CRAFT BREWERS CONFERENCE

& BrewExpo America®

BA BREWERS ASSOCIATION

#CraftBrewersCon

WELCOME

KATIE FROMUTH

Technical Brewing Projects Coord.

BREWERS ASSOCIATION

Boulder, CO

MATT STINCHFIELD

Safety Ambassador

BREWERS ASSOCIATION

Boulder, Colorado

safetyambassador@brewersassociation.org

@MattStinchfield, #SafetyAmBadAssador

mstinchfield

GROUND RULES

FAQs

- **Bootcamp Time**
  8:01am–11:30pm
- **15-minute break**
  10:00–10:15am
- **COVID precautions**
- **Emergency Actions**
  Exits, Restrooms, Fire Alarms, AEDs
- **Devices to Silent Mode**

DOCUMENT YOUR TRAINING

1. **Attend Today's Course**
2. **Take the Online Quiz**
   - **You have until end of CBC**
   - **Details during second half!**
3. **Pass the Quiz (75% score)**
4. **Certificate Emailed (by 5/31)**

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Audience Poll – Word Cloud

Join at: slido.com #CBC22

Q1: Safety Bootcamp is live!

In one word, how do you *feel* about being here?

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DANA JOHNSON

Technical Director, Craft Brewing

BIRKO CORPORATION / DIVERSEY

Commerce City, Colorado

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Diversey™

BIRKO®

A Diversey Company

your partner in craft brewery sanitation

YOUR BREWERS ASSOCIATION

AND *YOUR* SAFETY

SAFETY BASICS

STATE OF THE INDUSTRY

KEY DEFINITIONS

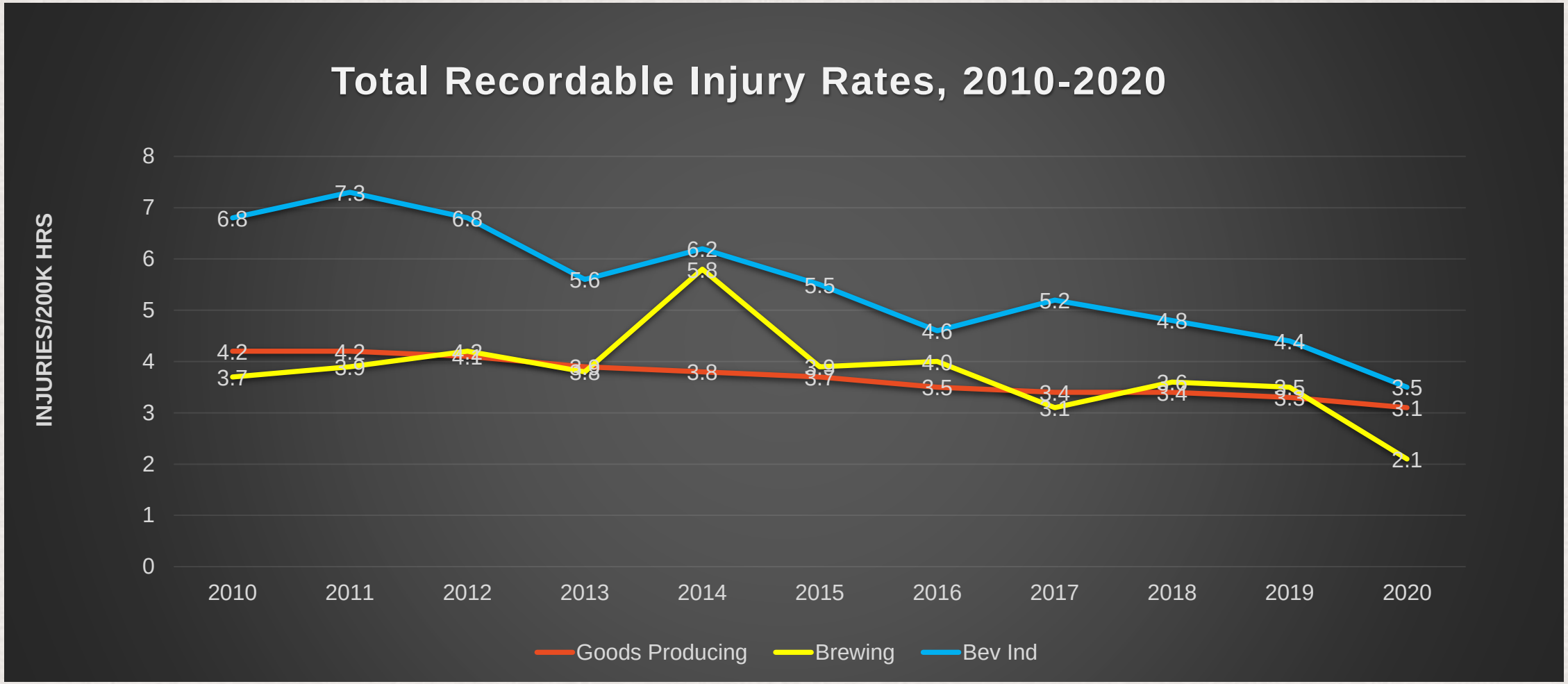
HEALTHY SAFETY CULTURE

HAZARD ASSESSMENT

What is Safety?

Freedom from harm in the workplace

PAST: Injury Rates Decline, but Covid?



PRESENT: Collaborations and Alliances

FUTURE: Improve Culture, Assess and Progress

GENERAL DUTY CLAUSE

Employer creates a **"safe and healthful workplace"**

Employees abide by safety instructions, use equipment provided, follow rules

CULTURE WORK

Culture → Safe Behaviors

Culture = Beliefs, Values, Perceptions, Assumptions

Experience & Socialization → Culture

SAFE & HEALTHFUL WORKPLACE

Employ the **Hazard Assessment** Process

Develop and Use **Standard Operating Procedures**

Measure Progress

Learn to Set Goals and Measure Safety Progress

Track & Yield:

A Winner's Guide to Safety & Sustainability Key Performance Indicators

Tuesday, 1:30-2:30
Ballroom B

Presenters:
Matt Gacioch
Matt Stinchfield

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RACHEL BELL

Safety Specialist

CANARCHY - CRAFT BREWERY COLLECTIVE

Salt Lake City, Utah

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CULTURE CHANGE

COMMUNICATION COLLABORATION

YEAST MAKES BEER

PEOPLE MAKE BREWERIES

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IMPORTANCE OF CULTURE

"…group change in behavior occurs through changes in cultural beliefs, attitudes, perceived norms and concepts."

–Trotter & Schensul, 1998

Wrap Your Head Around Culture

- **Culture is all encompassing, constantly growing, changing**
- **Culture is a group acting together**
- **Safety culture shouldn't threaten management – management has vital role**
- **Culture is built from existing organizational principles: the 5 drivers**
- **Your brewery will have a culture, make it the one you want**
- **Build safety culture first, then expand to other areas**

SAFE BEHAVIOR

OUTCOMES

BELIEFS, VALUES & PERCEPTIONS

CULTURE

EXPERIENCE & SOCIALIZATION

CULTURAL PRECURSORS

CULTURAL PRECURSORS

Management

Communication

Accountability

Inclusivity

Competence

Principal Culture Drivers – These Exemplify *Experience* and *Socialization*

FIVE DRIVERS OF A HEALTHY SAFETY CULTURE

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1. MANAGEMENT

Coordination of All Drivers

- Setting objectives (Management)
- Motivating the team (Communication)
- Developing people (Competence)
- Devising systems of measurement (Accountability)
- Organizing resources (Inclusivity)

Management in a Safer Brewery

- Dedicated to high value of safety
- Measurable processes and progress
- Involves employees at all levels
- Training and equipment provided

2. COMMUNICATION

Frequent, Consistent Messaging

- What is known, expected, required
- What is unknown; asking
- Expected performance, consequences
- Dynamic, through all organization levels
- In Person, written, digital

Communication Regarding Safety

- Policies, procedures (SOPs), schedules
- Concerns, near-misses, suggestions
- Checking in for well-being

Communicate Better

- Mis-Comms Inevitable, Try Again
- Don’t read minds

3. COMPETENCY

Empowered Learning, Experience, Skills

- Orientation, training, cross-training
- Internship, mentoring
- Committee involvement, trade assoc.
- Learning measurement, evaluations, certifications
- ***Plus***, Whatever you brought with you

Competence in Safe Job Performance

- Know hazards and control procedures
- Share what you know with others
- Don’t normalize shortcuts
- Be accountable for your competence
- Put aside turf wars

4. ACCOUNTABILITY

Responsibility and Follow-Through

- Workforce and Management held to same level of accountability
- Goal setting, supporting goal pursuit, assured achievement of goals
- System of praise and discipline exists, applied consistently
- Forward-looking KPIs

Accountability in a Safe Workplace

- Management lives up to stated safety values, importance, underwriting
- Safety improvements are prioritized, measurable, time-specified
- Follow-through, completion are recognized

5. INCLUSIVITY

Equal Access, Opportunities, Involvement

- "Be in the room" & "Have a voice"
- Learning and training opportunities
- Cross-training and task rotation

Inclusivity in a Healthy Safety Culture

- Represented on Safety Team or Safety Committee
- Parity in job assignment, risk, PPE
- Contributing to safety systems
  - Hazard recognition/assessment
  - SOP & LOTO procedure development
  - Safety policies, near-miss reporting, etc.

