



WORLD BREWING CONGRESS

August 13–17, 2016 • Denver, Colorado, U.S.A.

#ElevateBeer



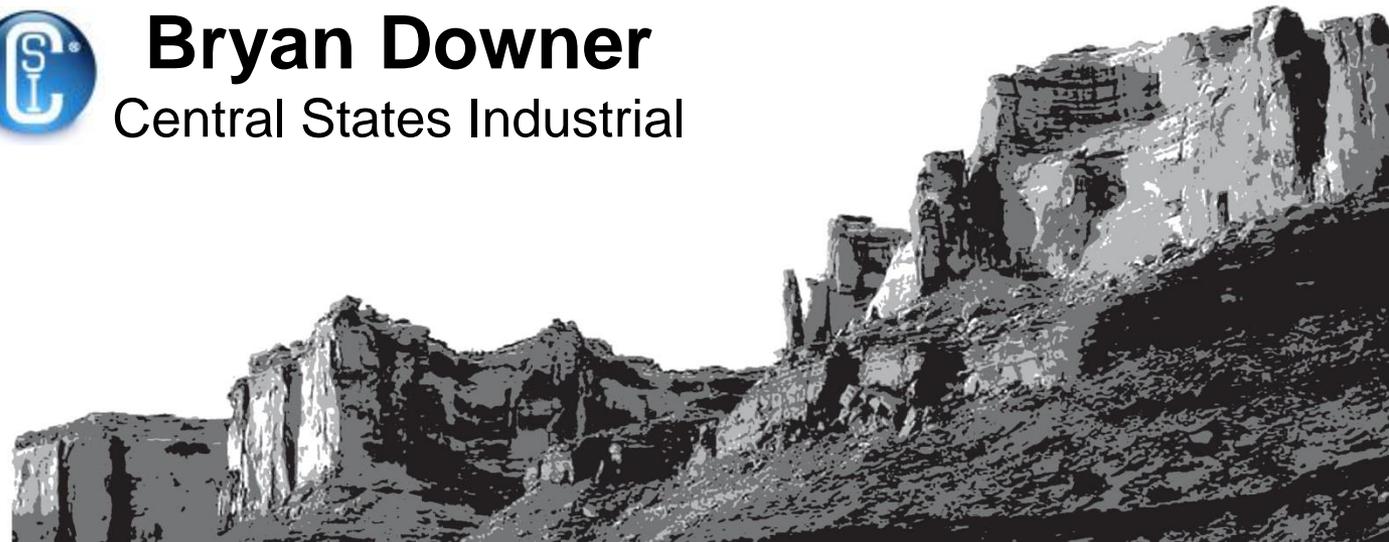
Facility Design

Make it and keep it hygienic



Bryan Downer

Central States Industrial





Risk Classification

Biological

Chemical

Physical





Three Areas of Focus

Introduction

Harborage

Removal



