Sanitation and the Food Safety/HACCP Program
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A special thank you to Dr. Ron Schmidt for assistance in preparing this material!
Sanitation Defined--

- **Sanitas**
  - Health [Latin]
- **Sanitation**
  - The Creation & Maintenance Of Hygienic & Healthful Conditions
“Is our food supply safe?”
“Why do we care?”

“Special Good Housekeeping Report”
By Madeline Drexler
Good Housekeeping October 2011

“Cost of Poor Quality Video”
www.youtube.com/watch?v=MyPCsw2Yjew
Why Food Safety??

• Do you know how many lives you touch each day when it comes to producing **Safe Foods**?

• Do you feel a responsibility to produce foods that are free from any **Food Hazard**?

• What is the definition of “**Safe Food**”?

• Do you think about what the consequences would be if you produced a product that contained **Food Hazards**?
WHO – World Health Organization Defines Safe Food As:

“assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use”
Sanitation --

- Protection From Contamination
- Must be a “Way of Life”
- Evolved through automation
- But still depend on “People, People, People”
- Sanitation – clean equipment
- Must be “A Mind Set”
Sanitation --

- Effective Food Safety/HACCP Programs must be built on a sound foundation of prerequisite programs (PRP).
- A prerequisite program will either eliminate a potential hazard or reduce it to an acceptable level.
- PRP programs are “preventive”.
- Sanitation is a PRP program by all standards.
Sanitation --

- Automation
- CIP systems
- COP systems (they are still around)
- Manual cleaning (still done)

- The basics
  - Time, temperature, velocity, and chemical concentration (still matters)
A Properly Implemented Sanitation Program -

- Uses Well Defined and Scientificaly Sound Procedures & Practices
- Provides A Schedule
- Provides A Foundation To Support Routine Monitoring
- Involves Prior Planning To Ensure That Corrections Are Taken
- Identifies Trends And Prevents Re-occurrence
- Enhances Understanding By Personnel
- Provides Consistency In Training And Application
- Demonstrates Commitment To Buyers, Auditors, Inspectors
- Improves Overall Sanitation Practices And Conditions
Sanitation Involves -- The Entire Food Processing & Handling Asset.
Cleaning Considerations

- Chemistry Of Detergents
- Chemistry Of Water
- Quantity And Type Of Soil
- Temperature
- Equipment Considerations
  - Surface Characteristics
    - Composition
    - Finish
    - Condition
  - Design, Fabrication & Installation
- Environmental Considerations
  - Is This In Conflict With Sanitation?
Let’s discuss product contact surfaces…..

- CIP equipment
- Manual cleaning equipment (brushes, etc.)
- Cleaning chemicals
- Water??

These all reflect … “product contact surfaces”

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Product Contact Surfaces

• As a link to the food chain, all materials going into the process, used in the process and exiting the process must be identified and described. Product Characteristic (raw materials, ingredients, product contact materials, & end product) must be defined and included in the hazard analysis (ISO 22000:2005 Section 7.3.3)

• Product contact surfaces must be constructed from materials designed for food use. They must be impermeable and rust or corrosion free. (ISO 22002-1:2009 Section 8.3)

It all matters!! Whatever touches, directly or indirectly, the same surfaces that the product touches.
Where are requirements defined?

Pretty much everywhere!

- Basic Codex HACCP
- GFSI approved schemes
- (FSSC 22000, BRC, IFS, SQF…)
- Regulatory (FDA, USDA, FSMA)
- Basic common sense
Regulatory Standards?