FOUNDATIONS OF CULTURAL CHANGE

Create Policies and Enact Change

- Get feedback from departments BEFORE policy development
- Identify potential roadblocks
- Listen to those who do the job every day
- Stakeholders with an active role in writing these policies are more likely to follow them
- Be prepared to either adjust the policy or punish noncompliance

Audience Poll – YES or NO

Join at: slido.com #CBC22

Q2: Have you ever left a job because it was unsafe or threatening?

Tackle Behavioral and Systems Safety at the Core

How to Prevent Safety Incidents: An Introduction to Human and Organizational Performance (HOP)

Wednesday, 1:30-2:30pm
Ballroom B

Presenter:
Dave Huizen

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HAZARD ASSESSMENT AND CHOOSING CONTROLS

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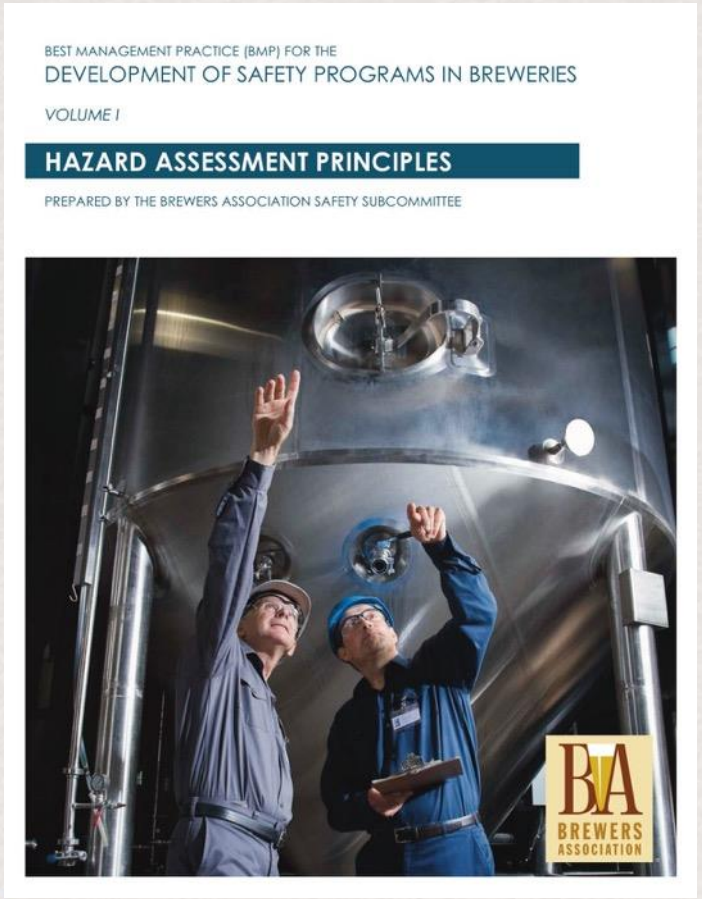
What is Hazard Assessment?

1. Outline steps in task
2. Identify hazards
3. Specify hazard controls
4. Revise procedure to include controls

Just Takes a Little Practice

1. Understand the task or process
2. Imagine what could go wrong, i.e. hazards and outcomes
3. Think creatively for ways to prevent or reduce the hazards
4. Document your findings in writing, i.e. SOP

Hazard Assessment BMP



Hazard Assessment Form

TASK:	HA DATE:
DEPT:	INITIALS:

STEP	DESCRIPTION	HAZARDS	CONTROLS	PPE	FMEA NO.

SOP FORM

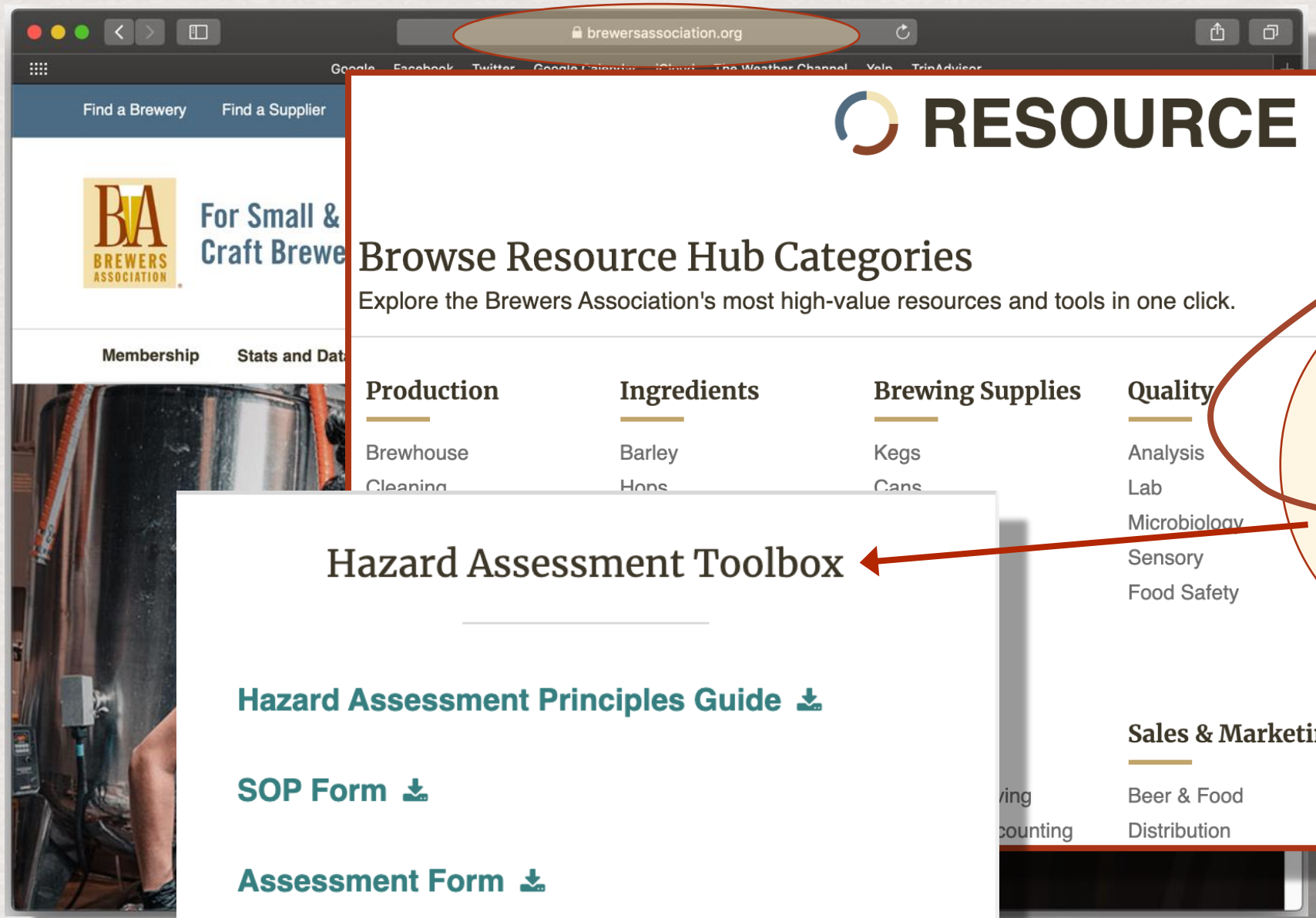
TASK: _____	SOP NO: ____ REVISION DATE:_____
DEPT: _____	INITIALS: _____

1) Purpose

This SOP describes Brewery _____'s procedure for safe and effective _____.

2) Scope

This SOP is limited to _____.



RESOURCE HUB

CLICK

Browse Resource Hub Categories

Explore the Brewers Association's most high-value resources and tools in one click.

Production
- Brewhouse
- Cleaning

Ingredients
- Barley
- Hops

Brewing Supplies
- Kegs
- Cans

Quality
- Analysis
- Lab
- Microbiology
- Sensory
- Food Safety

Safety
- Safety Culture & Training
- Hazards & Prevention
- OSHA

Sustainability
- Benchmarking
- Energy
- Green Building
- Solid Waste
- Wastewater
- Water Usage

Sales & Marketing
- Beer & Food
- Distribution

Laws & Regulation
- Government Affairs
- FDA

Human Resources
- Employee Health & Safety

Hazard Assessment Toolbox

Hazard Assessment Principles Guide

SOP Form

Assessment Form

EXAMPLE HAZARD ASSESSMENT – SPENT GRAIN REMOVAL

TASKS

1. Discharge draff from lauter tun (LT) into container
2. Move container from brewhouse area to parking lot
3. Detailed cleaning of LT…
4. … all the way thru

EXAMPLE HAZARD ASSESSMENT – SPENT GRAIN REMOVAL

HAZARDS

Where could there be a hazardous transfer of energy to a person or object?

