

Achieving Hygienic Design

The Education Mission of 3-A SSI

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Johnsonville Sausage

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What is the Necessity of
Hygienic Design Today?

2014 Food Recalls

- Salmonella
 - Chicken, Dried Eggs, Slice Fruit, French Cheese,
 - Sausage, Peppercorns, Basil
- Listeria
 - Mangos, Mexican Cheese, Peanut Butter, Salsa, bagged lettuce
- E. Coli
 - Spinach, Beef, Lettuce
- Allergen -
 - Niacin in Rice , Undeclared milk, Undeclared eggs, Undeclared fish

Data Management & Science

- CDC – Center for Disease Control
 - Quicker identification of outbreak
 - Better communication
 - Better tracking of pathogens
- DNA mapping

Hygienic design is important to the Food Industry and Public Health Agencies

- **Reduces hazardous risks**
- **Improves food safety**
- **Improves product quality**
- **Extends Shelf Life**
- **Faster, easier and more reliable cleaning**
- **Lower cost cleaning**
- **Cross Contamination Reduction**

Processor Necessity

- As a processor the necessity has never been greater
 - Allergen Control
 - Food Safety
 - Shelf Life
 - Production Capacity
 - Ltd sanitation
 - 24 hours per day – seven days a week
 - Global Markets
 - Natural and Organic

Regulatory Necessity

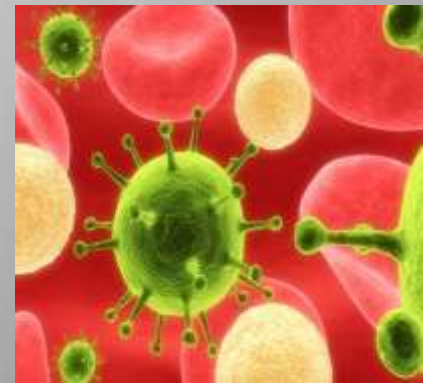
- Hygienic Requirements for Equipment and Utensils
 - GMP
 - USDA
 - FSIS
 - PMO
 - FSMA
 - HACCP (Hazard Analysis & Critical Control Points)

Relationship of Hygienic Design to HACCP

- HACCP (Hazard Analysis & Critical Control Points)
 - Physical Hazards
 - Chemical Hazards
 - Biological Hazards
- Hygienic Design is a Tool to Manage, Reduce and Eliminate Hazards and Risks
- 3-A SSI Standards Addresses and Manages Risks
- Hygienic Design is a Prerequisite program to HACCP

Hazard

Definition – a physical, chemical or biological agent that is likely to cause illness or injury in the absence of its control.



Hazard Analysis

the process of collecting & evaluating information on hazards associated with food under consideration to decide which are significant and must be addressed in a HACCP plan.

Critical Control Point (CCP)

Definition – a step at which a control can be applied and is essential to prevent or eliminate a food safety hazard or reduce it to an acceptable level

Hygienic design is a prerequisite
Program to a HACCP Program and in
not part of a HACCP Program

Examples of How 3-A Manages Physical Hazards

- **Materials of Construction**
 - Corrosion resistant material vs. rust of carbon steel
 - Risks of paint and coatings
 - Glass breakage and brittle materials risk
 - Rubber and plastic compatibility
- **Fasteners elimination or reduction**



Examples of How 3-A Manages Chemical Hazards

- Lubricated bearings mounted outside product zone
- Gear boxes mounted outside product zone
- Free draining and no pools of cleaning solutions
- Effective cleaning of allergens



Examples of How 3-A Manages Biological Hazards

- Reduce harborage point for microorganisms to hide and grow
 - Elimination of cracks and crevices
 - Elimination of bolted construction
 - No absorbent material
 - Specifies material surface finish



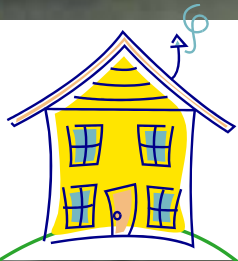
3-A does a great job to get hygienic equipment from fabrication to the process floor.

