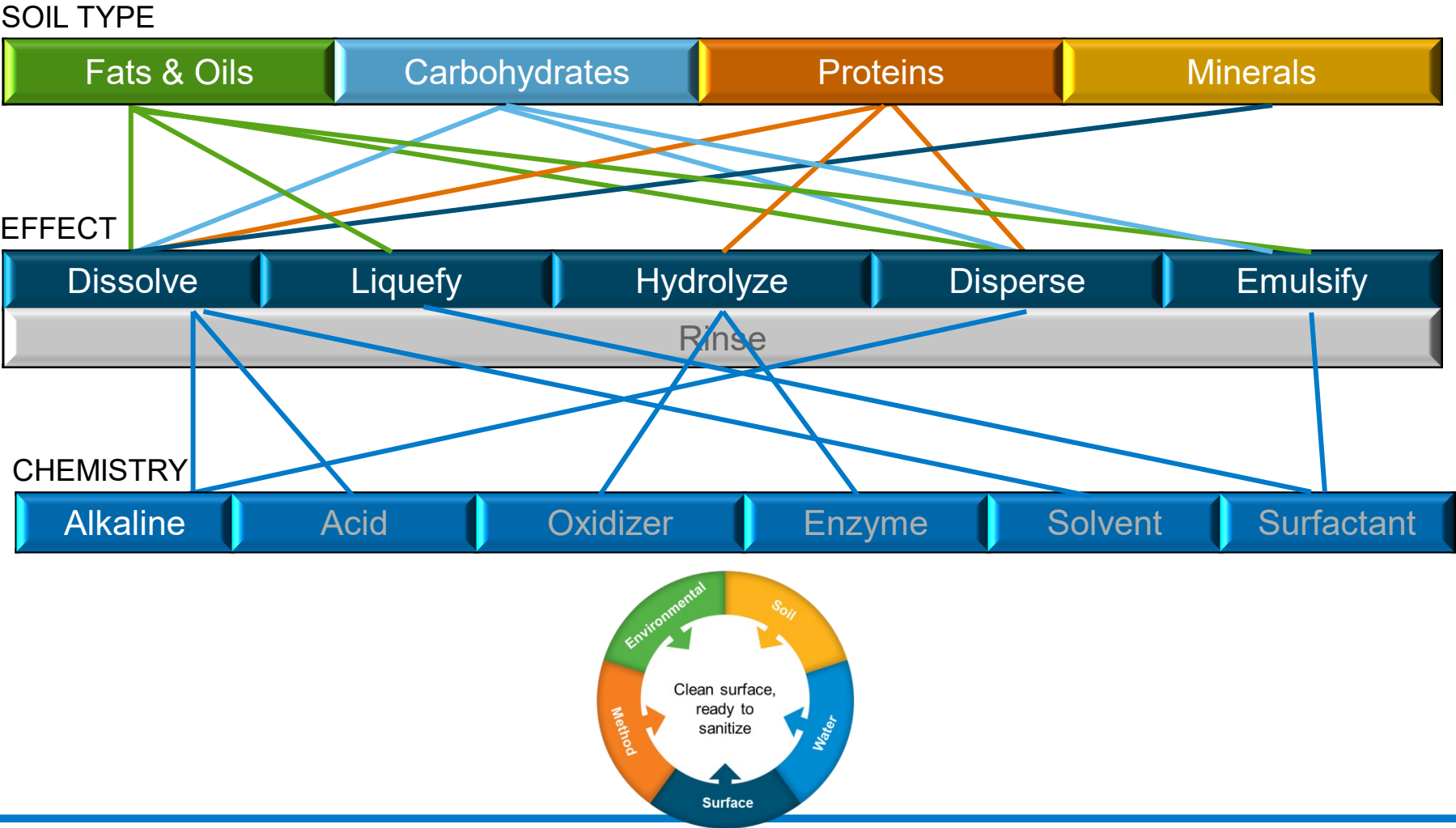
### Soil Basic Components

Fats & Oils	Carbohydrates	Proteins	Minerals
<ul style="list-style-type: none"><li>▪ Organic Soils</li><li>▪ Simple structure</li><li>▪ Generally easier to clean</li></ul>		<ul style="list-style-type: none"><li>▪ Organic Soil</li><li>▪ More complex structure</li><li>▪ Difficult to clean</li></ul>	<ul style="list-style-type: none"><li>▪ Found in water or food supply</li><li>▪ Can precipitate depending on temperature and other conditions</li><li>▪ Can react with detergent ingredients</li></ul>