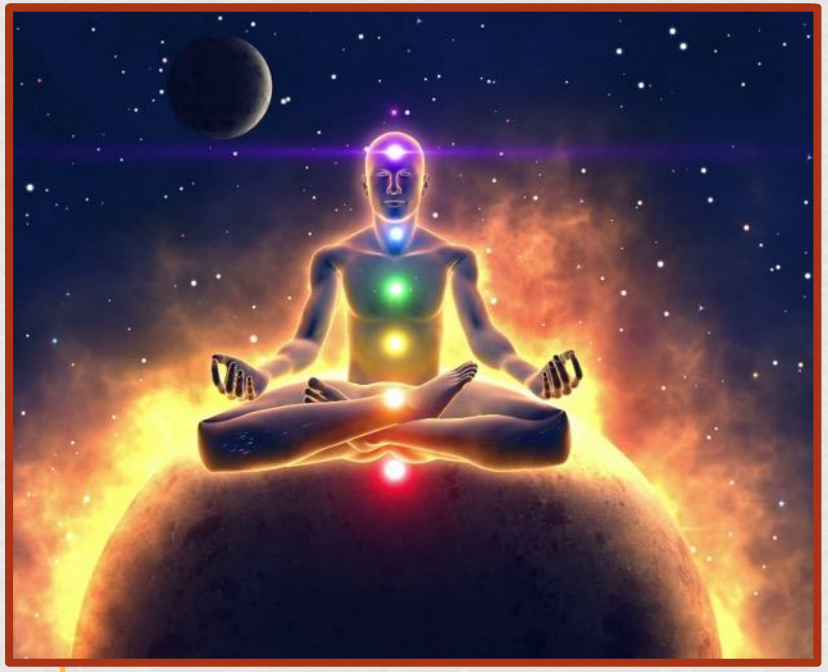
OUTCOMES

What could be the result if you are impacted by a hazard?

USING LAYERS OF HAZARD CONTROLS

CONTROLS

- Substitution or Elimination
- Safe Work Practices
- Engineering Controls
- Administrative Controls
- PPE



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WALKING AND WORKING SURFACES & HOUSEKEEPING

AVOIDING SLIPS, TRIPS AND FALLS…

…AND OTHER HORRIBLE INCIDENTS

WALKING AND WORKING SURFACES…

…Wherever Your Feet Touch

- Floors
- Elevated surfaces
- Ladders

Why Are They Important?

- We interact with them constantly
- Slips and falls account for 15% of accidental deaths
- OSHA regulates them
- Let me tell you a story

WALKING AND WORKING SURFACES HAZARD ANALYSIS

TASKS

- Daily brewery work
- Brew deck stairs
- Tank cleaning
- Dry hopping

OUTCOMES

- Slips, trips, falls
- Falls from height
- Falling items
- Increased severity of other incidents
- Electrocution

CONTROLS

- Good housekeeping
- Proper use of surfaces and ladders
- Fall Protection
- SWP – caution
- Emergency planning and egress

WALKING AND WORKING SURFACES

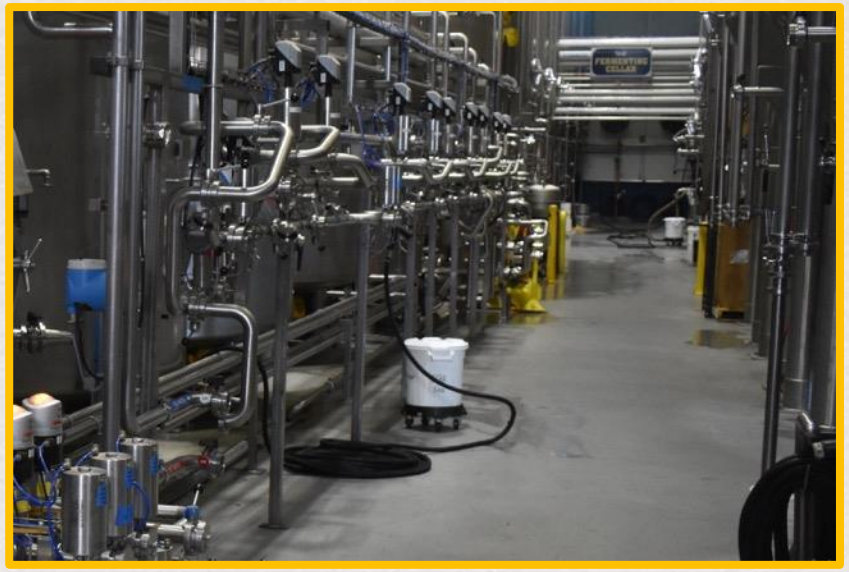
GENERAL REQUIREMENTS

General Requirements

- Good condition
- Clean
- Orderly
- Good lighting

Examples in Brewery

- Hoses, cords, pails
- Wet surfaces, chemical puddles
- Drains, older floors
- Clutter



WHY IS GOOD HOUSEKEEPING IMPORTANT?

Eliminates Hazards

- Slips and trips (water, ice, glycol)
- Emergency egress
- Access to critical devices
  - Eyewash stations
  - Fire extinguishers
  - Electrical panels
- Falling items (wrench on a ladder)
- Combustible dust build up

Increased Efficiencies

- Better flow of materials and byproducts
- Inventory control
- Effective use of space
- Reduced janitorial services
- Greater productivity
- Improved worker morale

GOOD HOUSEKEEPING BEHAVIORS

- Put away tools/equipment after each task
- Manage hoses, cords, and drain grates (“good hose-keeping”)
- Label storage areas
- Position storage space close to work areas
- Keep brooms, mops, squeegees, spill cleanup supplies on hand & in good repair
- Wear PPE appropriate for the housekeeping activity
- Develop SOPs for common housekeeping activities

LADDER USE – ALL WRONG!!!

TYPES OF STAIRS AND LADDERS

Step Ladders

- Stepladder only used in locked-open position
- No lean against tanks
- Do not stand on top two steps/rungs

TYPES OF STAIRS AND LADDERS

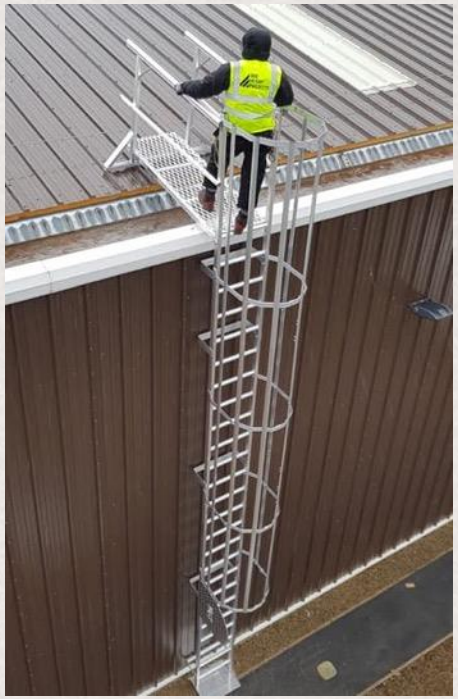
Extension and Fixed

- 4 to 1 pitch, approx. 75º, feels steep to user
- Easy phone apps exist
- If exiting, need 3 ft above point of contact
- No lean against tanks, but ladder hooks are ok
- Fixed ladders have special rules for clearance and fall protection









TYPES OF STAIRS AND LADDERS

Ladder Alternatives

- Stepladder only used in locked-open position
- No lean against tanks
- Do not stand on top two steps/rungs

Fixed Stairs

- Comfortable, stable
- Can’t be moved
- Can attract clutter

Mobile Platform / Platform Step Ladder

- Very stable, mobile
- No spotter needed
- Worker can move loads at torso height
- May have bulky footprint

TYPES OF STAIRS AND LADDERS

Hop Dispensers

- Eliminates height
- Pressure vessel
- Expensive

Catwalks

- Eliminates climbing ladder or similar
- Convenient
- Quite expensive

LADDER USE – MUCH BETTER!!!

3 POINTS OF CONTACT RULE

BELT BUCKLE RULE

REMEMBER

- Most Falls Occur from Lower Heights
- Majority of fall deaths are less than 4 ft drop
- Listen to that “dangerous feeling”

INCORRECT USE

ELEVATED WORK SPACES

GENERAL REQUIREMENTS

Engineering Controls

- “Engineer it Out”
- Guard rails/toe boards
- Equipment below
- Guard openings

Fall Protection Systems

- ABC’s
- #1 Rule…
  Don’t hit the ground

Audience Survey

Join at: slido.com #CBC22

Q3: In your brewery cellar, which working area hazard worries you MOST on a day-to-day basis?