- 3-A Standards
- 3-A Practices
- TPV (Third Party Verification)
- Ran (Report of Alleged Non-conformance)

Hygienic Design Realities

- Not all equipment has 3-A Standards
- 3-A does not focus on installation or maintenance
- Not all industries use 3-A Standards
- 3-A General Standard may bridge some of these reality weakness.

Let's Review Some Hygienic Design Opportunities



Intermittent Welds and Welds with Pits



Hollow Rollers



Corrosion

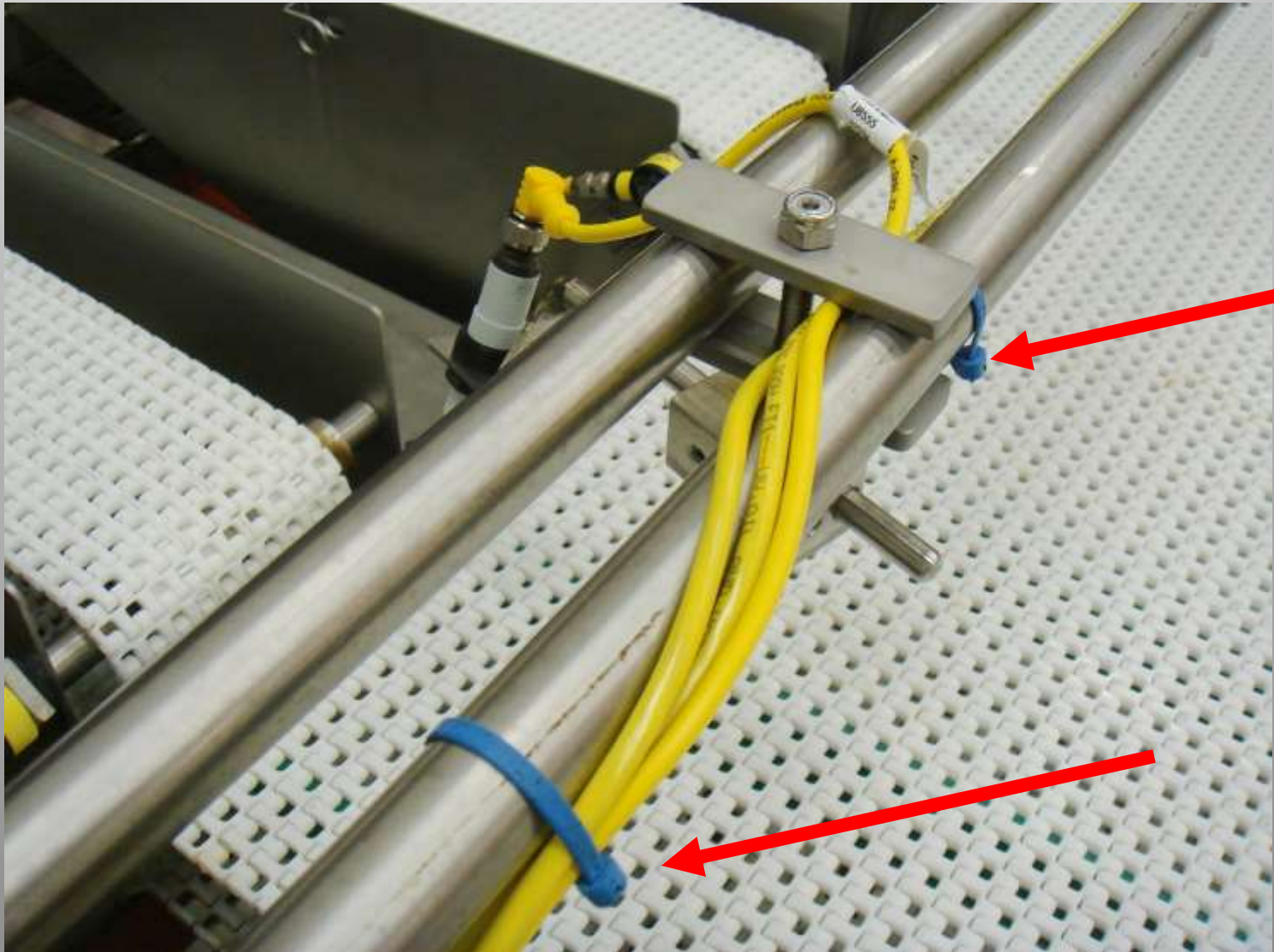
Will this create an niche for bacteria?