- Milk & Milk Products
  - Pasteurized Milk Ordinance (PMO)
  - Milk And Milk Product Equipment - A Guide For Evaluating Construction
  - Regional equipment auditing groups
- HACCP (Juice & Seafood)
  - SSOPs
- Other Food Processing
  - Current Good Manufacturing Practices (cGMPs) (21CFR110)
- Retail Foods
  - FDA Food Code
FDA Food Safety Modernization Act (FSMA) - 2011

“Building A New Food Safety System Based Upon Prevention” (FDA)

HARPC – all about preventive measures
## Control Measures - Summary

<table>
<thead>
<tr>
<th>HACCP</th>
<th>HARPC – Proposed</th>
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<tbody>
<tr>
<td><strong>Critical Control Points (CCPs)</strong></td>
<td><strong>Preventive Controls</strong></td>
</tr>
<tr>
<td>• Based Upon Decision Tree</td>
<td>• Include CCPs and “Non-CCPs”</td>
</tr>
<tr>
<td>• Must Have Definable and Realistic Critical Limit which can be Monitored and Verified</td>
<td>• Include Sanitation Programs (SSOPs)</td>
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<tr>
<td><strong>Prerequisite Programs (PRPs)</strong></td>
<td></td>
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<tr>
<td>• Required as Foundation to HACCP</td>
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<tr>
<td>• Include Sanitation Programs (SSOPs)</td>
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<td>• May be used to Control Hazards when Impractical to Identify as CCP</td>
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USDA Regulatory Standards?

- **Food Safety & Inspection Service (FSIS)**
  - Equipment List
  - Cleanability (9CFR 308.5; 381.53)
- **Agricultural Marketing Service (AMS)/Dairy Division**
  - USDA Guidelines for the Sanitary Design and Fabrication of Dairy Processing Equipment
  - Active auditing program
“Third Party” Standards

- American Meat Institute (AMI)
  - 10 Principles of Sanitary Design
  - Very pro-active
- Baking Industry Sanitation Standards Committee (BISSC)
- Global Food Safety Initiatives (GFSI)
- ISO 14159 Hygiene Requirements for the Design of Equipment
- Others
Cleaning and Sanitizing Programs

• Cleaning and sanitizing programs must be established and validated by the organization to ensure that all parts of the establishment and equipment are cleaned and/or sanitized to a defined schedule, including the cleaning of cleaning equipment.

• CIP Systems must be separated from active product lines.

• Parameters for CIP systems must be defined and monitored (including type, concentration, contact time and temperature of any chemicals used).

*(ISO 22002-1:2009 Section 11.3, 11.4)*
Cleaning and Sanitizing agents and tools

- Facilities and equipment must be maintained in a condition which facilitates wet or dry cleaning and sanitation.
- Cleaning and sanitizing agents and chemicals must be clearly identified, food grade, stored separately and used only in accordance with the manufacturer’s instructions.
- Tools and equipment must be of hygienic design and maintained in good condition and not present a potential source of extraneous matter.  
  \textit{(ISO 22002-1:2009 8.0, 11)}

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3.5.3 Management of suppliers of services

The company shall be able to demonstrate that where services are outsourced, the service is appropriate and any risks presented to food safety have been evaluated to ensure effective controls are in place.

4.6 Equipment

All food processing equipment shall be suitable for the intended purpose and shall be used to minimise the risk of contamination of product.

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<tr>
<th>Clause</th>
<th>Requirements</th>
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<tr>
<td>4.6.1</td>
<td>All equipment shall be constructed of appropriate materials. The design and placement of equipment shall ensure it can be effectively cleaned and maintained.</td>
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<tr>
<td>4.6.2</td>
<td>Equipment which is in direct contact with food shall be suitable for food contact and meet legal requirements where applicable.</td>
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Product Contact Surfaces

We must have objective evidence (records) confirming that all product contact surfaces are free of hazards

Why?
How do we do this?

It does happen…

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Poor hand wash facilities and poor personal hygiene are contributory factors in 17% of food-borne outbreaks, contributing to 170,000 cases of food poisoning per year at a cost to the food industry of £25,000,000 (€29,600,000) per year. (Health Protection Agency eFOSS Report 2: Foodborne Outbreaks in 2009)

- More than 100 foodborne Salmonellosis outbreaks occur each year in the United States with contaminated food preparation equipment implicated in approximately 32% of outbreaks with a known source:

  - In one example, in April 2009, a Salmonella outbreak at a camp in New Hampshire was caused by a Salmonella contaminated hand-held immersion blender used to prepare pudding, with a malfunctioning blender shaft seal suspected to have been the cause of contamination.
FOOD EQUIPMENT
SANITARY DESIGN
Sanitary Design must ensure...