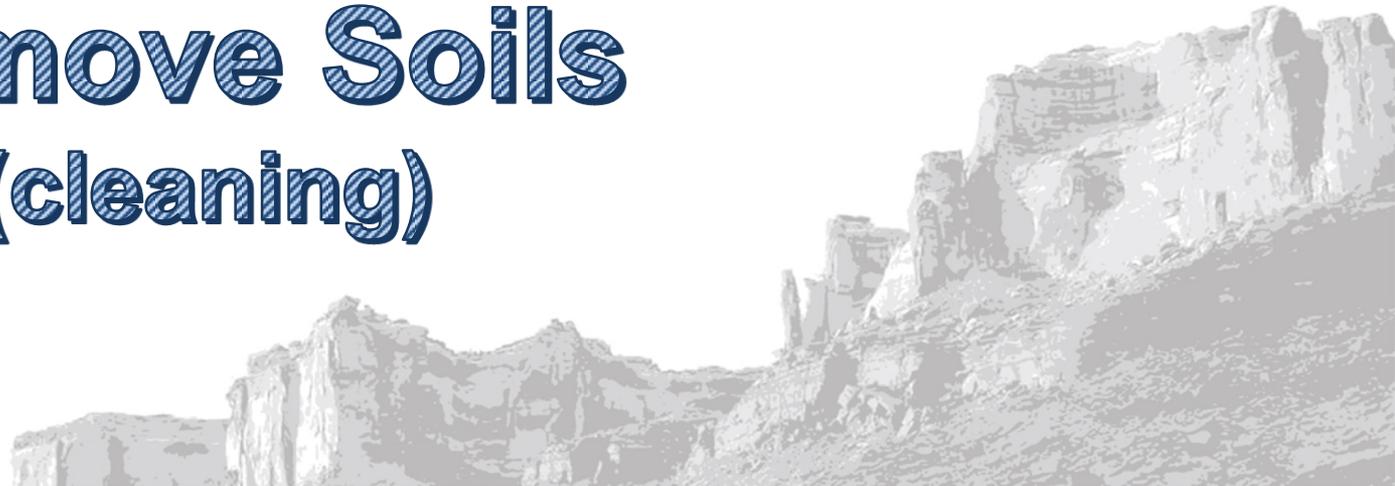


Prevent & Remove

Reduce Migration
(traffic flow)

Control Harborage Areas

Remove Soils
(cleaning)



Points of Introduction





Points of Introduction

Biological

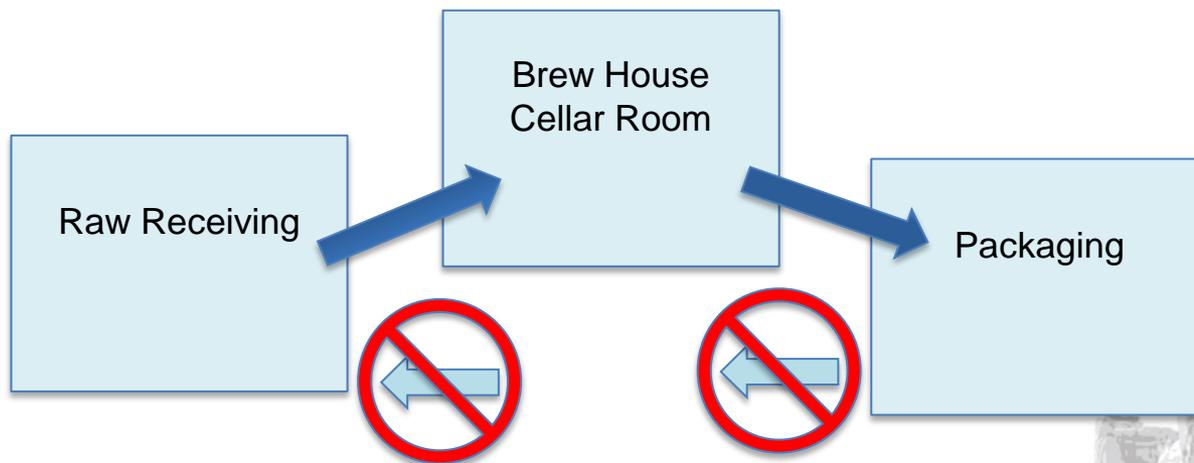
- Traffic between “clean” and uncontrolled areas
 - Personnel
 - Open doors and windows
 - Visitors / Vendors

