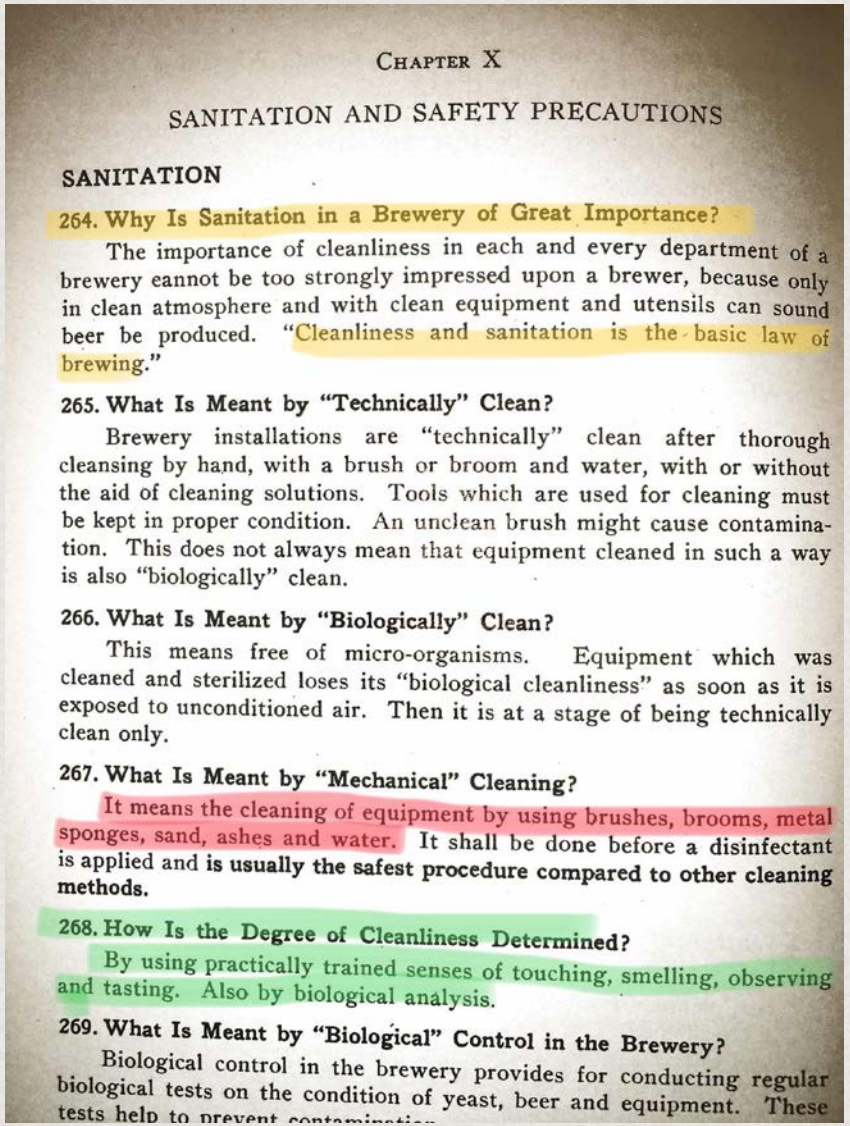
Brewery Sanitation

“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 eannot be too strongly impressed upon a brewer, because only in 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 unclean brush might cause contamination. 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, ashes 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 tests help to prevent contamination

What's the Point?

From: The Practical Brewer, Master Brewers' Association of America, 1946

Physically Clean

Looks good

Smells good

Feels good

You can’t skip this step!

Biologically Clean

Swab cultures come up negative.

The goal after sanitizing a surface.

Sterile

Hardest to achieve and maintain.

Not a real goal except in lab work or yeast propagation.

Steam and pressure needed.

Internal Conditions

Surfaces

Welds

Hoses and pipes

Water quality

Air quality

Gas purity

External Conditions

Temperature

Humidity

Light

Floors and drains

Air quality

Building envelope

Pests

Monitoring and Communication

pH testing

ATP testing

Wort stability test

Plating and culturing

Tags and signs

Discussion

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!

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.

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

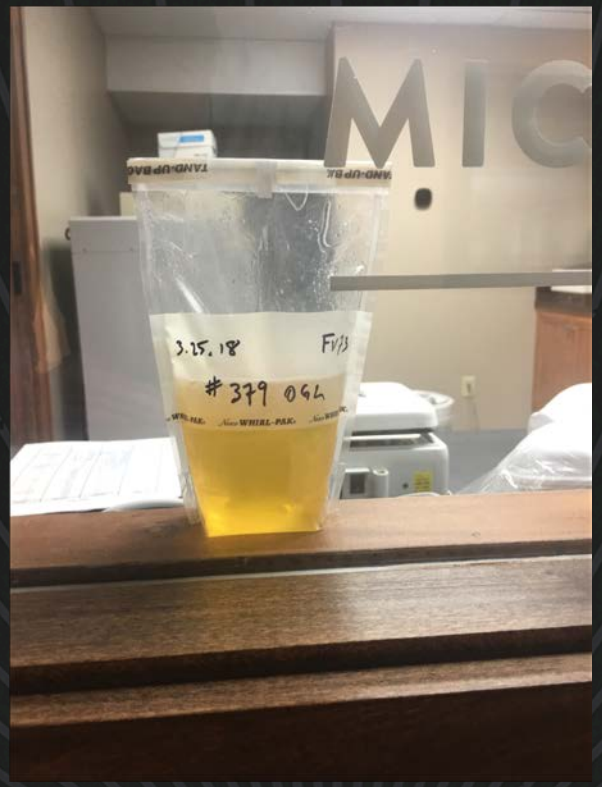
Sanitary tee types

And eventually all things need to find the recycling bin!