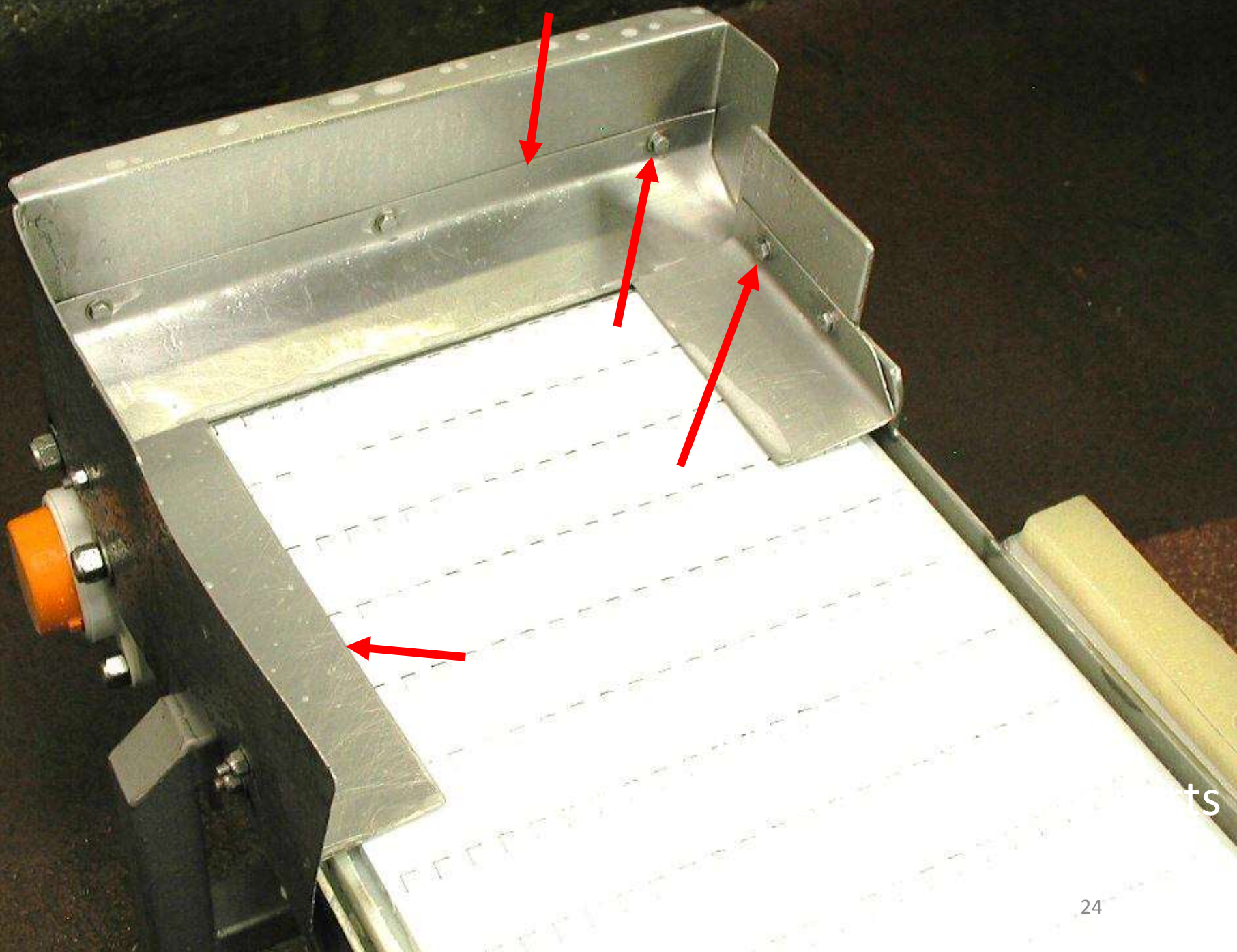


Bolted joints that cannot be cleaned without disassemble (note black lines)



