Brewery Sanitation

“Where The Rubber Meets The Road”

Andy Tveekrem
Market Garden Breweries
CHAPTER X
SANITATION AND SAFETY PRECAUTIONS

SANITATION

264. Why Is Sanitation in a Brewery of Great Importance?
The importance of cleanliness in each and every department of a
brewery cannot be too strongly impressed upon a brewer, because only
in a clean atmosphere and with clean equipment and utensils can sound
beer be produced. “Cleanliness and sanitation is the basic law of
brewing.”

265. What Is Meant by “Technically” Clean?
Brewery installations are “technically” clean after thorough
cleansing by hand, with a brush or broom and water, with or without
the aid of cleaning solutions. Tools which are used for cleaning must
be kept in proper condition. An uncleans brush might cause contamina-
tion. This does not always mean that equipment cleaned in such a way
is also “biologically” clean.

266. What Is Meant by “Biologically” Clean?
This means free of micro-organisms. Equipment which was
cleaned and sterilized loses its “biological cleanliness” as soon as it is
exposed to unconditioned air. Then it is at a stage of being technically
clean only.

267. What Is Meant by “Mechanical” Cleaning?
It means the cleaning of equipment by using brushes, brooms, metal
sponges, sand, sabres and water. It shall be done before a disinfectant
is applied and is usually the safest procedure compared to other cleaning
methods.

268. How Is the Degree of Cleanliness Determined?
By using practically trained senses of touching, smelling, observing
and tasting. Also by biological analysis.

269. What Is Meant by “Biological” Control in the Brewery?
Biological control in the brewery provides for conducting regular
biological tests on the condition of yeast, beer and equipment. These

What’s the Point?
From: The Practical Brewer,
Master Brewers’ Association of
America, 1946
<table>
<thead>
<tr>
<th><strong>Physically Clean</strong></th>
<th><strong>Biologically Clean</strong></th>
<th><strong>Sterile</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Looks good</td>
<td>Swab cultures come up negative.</td>
<td>Hardest to achieve and maintain.</td>
</tr>
<tr>
<td>Smells good</td>
<td>The goal after sanitizing a surface.</td>
<td>Not a real goal except in lab work or yeast propagation.</td>
</tr>
<tr>
<td>Feels good</td>
<td>Steam and pressure needed.</td>
<td></td>
</tr>
<tr>
<td>You can’t skip this step!</td>
<td></td>
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<tr>
<td>Internal Conditions</td>
<td>External Conditions</td>
<td>Monitoring and Communication</td>
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<td>Surfaces</td>
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<td></td>
<td>Pests</td>
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Chemicals...briefly.

- Caustics remove organic deposits and oils.
- Acids remove inorganic deposits like beer stone.
- Sanitizers kill microbes once everything is clean.
- Oxidizers can sanitize and aid in cleaning.
- Work with your supplier to develop a program.
Treat Chemicals with Respect!

Organized areas are inherently safer than messy areas.
Clean Out of Place Basics COP

- Time
- Temperature
- Agitation -- 80% more effective than static soaking
- Chemical concentration
This is a really nice COP system.
An Ounce of Prevention...

...beats this!
Get Organized!

5 S philosophy: a place for every thing and every thing in its place.
Clean In Place Basics
CIP

- Time
- Temperature
- Flow velocity—laminar vs turbulent flow
- Pressure
- Chemical concentration
CIP: The heart of the sanitation process

- This is a nice CIP system.
CIP:

“A Pot and a Pump.”

• This is a simple, yet effective, CIP system.
Control Options for CIP:

- Pump Speed
- Heating
- Flow Rate and Total
- Conductivity
- Tank Level
- Chemical Feed
- Process Duration
- Proof of Return
More CIP Options:

• Air Blow
• Water Filtration & UV
• Ozonation
• Strainers/Bag Filters
• Sprayballs (CIP your CIP)
• Valve Actuation
• CIP Recipe Management
A few environmental items to be aware of...

- Dry vs Wet Storage
- Water makes things grow.
Dry It Out.

Air Conditioning Eliminates Mold Growth…
get the %RH below 60.
Natural light helps too.

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External Cleaning

Chlorinated Caustic Foam. Acid Foam. Quaternary Ammonium Compound.
Flooring and Drains

The floor and drains are a system. A failed system is a problem!
Hoses are wear items.

Beer hoses that are kinked or crushed should be retired or repurposed. 5 years is average working life for a beer hose.
Valves: some are sanitary and some are not.

- Ball and Butterfly Valves
- Sanitary Ends vs. Threaded
Sanitary tee types

And eventually all things need to find the recycling bin!
Potential Hot Spots

- Wort Cooler
- Carbonation and aeration stones
- CO2 hoses
- Water filters
Heat Exchanger CIP: 1.5 – 2X nominal flow rate. Forward AND Backward. Inspect internally every 4-6 months.
Stones

Flush them outside-in for cleaning. Ultrasonic cleaning helps! Autoclaving is best practice. Or boil them.

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Basic Validation and Documentation

• pH
• Titrations
• Swabs
• SOPs and Release Forms
pH is fundamental.

- pH meter
- pH strips
Validation: ATP swabs.

Good for surfaces and water.
Ideal for filler start-up procedure.

Validation: Titration
Release Forms: Have people sign off before beer moves down the line.

Keep all documentation!
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Thank You!

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