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HAZARDS ARE A TRANSFER OF ENERGY TO THE BODY

TASKS

- Grain Milling & Conveying
- Pumping, Mixing
- Material Handling
  - Grain bags, boxes, pallets
  - Lifting beer kegs, cartons
- Packaging Beer
- Taproom, Kitchen Activities

OUTCOMES

- Crushed, Amputated Parts
- Broken Bones
- Eye Injury
- Laceration, Infection
- Back, RMD
- Forklift – “caught between”
- Damage to equipment

CONTROLS

- Use proper fittings, not hardware store fixes
- Machine guarding
- Hands out of moving equipment
- LO/TO
- Safe knife use
- PM schedules

KINETIC ENERGY HAZARDS 1

- STRUCK BY EQUIPMENT

LINEAR

- WHEELED EQUIPMENT
- INCLINED SURFACES

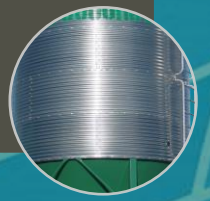
ROLLING

- FLYING OBJECTS
- PRESSURE FAILURES

PROJECTILE

- ENGULFMENT
- FLOODING

FLOOD



KINETIC ENERGY HAZARDS 2

- MIXERS
- CONVEYORS

ROTATORY

- TOOLS
- HEAVY EQUIPMENT

VIBRATORY

- FANS
- FLYWHEELS
- PISTONS

OSCILLATORY

- TOOLS
- POSITIVE DISPLACEMENT PUMPS

RECIPROCATING

PHYSICAL HAZARDS

MOTION AND NOISE HAZARDS

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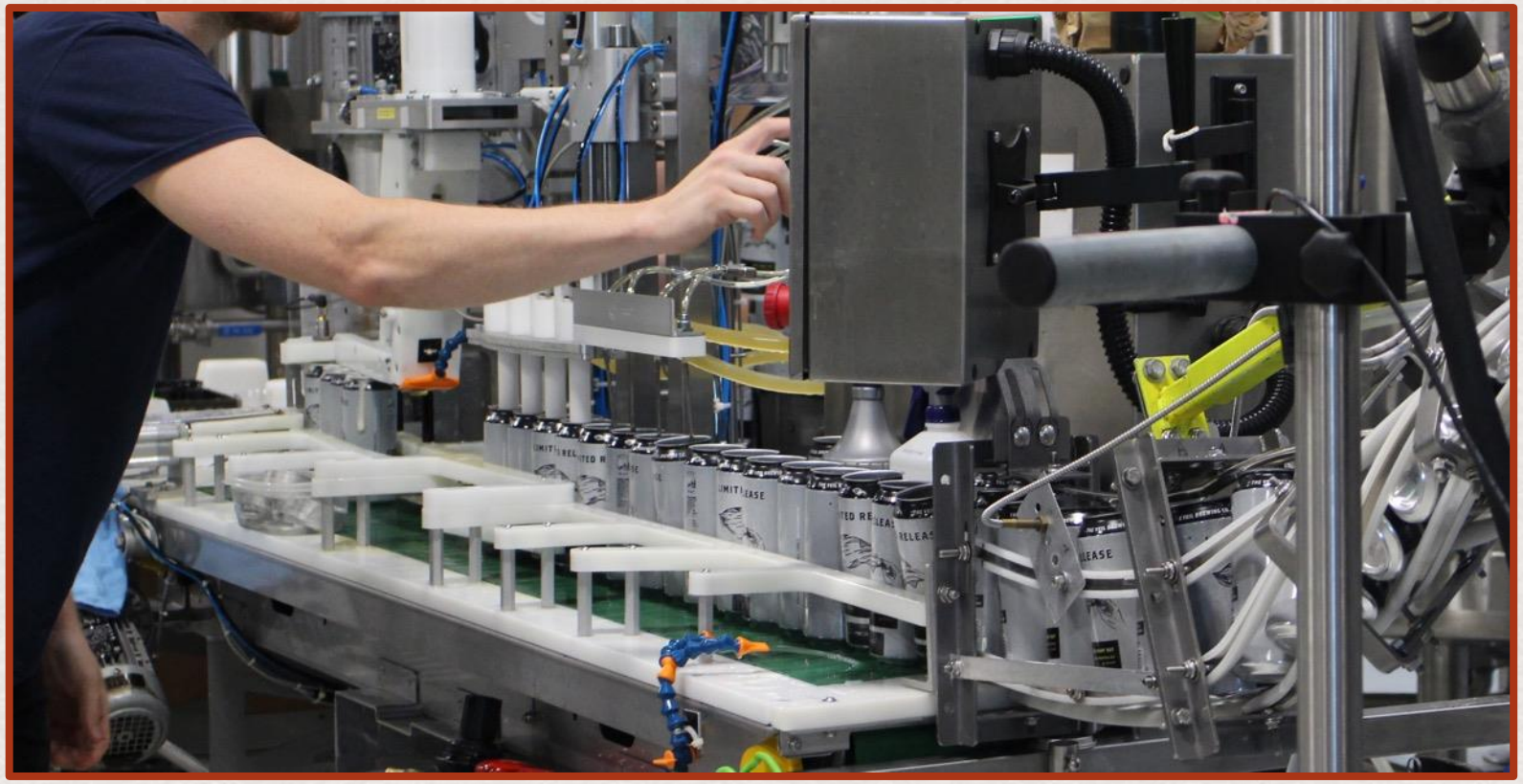
MECHANICAL HAZARDS

PINCH, CRUSH, PUNCTURE, CUT, SNAG HAZARDS



PINCH, CRUSH, AND CUT HAZARD ASSESSMENT

TASKS

- Grain Milling & Conveying
- Pumping, Mixing
- Material Handling
  - Grain bags, boxes, pallets
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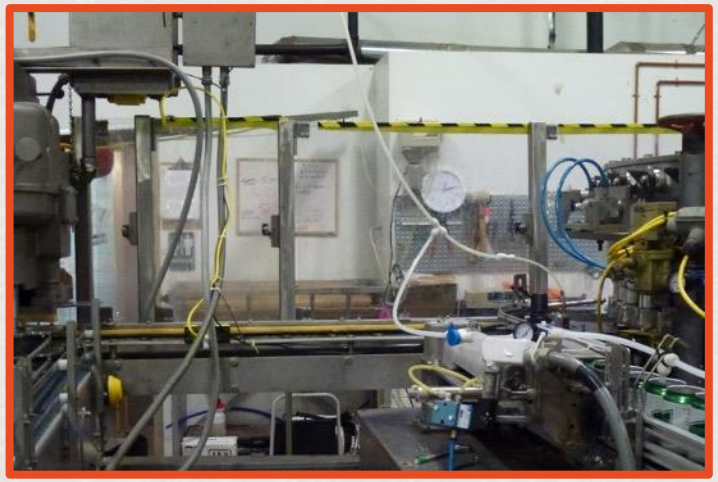
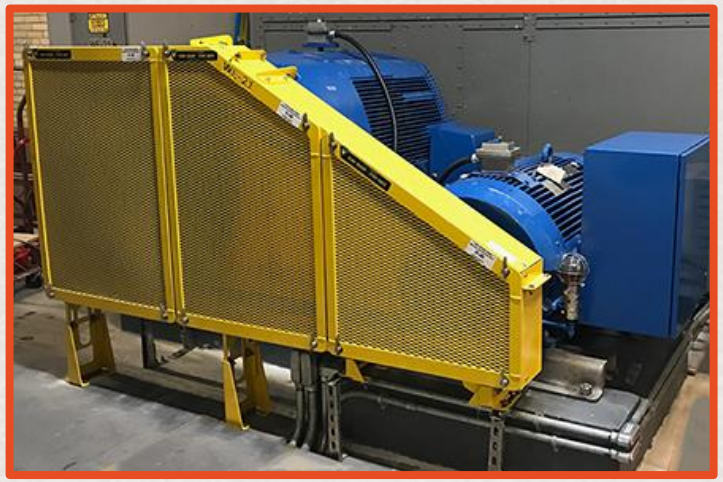
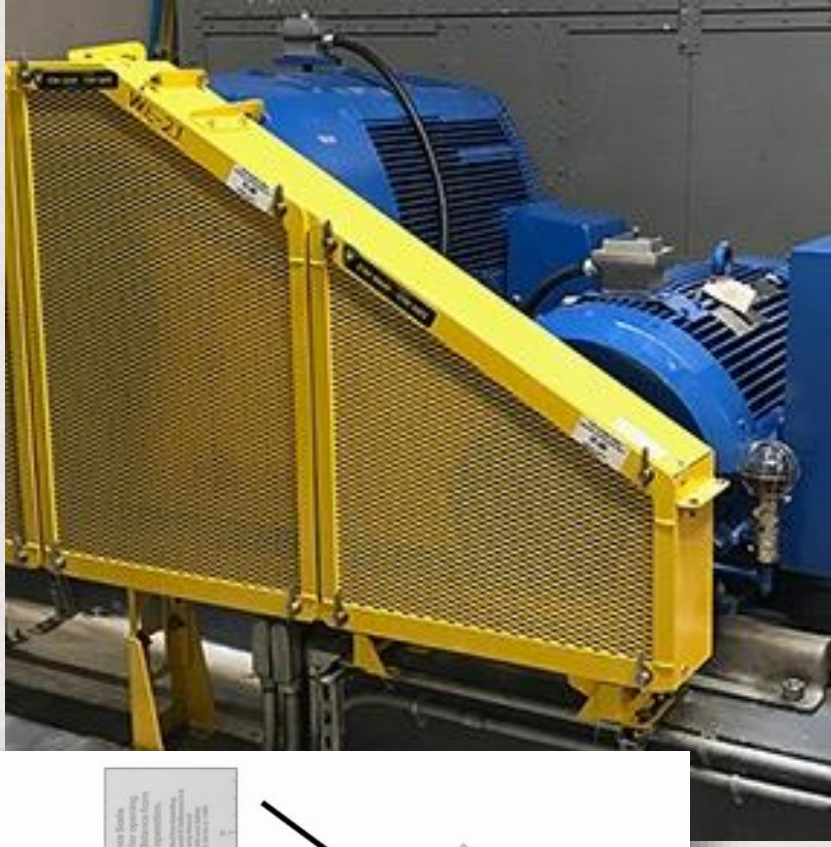
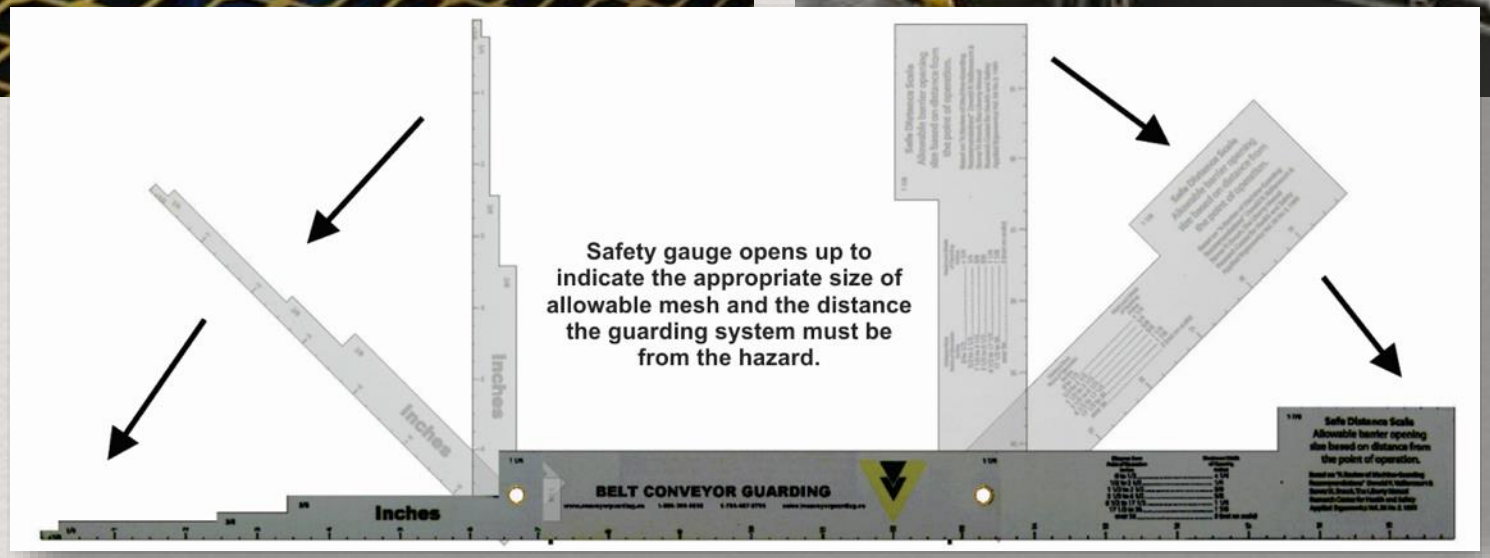