Potential Hot Spots

- Wort Cooler
- Carbonation and aeration stones
- CO_2 hoses
- Water filters

Wort Stability Test



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.

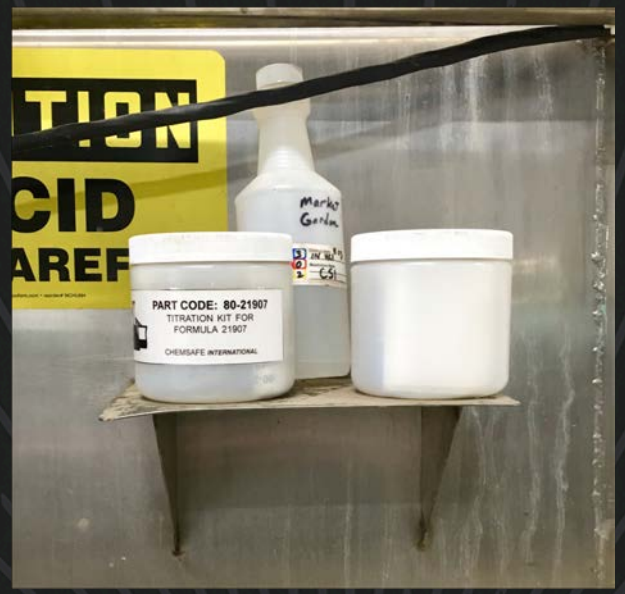
Basic Validation and Documentation

- pH
- Titrations
- Swabs
- SOPs and Release Forms

pH is fundamental.

- pH meter
- pH strips

Validation: Titration

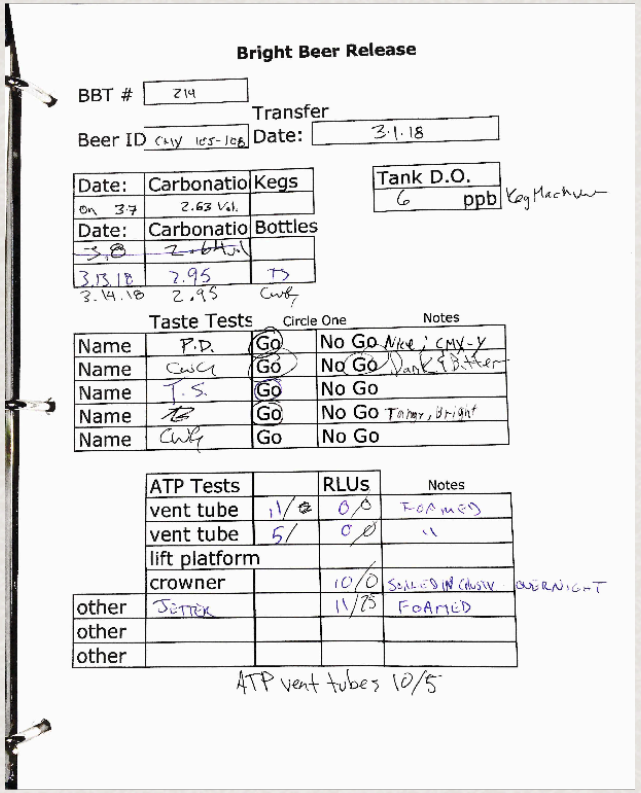


Validation: ATP swabs.

Good for surfaces and water.

Ideal for filler start-up procedure.

Standard Operating Procedures



Bright Beer Release

BBT # 214

Beer ID CMY 165-168

Transfer Date: 3.1.18

Date:	Carbonatio	Kegs
on 3.7	2.63 Vol.	
Date:	Carbonatio	Bottles
~~3.8~~	~~2.64 Vol~~	
3.13.18	2.95	TD
3.14.18	2.95	CWG

Tank D.O.
6 ppb Keg Machine

Taste Tests

		Circle One	Notes
Name	P.D.	Go	No Go Nice ' CMY-Y
Name	CWG	Go	No Go Dank Bitter
Name	T.S.	Go	No Go
Name	[illegible]	Go	No Go Tanner, Bright
Name	CWG	Go	No Go

	ATP Tests		RLUs	Notes
	vent tube	11/	0/0	FOAMED
	vent tube	5/	0/0	11
	lift platform			
	crowner		10/0	SOAKED IN CHLOR OVERNIGHT
other	SETTER		11/15	FOAMED
other				
other				

ATP vent tubes 10/5

Release Forms:

Have people sign off before beer moves down the line.

Keep all documentation!

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Discussion

Thank You!

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