- Food processing soils are typically a mixture of one or more of the above
- Soil characteristics vary depending on factors such as processing temperature or processing time
- Cleaners can be built to address complex soil challenges

# FACTORS OF CLEANING

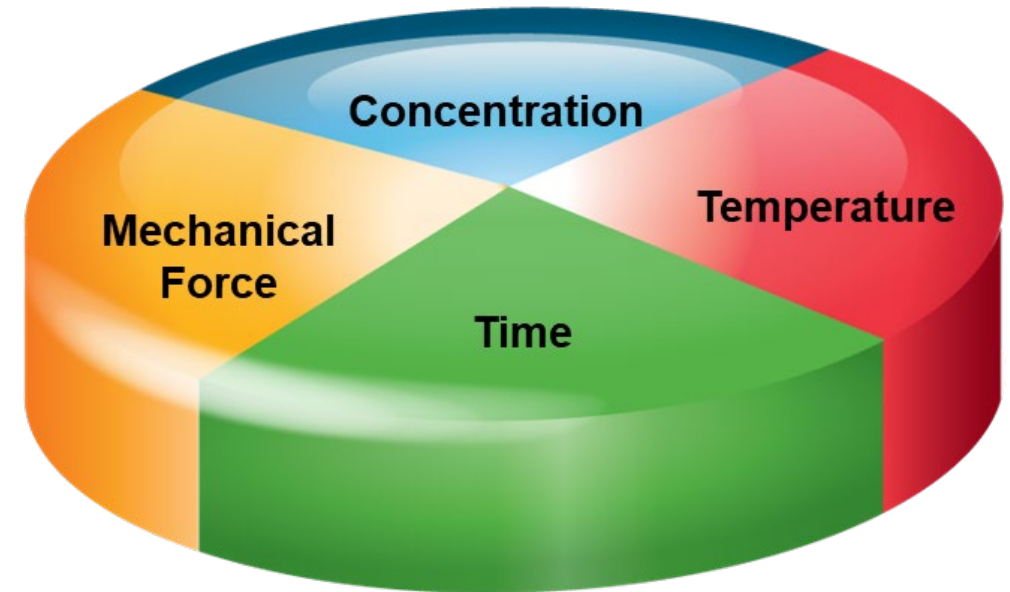
Choosing the Right Cleaner



# FACTORS OF CLEANING

## Sanitation Process

1.	Sanitation Prep
2.	Pre-Rinse
3.	Wash
1.	Concentration
2.	Temperature
3.	Time
4.	Mechanical Force
4.	Rinse & Inspect
5.	Remove Water & Assemble
6.	Pre-Op Inspection & Verification
7.	Sanitize