PHYSICAL DEVICE PREVENTING DIRECT CONTACT

- Metal guards
- Plexiglas windows
- Other devices



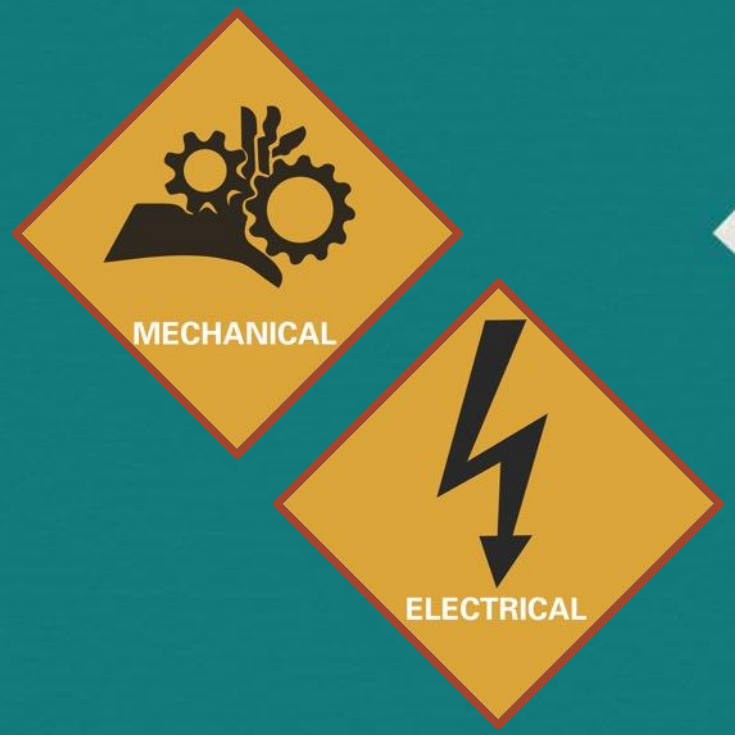


MACHINE GUARDING

How large can the openings be?

DON’T BE CAUGHT OFF GUARD

HAND AND POWER TOOL HAZARDS



HAND AND POWER TOOL HAZARD ASSESSMENT

TASKS

- **Maintenance & Repair**
- **Custodial**
- **Building Trades**
- **Special Construction**
  - R & D
  - Festival Decoration
  - Seating
  - Security

OUTCOMES

- **Tool Related Injury**
  - Flying objects
  - Electric shock
  - Laceration or puncture
  - Noise
  - Heat and Light
  - Pressure
- **Damage**
  - Stripped fasteners
  - Damage to tool itself

CONTROLS

- **Eye and hand protection**
- **Trained in tool use**
- **Regular inspection**
  - Power cord
  - Fittings, couplings
  - Wear and tear
- **Repair and replacement**
  - Blades and bits

NOISE HAZARDS

NOISE SOURCES

- Grist mills
- Pumps
- Centrifuges
- Packaging Lines
- Air Compressors
- Loud Music Systems
- Personal Listening

NOISE CONTROLS

- Isolate workers from noise
- Insulated rooms, walls
- Hearing protection
  - Voluntary
  - Hearing Protection Program
- Hearing rule of thumb

You need to be able to hear your brewing systems: mill, pumps, bearings, HLT/CLT, co-workers, etc.!

RUSSELL ‘TONY’ McCRIMMON

Safety and Industrial Hygiene Professional

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PHYSICAL HAZARDS

ELECTRICAL HAZARDS

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ELECTROMAGNETIC HAZARDS

- AC
- DC
- STATIC
- ARC FLASH

ELECTRICITY

- VISIBLE/UV/IR
- MICROWAVE
- RADIO

NON-IONIZING RADIATION

- X-RAY
- GAMMA

IONIZING RADIATION

ELECTRICAL HAZARDS

U.S. workers	Number	Effect
Yearly	4,000	Non-disabling electrical shock injuries
Yearly	3,600	Disabling electrical shock injuries
Every year	2,000+	Sent to burn centers with electrical burns

Every day at least 1 person is electrocuted at work

ELECTRICAL HAZARD ASSESSMENT

TASKS

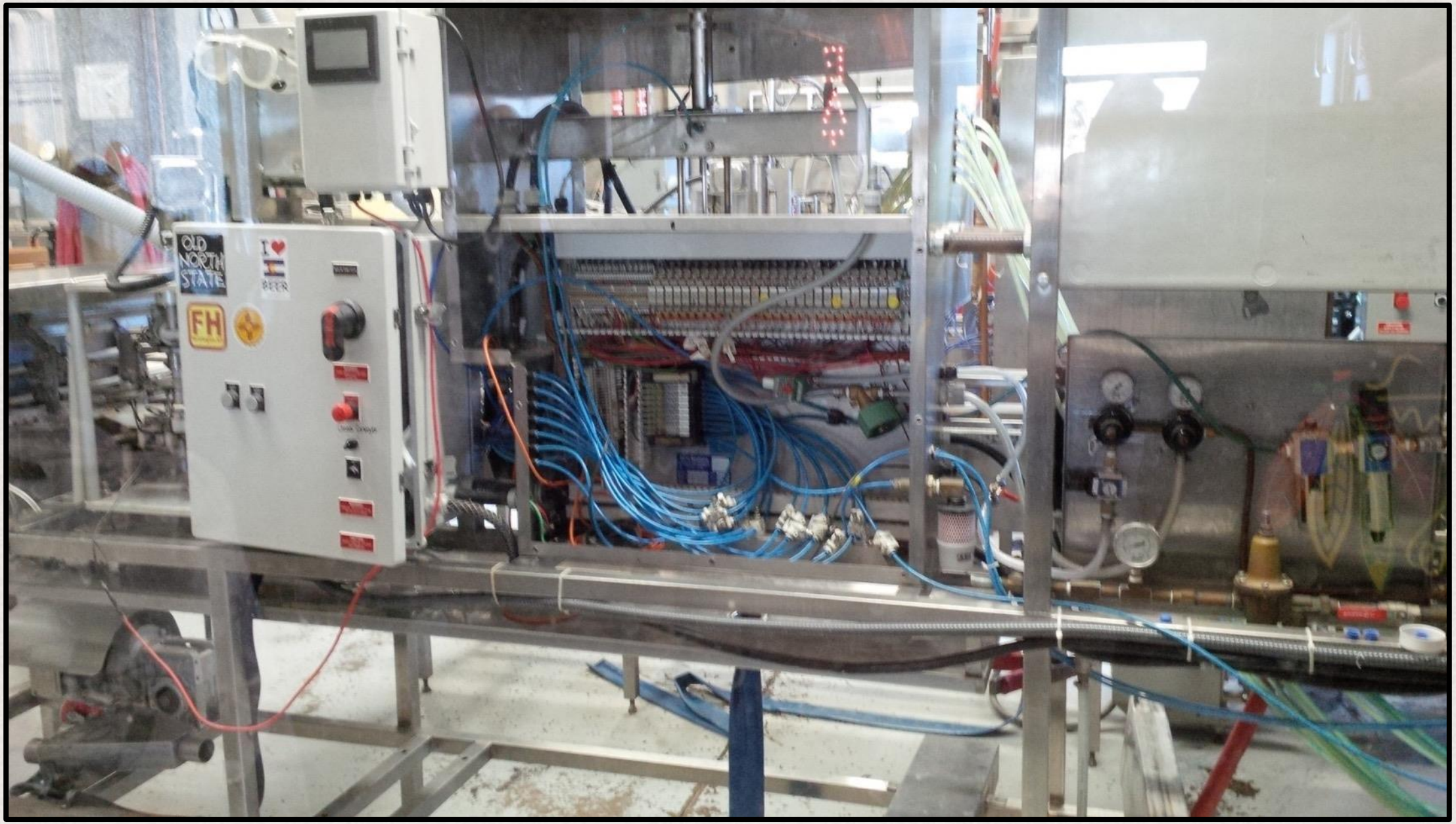
- Grist mill, conveyors
- Pumps, mixers
- Chillers
- Power tools
- Packaging lines
- Office/retail equipment
- Kitchen appliances