Proper and efficient cleaning and prevention of potential contamination including:

- **Physical**
  - Cleaning/removal
  - No fragments or residues from surfaces

- **Chemical**
  - Cleaning/removal of allergens & other
  - No residues from surfaces
  - Durability of surfaces

- **Microbiological**
  - Cleaning/sanitizing
Food Equipment
Sanitary Design Includes

• Materials
• Construction
• Design & Fabrication
• Surface Finish
• Installation
• Operation/Maintenance
Sanitary Design during equipment construction

*Must take into consideration*

- Effectiveness of the cleaning process
  - Cannot clean and sanitize improperly constructed and designed equipment
- Corrosion consideration
  - Maintain cleanability
- Accessibility for inspection
CLEANABILITY CHALLENGES – INTRICATE EQUIPMENT & NICHES

Multiple Pulleys

Source: Am. Meat Inst.
Product (food) Contact Surface – Materials

- Impervious, smooth, cleanable
- Surface texture and finish features
- Surface treatments
- Free of cracks & crevices
- Nonporous/non-absorbent
- Non-toxic (residues)
- Corrosion resistance

There is HELP available
The HACCP Program

• We must have assurance that product contact surfaces are hazard free
• Anything that directly or indirectly comes in contact with the same surface that contacts that “food product”
• Examples: equipment, cleaning chemicals, brushes, tools, lubricants, air, water, etc....
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• Standards
• Guidelines
• Equipment Certification

http://www.nsf.org/
THIRD PARTY EQUIPMENT VERIFICATION (TPV) PROGRAM

ANSI CONSENSUS STANDARDS PROCESS

http://www.3-a.org/

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The food safety hazards arising from non-food (equipment, materials and services) destined for the food industry

“Mitigating the risks”

www.haccp-international.com
HACCP International
Components Evaluated

- Materials and specifications
- Toxicity
- Contamination risks
- Ease of Cleaning
- Operating Instructions
- Consequences of error
- Batch and process controls
- Claims
- Packaging and labelling
- Contribution to food safety
HACCP International Criteria

Materials and specifications:

• Use of food-safe materials when in contact with food or incidentally expected to contact food
• Use of appropriate grade of non-porous, cleanable, robust materials in construction
• Use of service providers (pest controllers, laundry etc.) with systems that support food safety management based on HACCP (e.g. record keeping, training and non-conformance procedures)
Contamination risks arising from the equipment or material:

- The potential for extraneous materials to enter the food stream (e.g. loose fixings, glass, brittle plastic, coatings)
- Chemical hazards which may enter the food stream (e.g. lubricants, solvents, allergens, dyes and pigments)
- The presence or build up of microbes or microbial toxins (linked to materials and specification, and ease of cleaning)
- In-house risk assessment is valid but should consider the same types of criteria and risk potential
An example from HACCP International that addresses the “ease of cleaning”:

- Hygienic design – presence of existing validation
  - Smooth and non-porous surface, non-toxic, non-corroding
  - Smooth welds
  - No angles / small radius corners (hard to clean)
  - Closed or capped ends to tubular pieces
  - Durability to cleaning agents and to repeated cleaning
  - Capped or reversed fixings such as screws
- In-house risk assessment is valid but should consider the same types of criteria and risk potential
WEBSITE -- http://edis.ifas.ufl.edu/


www.lawserver.com
The HACCP Program’s “hazard analysis” must address existing and potential hazards (biological, chemical, physical) related to “product contact surfaces”

Objective evidence must be available to substantiate all decisions related to these hazards.
Questions?

Thank you for your attention!

Go Gators

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