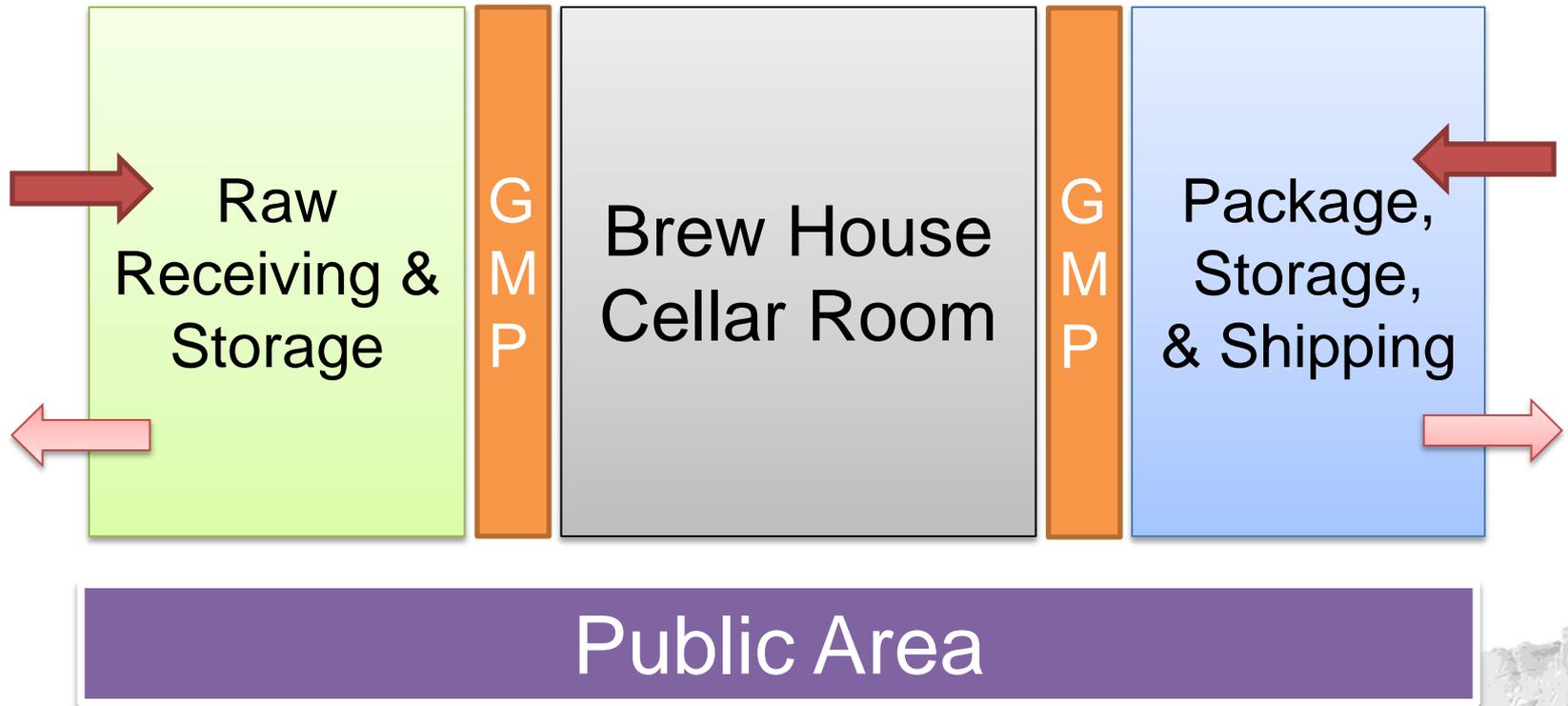




Facility Layout

- Manage traffic flow and access
- Isolate exposed product areas
- Isolate raw processing areas
- Good Hygiene practices (GMP)







G
M
P





Points of Introduction

Chemical

- Bearings (Divorcement)
- CIP divorcement (clean-break)
- Chemical storage & isolation
- Materials of Construction
 - Absorbent or leachable