OUTCOMES

- Electric shock
- Electrocution
- Arc flash/blast
- Damage to equipment
- Building fire

CONTROLS

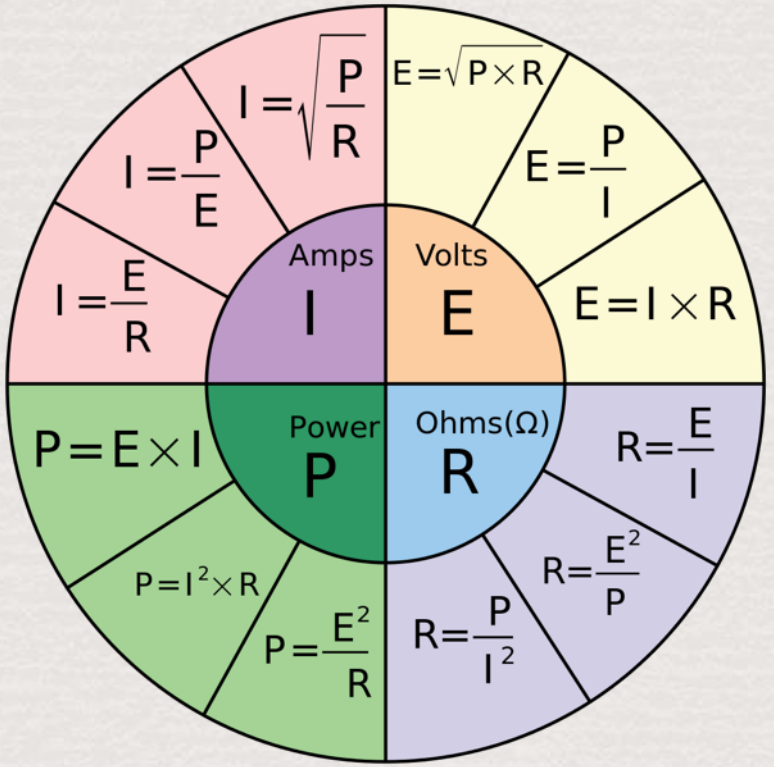
- No openings in boxes or covers
- Rated for amps required
- Switches, GFCIs, Disconnects, Grounds
- Equipment access in emergency
- No cords through doors, openings, walls…


OLD NORTH STATE
I ♥ BEER
FH

OHM'S LAW

I = E/r

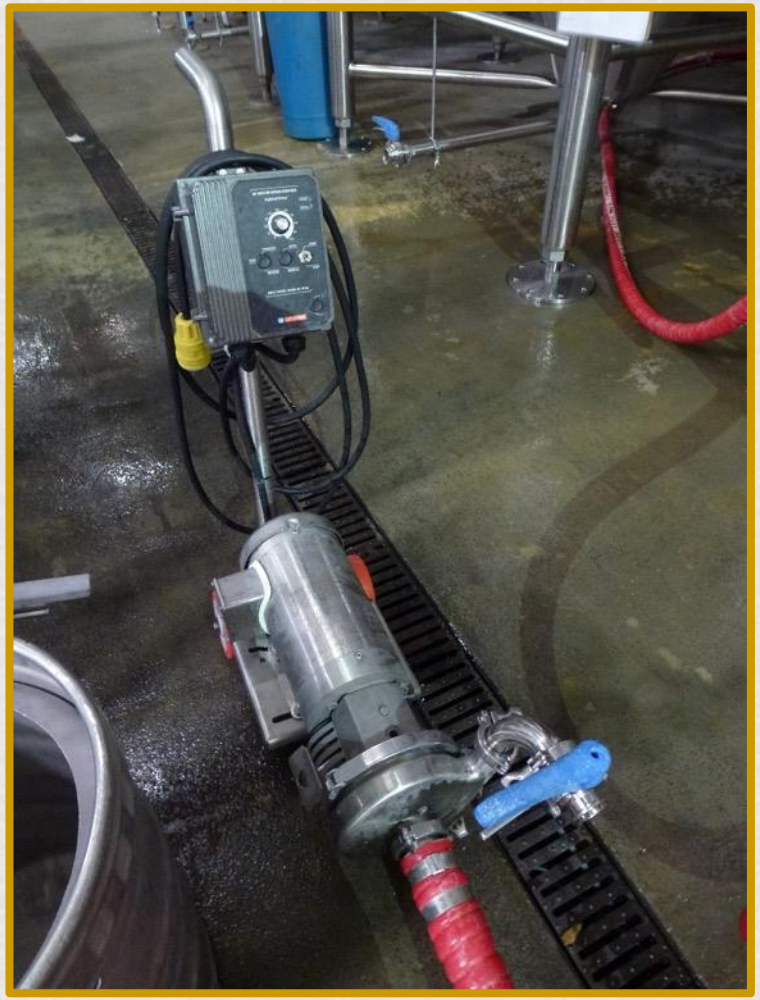
- I = current, is the flowing electricity
- E = volts, force that pushes
- r = resistance trying to hold it back

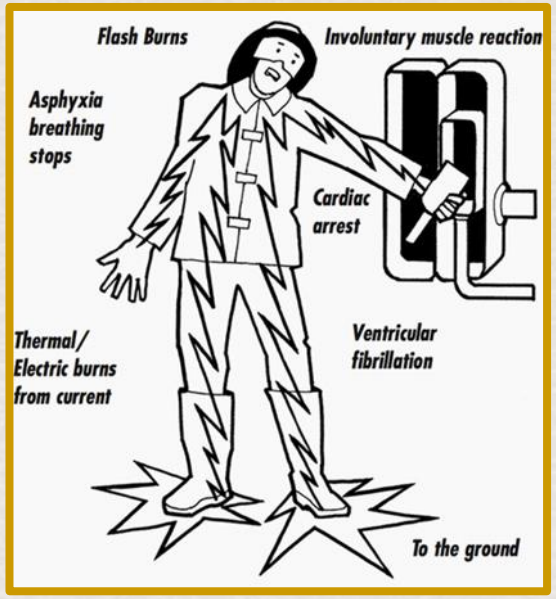


W = E•I

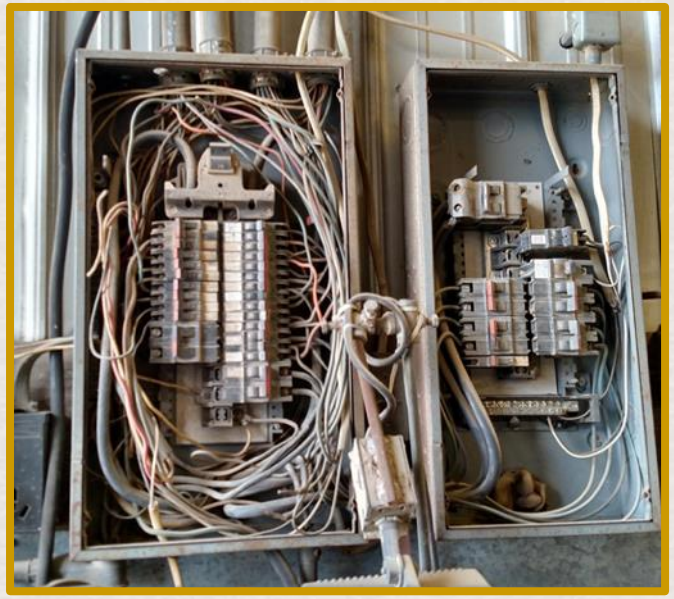
- W = watts, unit of power
- 745.7 W = 1 Hp