Cable Tie Installation









Conveyor Access Design

A



B



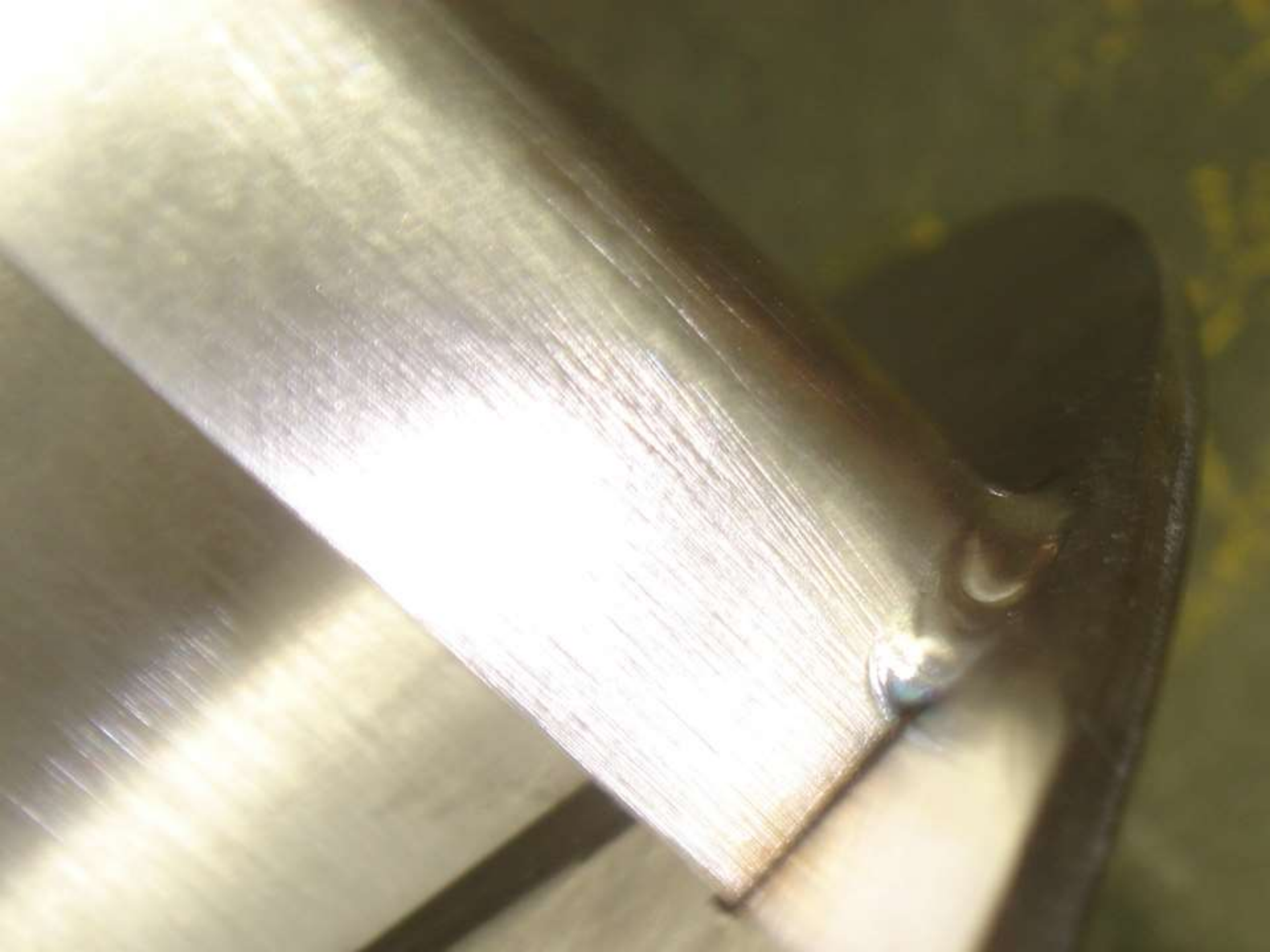
Installation Location



Installation Location

Too Close to wall for proper cleaning





Current Hygienic Design Resources

- 3-A SSI standards and practices
- EHEDG
- BSSIC Standards
- NSF standards and guideline
- National Vending Machine Association
- AMI 10 principles
- ASME – BPE
- Books
- Consultants
- Universities and Colleges

No One Resource Provides a Holistic approach to Hygienic Design



Where does 3-A SSI Fit?

- Education is a key initiative in the 3-A SSI Mission
- There is current gap in hygienic design education for all 3-A stakeholders
- 3-A is in a unique position to fill that gap
 - Established community of hygienic design experts
 - 3-A Standards authorities
 - Stakeholder groups already have a good communication network

Current 3-A education

- 3-A website Knowledge center
- Seminar and outreaches
- Speaker Network
- Annual Education Meeting

Future 3-A Education Opportunities

- Basic and Advanced Hygienic Design Training
Targeting All Stakeholders Education
 - Fabricators
 - Engineers, designer, service technicians
 - Processors
 - Engineer, Maintenance, quality
 - Public Health Officials

Introductory Modules

- Overview of Principles of Hygienic Design and Foundation Elements
- Basics of Hygienic Equipment Design
- Basics of Hygienic Facility Design Basics & Environmental Control
- Basics of Cleaning and Sanitation
- Basics of Operational Design and GMP
- Basics of Quality, Regulations, Standards, and Certification Programs