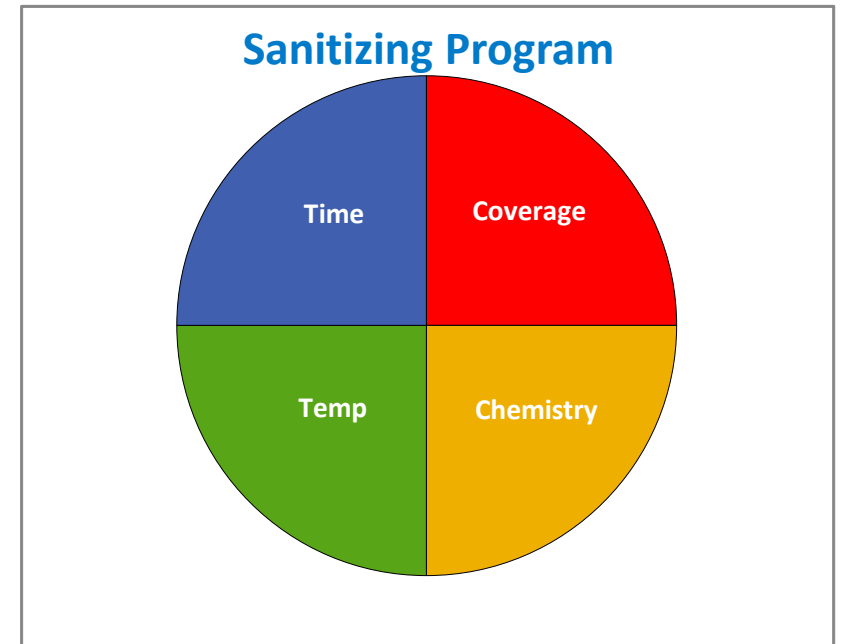
# FACTORS OF SANITIZERS



# FACTORS OF SANITIZERS

## Choosing the Right Sanitizer

- Chemistry (type & concentration)
  - Proper sanitizer and concentration for the job
    - Water quality, material compatibility, label claims
- Temperature
  - Necessary for proper performance (within a range)
- Time
  - Allow enough time to perform “kill”
- Coverage
  - Complete coverage of surface areas to reduce micro levels



**Coverage! Coverage! Coverage! Coverage! Coverage! Coverage!**

# FACTORS OF SANITIZERS

## What a Sanitizer Is/Does

- Reduce microbial contamination to a safe level
- Two Types:
  - No rinse food contact surface sanitizer
    - Approved for incidental food contact
    - Must be adequately drained from the surface
  - Non-food contact surface sanitizer
- Usage restrictions:
  - Only prepare in potable water
  - Do not reuse for sanitizing (prepare fresh)
  - Use the accurate concentration (legal)
    - Below = Questionable efficacy
    - Above = Violate regulatory approvals

A Sanitizer  
**Does Not**  
Sterilize  
&  
Disinfect  
**Does**  
Reduce  
contamination to  
safe level  
&  
Surface sanitizer  
kills 5 logs in 30  
seconds at 25 C

## DIRECTIONS FOR USE:

**It is a violation of Federal law to use this product in a manner inconsistent with its labeling.**

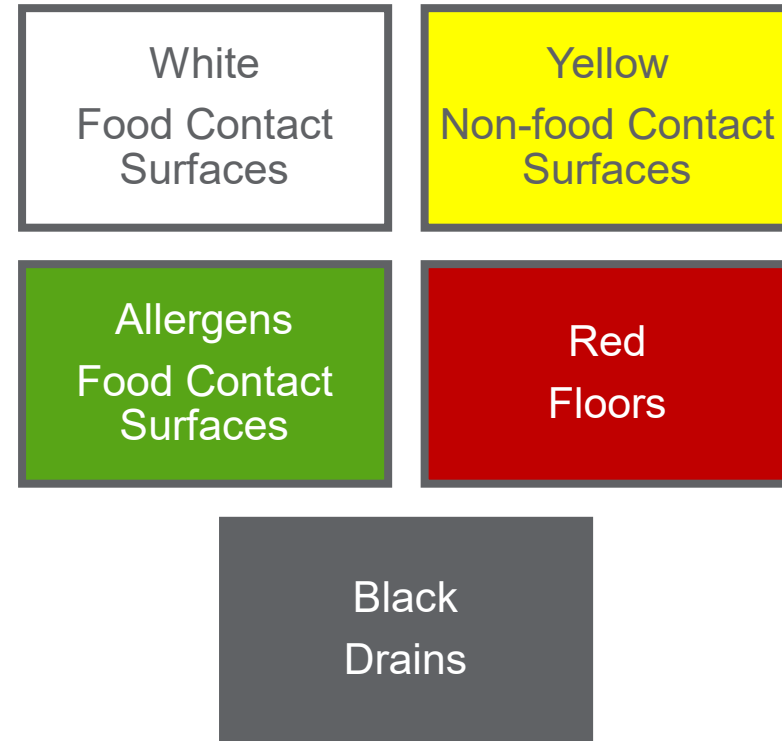
# ENVIRONMENTAL CLEANING



# ENVIRONMENTAL CLEANING

## Tools

- No federal or state regulations for color-coded cleaning tools
- If implementing, training on tool color and exact use is needed
- Example color coding:



# ENVIRONMENTAL CLEANING

## Pre and Post Operational Inspection

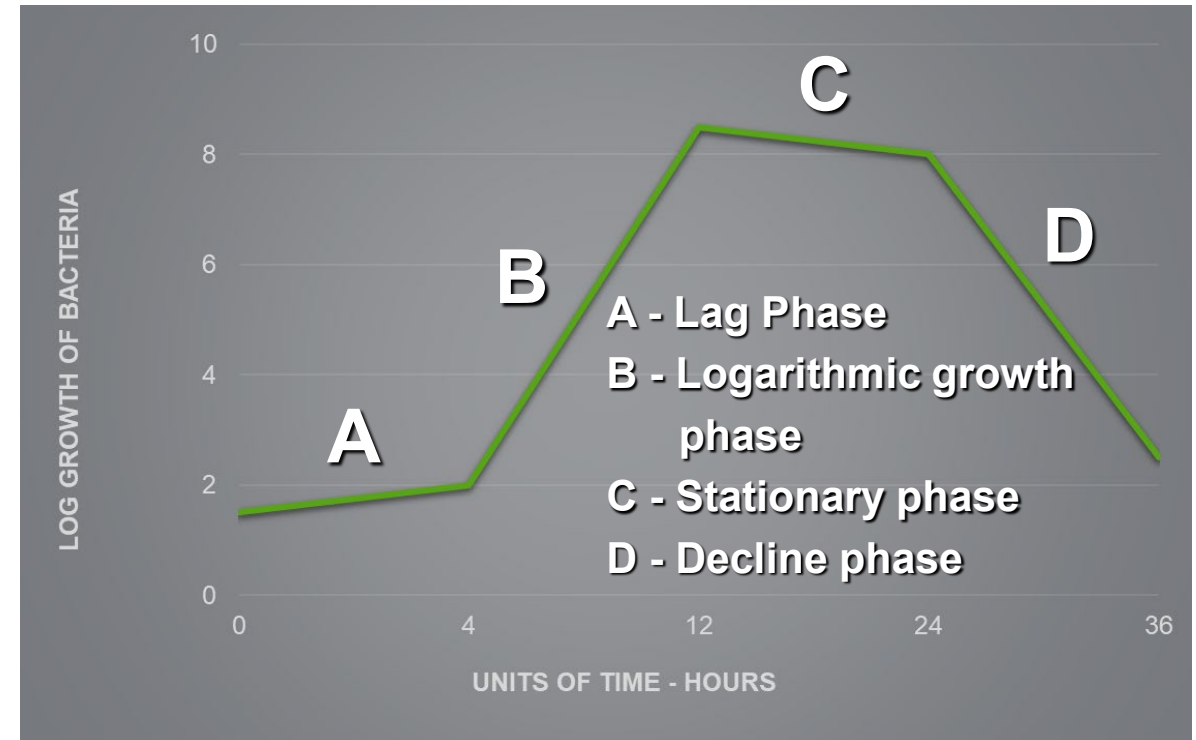
- Organoleptic
  - Visual appearance
  - Feel
  - Off odors
- Analytical
  - Microbiology counts
  - ATP
  - Indicator chemistries



# ENVIRONMENTAL CLEANING

## Operational Sanitation

- Definition
  - Sanitation conducted during production
  - Intermittent removal of process scrap & debris
- Why it's necessary
  - Employee safety
  - Make sanitation prep step of sanitation process quicker and easier
  - Control bacterial levels during production (maintaining Lag Phase)
- Why it can be problematic
  - Potential for cross-contamination
  - Increases microbial growth factors in the environment (water)



# ENVIRONMENTAL CLEANING

## Targeting Environmental Bacteria

- Disinfect Zones 2 – 3
  - Zone 2: Non-product contact surfaces close to Zone 1
  - Zone 3: Non-product contact surfaces in processing area
- Follow written procedures
  - What is available works if applied correctly
- Use a peroxide based cleaner, disinfectant, or sanitizer
  - PAA boosted caustic cleaner
  - Hydrogen peroxide followed by caustic (CIP)
  - Hydrogen peroxide and quaternary ammonium (PerQuat)
  - PAA