LOOK AT YOUR PUMP MOTOR:
HIGHER VOLTAGE USES LOWER AMPERAGE



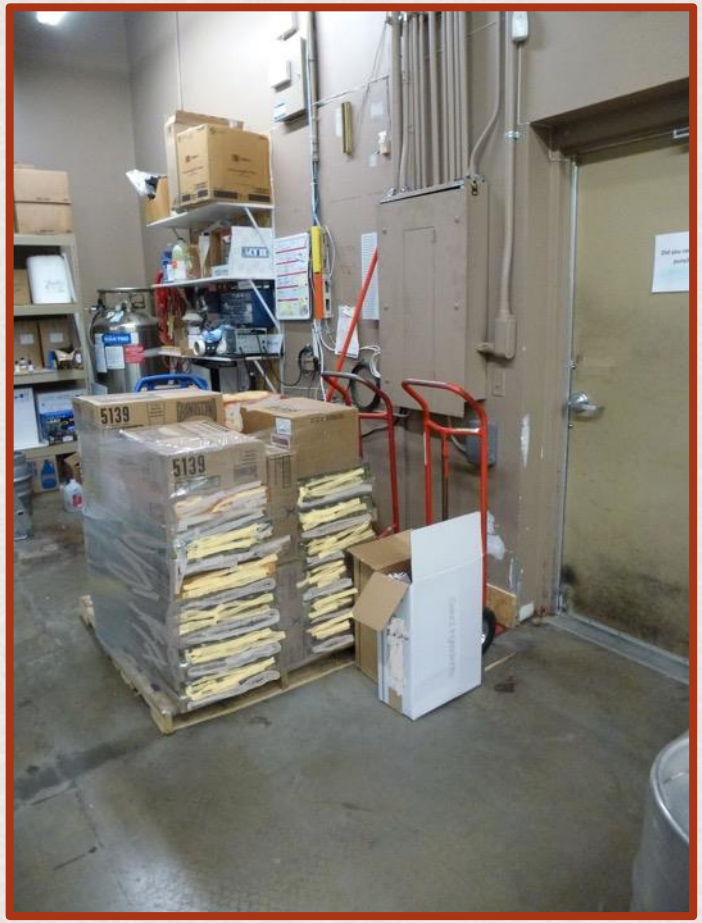


WHEN DO I FEEL A SHOCK?



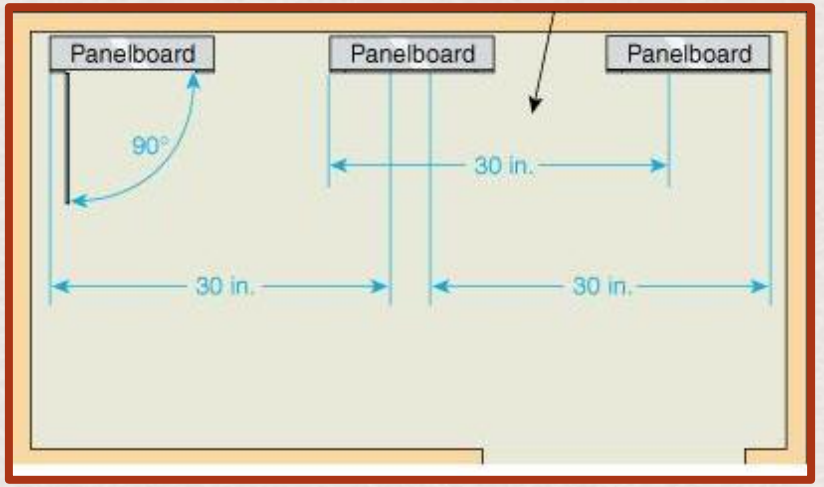
CURRENT	PHYSIOLOGICAL RESULT	FEELING OR LETHAL INCIDENCE
1 mA	Perception threshold	Tingle
2 – 10 mA	Sensation of shock	Maintain muscle control, not painful
5 mA		GFCI trips
10 – 20 mA	Paralysis threshold of arms	Cannot release hand grip, may be thrown clear
20 – 50 mA	Respiratory paralysis	Breathing stops, usually fatal
50 – 200 mA	Fibrillation threshold	Heart beat uncoordinated, usually fatal
>200 mA	Tissue burns	Non-fatal unless are vital organs

KEEP CLEAR ACCESS FOR AN EMERGENCY



RIGHT

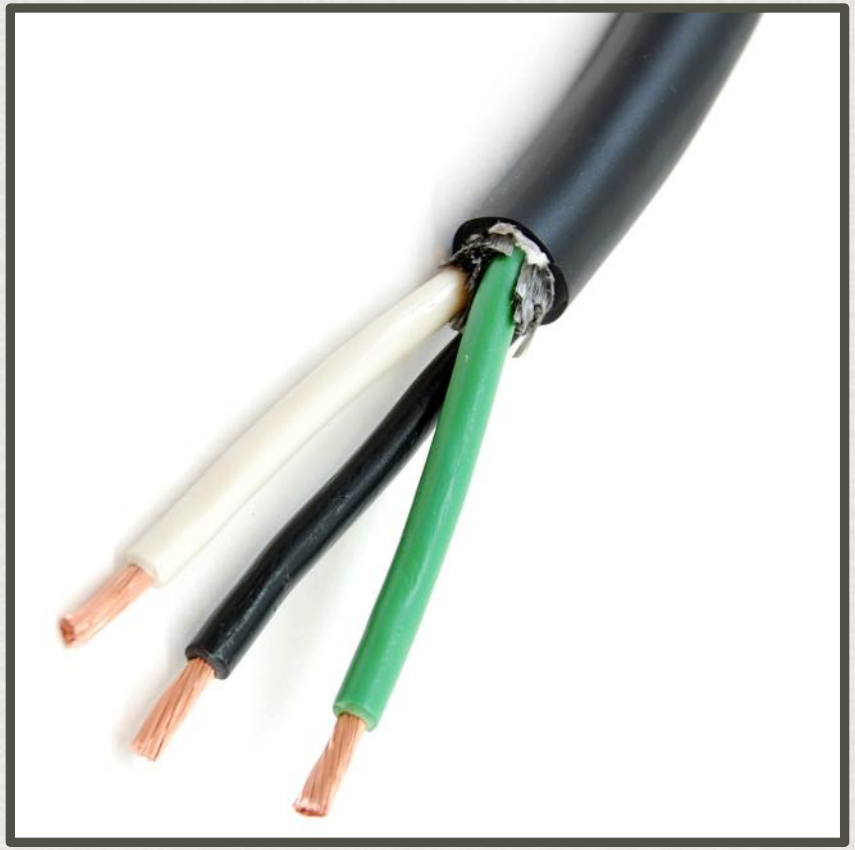
WRONG



EXTENSION CORDS

SELECTION

- Protective jacket over insulated conductors
- Read instructions for use and amps.
- Select cords rated for your current
- Thick, round, big gauge, high amp cords are best



EXTENSION CORDS

READ THE CORD!

- S – Flexible cord
- W – Outdoor use
- J – 300V insulation
- No J – 600V insulation
- P – Parallel wire construction, used in air conditioner cords and household extension cords

- T – Jacket is vinyl thermoplastic
- E – Jacket is thermoplastic elastomer rubber (TPE)
- O – Cord is oil-resistant

- Wire Gauge and Number of Conductors

  e.g. 18/3, 8/4

On this cord, SJTW indicates the jacket type and AWG 18/3 indicates the gauge rating.