Advanced Modules

- Advanced Hygienic Equipment Design
 - 2.1 Hygienic Design of Fluid Handling Systems
 - 2.2 Hygienic Design of Solid Handling Systems
 - 2.3 Advance Material Selection and Specification for Hygienic Design
 - 2.4 Advance Fabrication Methods for Sanitary Design
- Advanced Hygienic Facility Design & Environmental Control
 - 3.1 Hygienic Construction details and design
 - 3.2 Hygienic Product Contact Utilities – Air, gases, water, steam
 - Module 3.3 Facilities Systems – Air Handling, Water, Heating Systems, Drains and Waste treatment

Advanced Modules (cont.)

- Advanced Cleaning and Sanitation
 - 4.1 CIP Strategies and Circuit Design
 - 4.2 Automated Cleaning Solutions
 - 4.3 Sanitation Alternatives – Chemicals, heat, ozone, gases
 - 4.4 Dry Cleaning Techniques
- Advanced Operational Design and GMP
 - 5.1 People and Food Processing – Traffic flow, hand washing and GMP Management
- Advanced Quality, Regulations, Standards, and Certification Programs
 - 6.1 Specification of Equipment Using 3-A-SSI General Standard
 - 6.2 Design of Equipment Using 3-A-SSI General Standard
 - 6.3 Selection of Custom Food Equipment Fabricator

Modes of Content Delivery

- Basic content
 - Online self instruction e-learning modules
- Advance content
 - Online self instruction e-learning modules
 - Instructor Lead Sessions
 - Webinars
 - Group Seminars
 - Partner with other associations
 - Outreach to Universities and Colleges

Education is a key initiative in the 3-A SSI Mission and this program would fill a current gap in hygienic design education for all 3-A stakeholders