# ENVIRONMENTAL CLEANING

## Master Sanitation Schedule

- Tear equipment down enough to allow deep cleaning periodically
- Determine frequency based on visual and swabbing results
- Keep to the schedule in order to prevent opportunities for growth
- Pair teardowns with other preventive maintenance activities
- A Master Sanitation Schedule is an effective tool for addressing hard to clean areas

## Preventive Maintenance

- Effective PM programs completed on time are essential to maintain good sanitation
- Sanitation program is designed for normal equipment soils
- Compliance to schedule is important

**The best sanitation program is not overdesigned and needs properly maintained equipment**

# EQUIPMENT

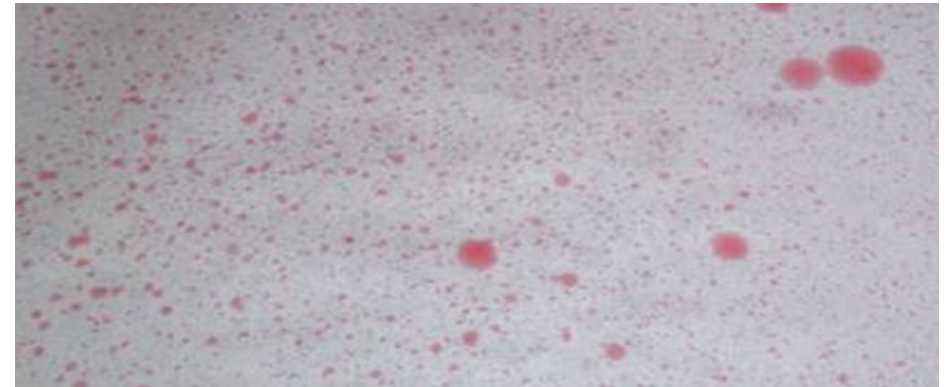


# EQUIPMENT

## Pump-up Sprayer

- Too low volume for proper coverage
- Don't hold up to rigors of the industry

**Recommend: Flood  
Sanitizing**



# EQUIPMENT

## Central System



- Centralized injection system accurately pre-dilutes chemistry and supplies it to sanitation hose drops throughout the department
- Also available for filling hand dips, and other equipment dips
- Available on demand during production
- Less variability in no rinse concentrations
- Only one system to verify from a documentation standpoint – helps with audit readiness
- Eliminates overages in no rinse sanitizer applications
- Much more effective and efficient than pump-up sprayers, tank or wall units

# EQUIPMENT

Central System - Improper nozzles equate to poor coverage and/or no pressure



# EQUIPMENT

## Zone Barrier

- Spray or foam applications
- Low moisture options
- Many options available
  - Single, stand-alone units with manual timer
  - Programmable units that turn ON/OFF
    - Time based
    - Infrared activations
  - Central systems
- Foam quality is critical
- Replenishing sanitizer is important for effective treatment



# EQUIPMENT

## Sanitary Design



# EQUIPMENT

## Sanitary Design

“Sanitary design is the application of design techniques that allow the timely and effective cleaning of the entire manufacturing asset.”\*

- Good sanitary design can reduce or eliminate the need for Master Sanitation Schedule tasks as a mitigation step.
- Good sanitary design can cut:
  - Cleaning Costs
  - Time
  - Harborage areas



**Poor sanitary design, that isn't addressed, can negate the best sanitation programs.**

# EQUIPMENT

## 10 Sanitary Design Principles – American Meat Institute (AMI)

1. Cleanable
2. Made of compatible materials
3. Accessible for inspection, maintenance, cleaning, sanitation
4. No product or liquid collection
5. Hollow areas eliminated or sealed
6. No niches
7. Sanitary operational performance
8. Hygienic design of maintenance enclosures
9. Hygienic compatibility with other plant systems
10. Validated cleaning & sanitizing protocols

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