Points of Introduction

Physical

- Glass (gauges, lights, etc)
- Metal (construction)
- Hard Plastics

Will migrate with traffic

Points of Harborage



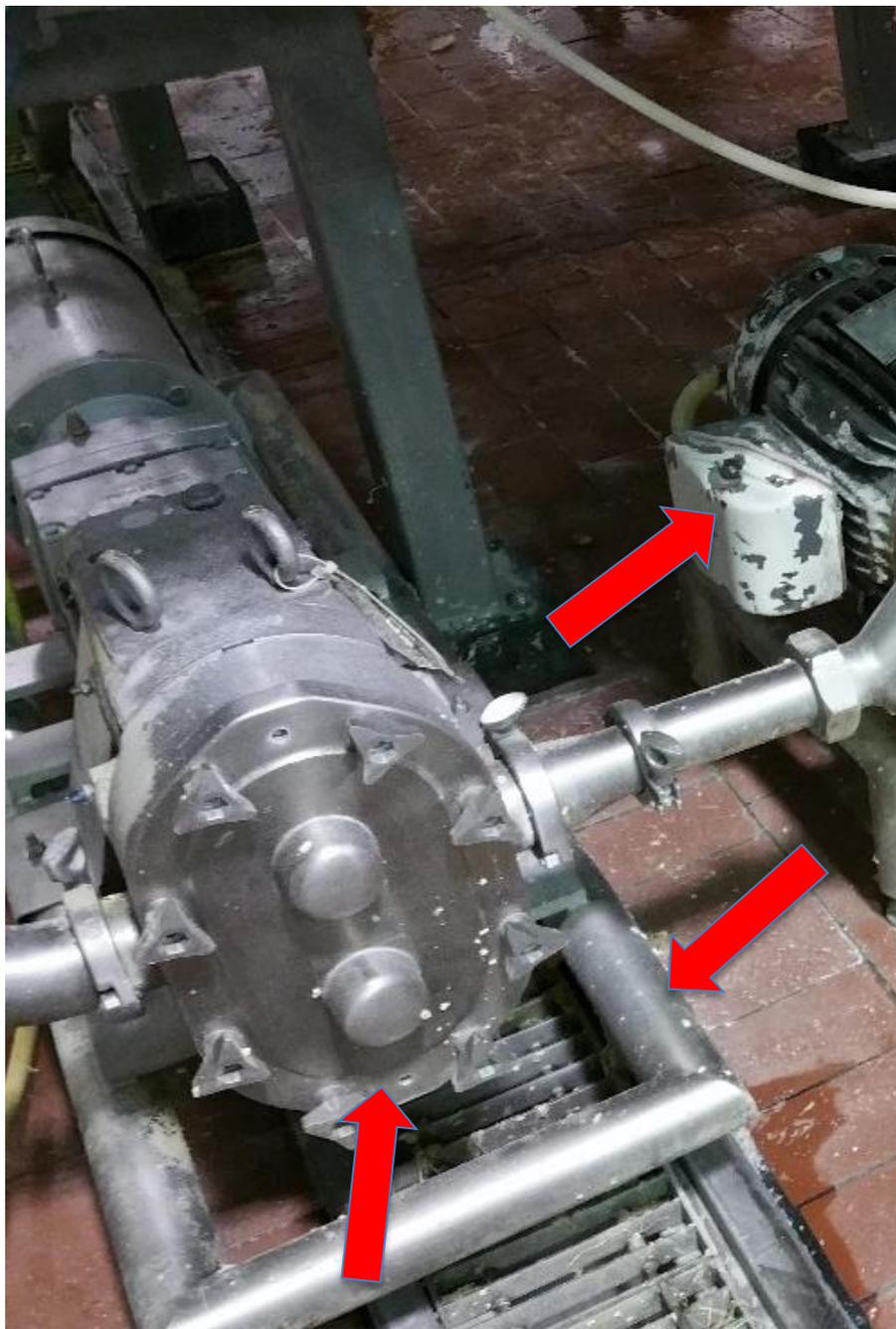


Points of Harborage

Biological

- Standing Water / Floor drains
- Piping dead ends
- Improper equipment drainage
- Porous surfaces









Points of Harborage

Chemical

- Build up in divorcement gap
- Porous materials
- Incompatible elastomers
- Poor CIP draining / dead ends





Points of Harborage

Physical

- COP
- Personnel (traffic)
- Raw material packaging
- Inconsistently cleaned surfaces





Inaccessible

Porous / Absorbent

Dead Leg

Non-Cleanable



Cleaning





Removal (cleaning)

- Porous surface
 - Floors
 - Ceilings and Walls
- Surface Finishes
- Clean-ability (radii)
- Inspection and cleaning access
 - If you can't see it....







WELDED JOINTS

- Continuous TIG Weld
- Cleanable

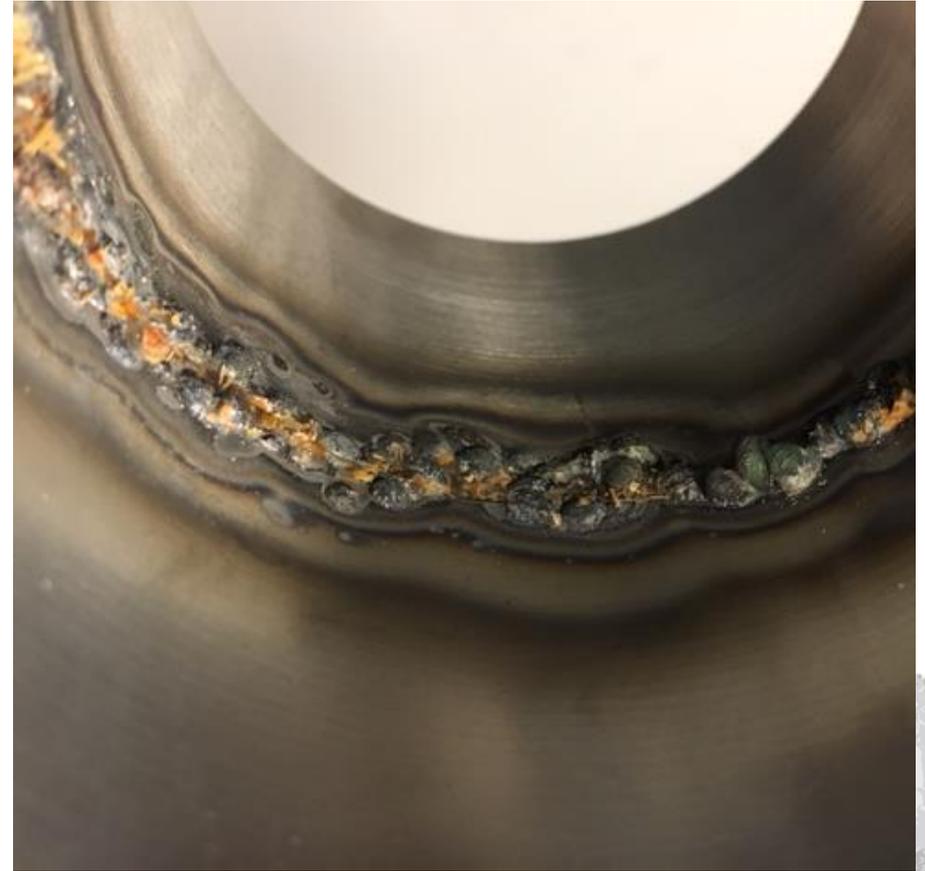


- Intermittent TIG Weld
- Not Cleanable





Non-Cleanable Welds



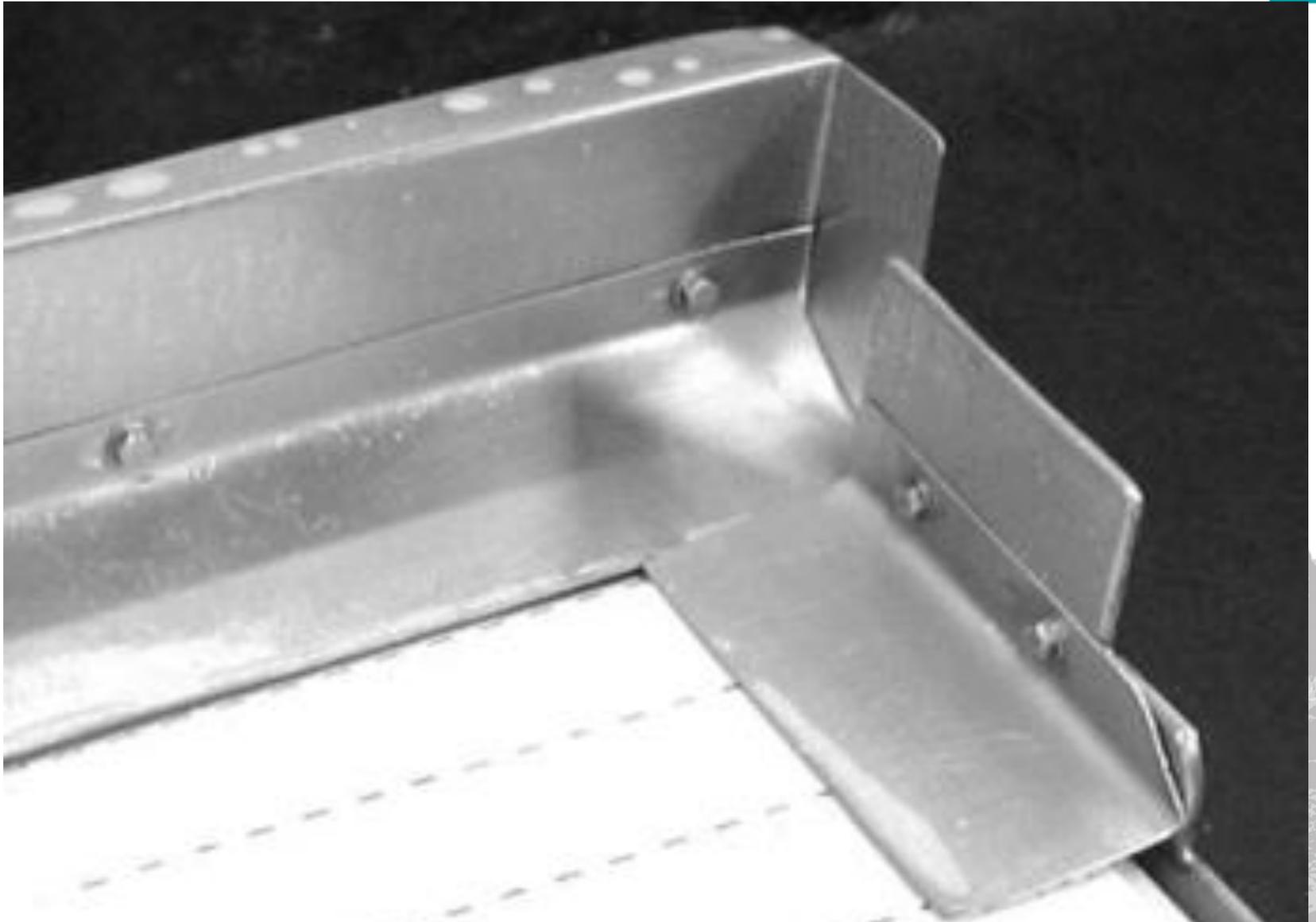


Lack of Penetration





Bolted Joints





Accessible

Hygienic equipment should be designed where:

- Surfaces are accessible for cleaning
- Surfaces are accessible for sanitizing
- Surfaces are accessible for inspection
- Applies to all cleaning methods
 - Manual, COP, and CIP

For manual and COP cleaning

IF YOU CANNOT SEE IT, YOU CANNOT CLEAN IT!

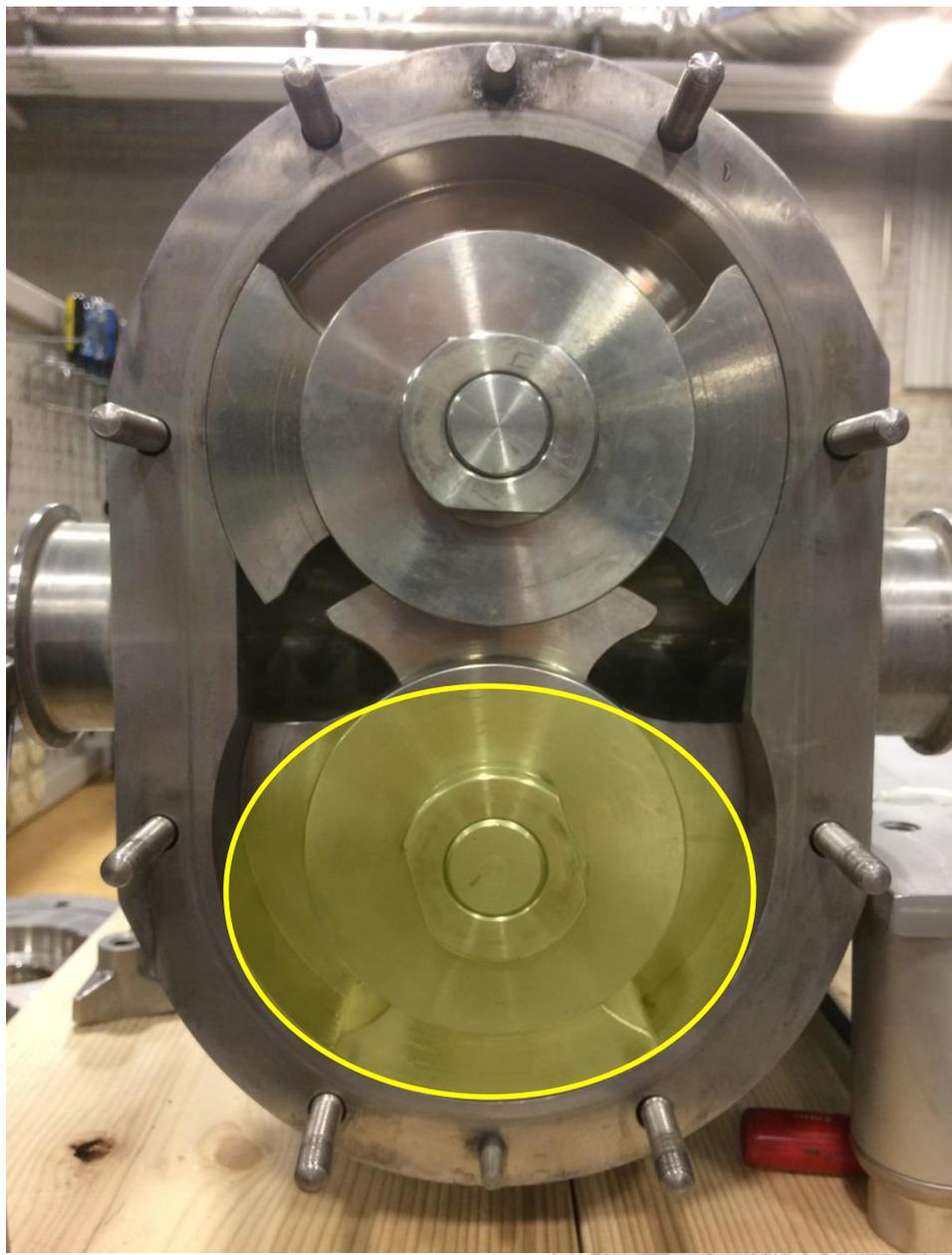




Drainable

- Surfaces must be self-draining except for typical clingage or adherence.
- Recommended slope is a minimum of 1/8" per ft.







Overview

- The **Key** to facility hygiene....

Your Staff
Your Culture





Cleanliness Culture

- Rules alone don't work
- Procedures are necessary
- **Understanding and desire**