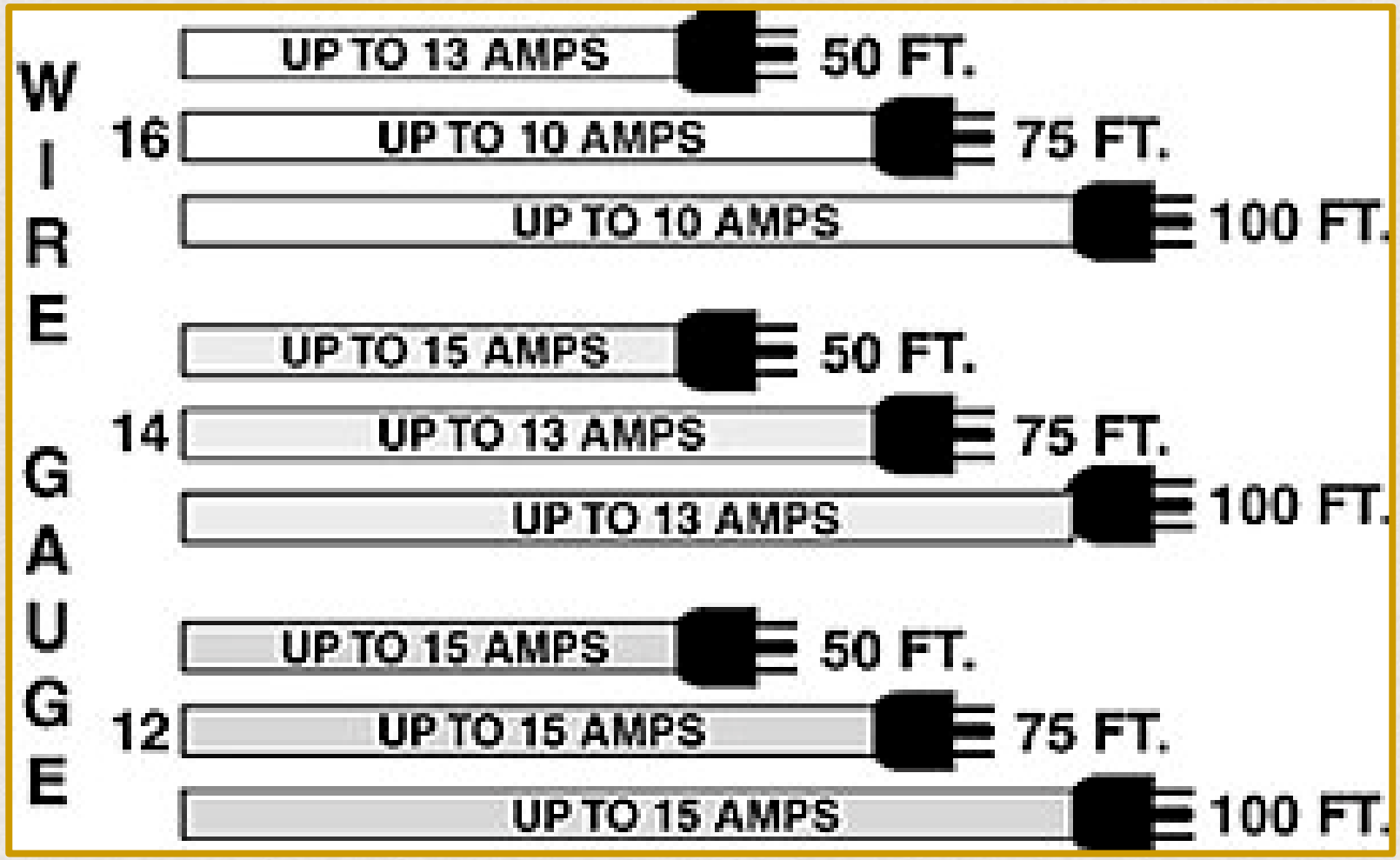
EXTENSION CORDS

THE LONGER THE CORD…

- …the higher its RESISTANCE
- …the lower its CURRENT rating

THE HEAVIER THE GAUGE…

- …the lower the GAUGE
- …the higher its CURRENT rating



CORD CARE

- Outlet, cover plate get hot
- Plug ends gets hot at outlet box
- Both plugs get hot
- Entire cord gets hotter
- Transfer of electricity across a gap creates heat

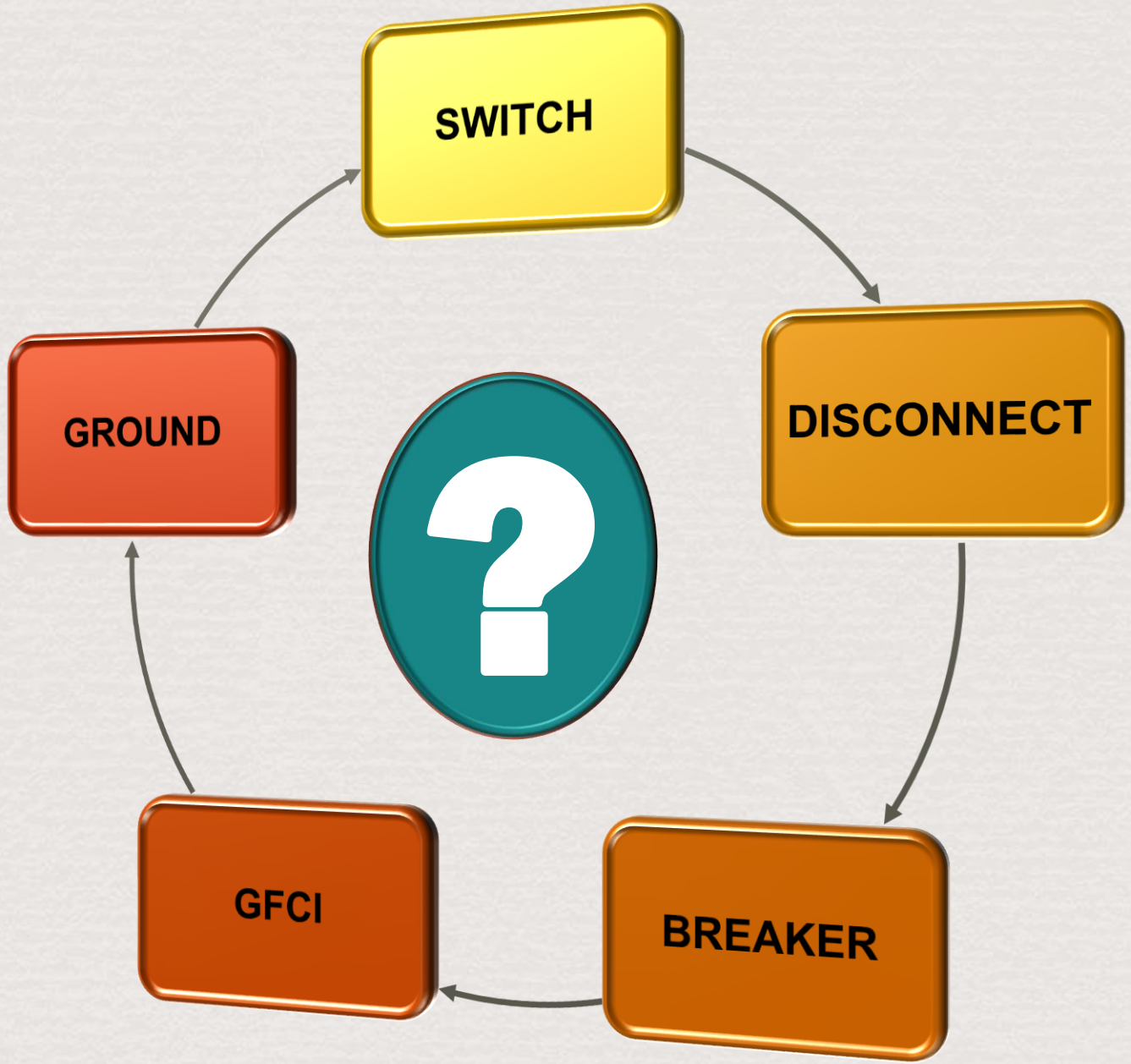
LOVE YOUR CORD

- Pull on the plug
- Unplug from outlet first, then tool
- Power arcs across the connection
- Avoid touching when wet
- Unplug it
- Cords are temporary; add more outlets

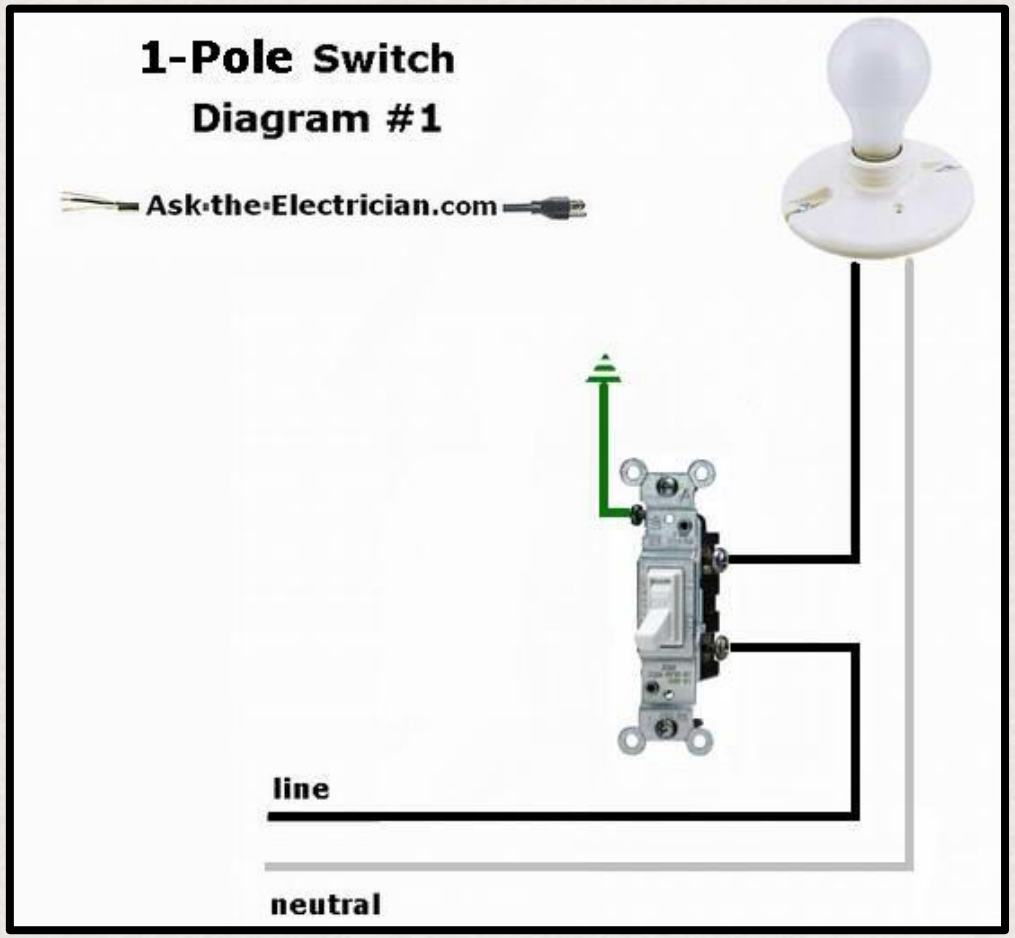
ROLLED CORDS

- Current heats cords
- Inductive coupling magnifies heat
- Stop using hot cord

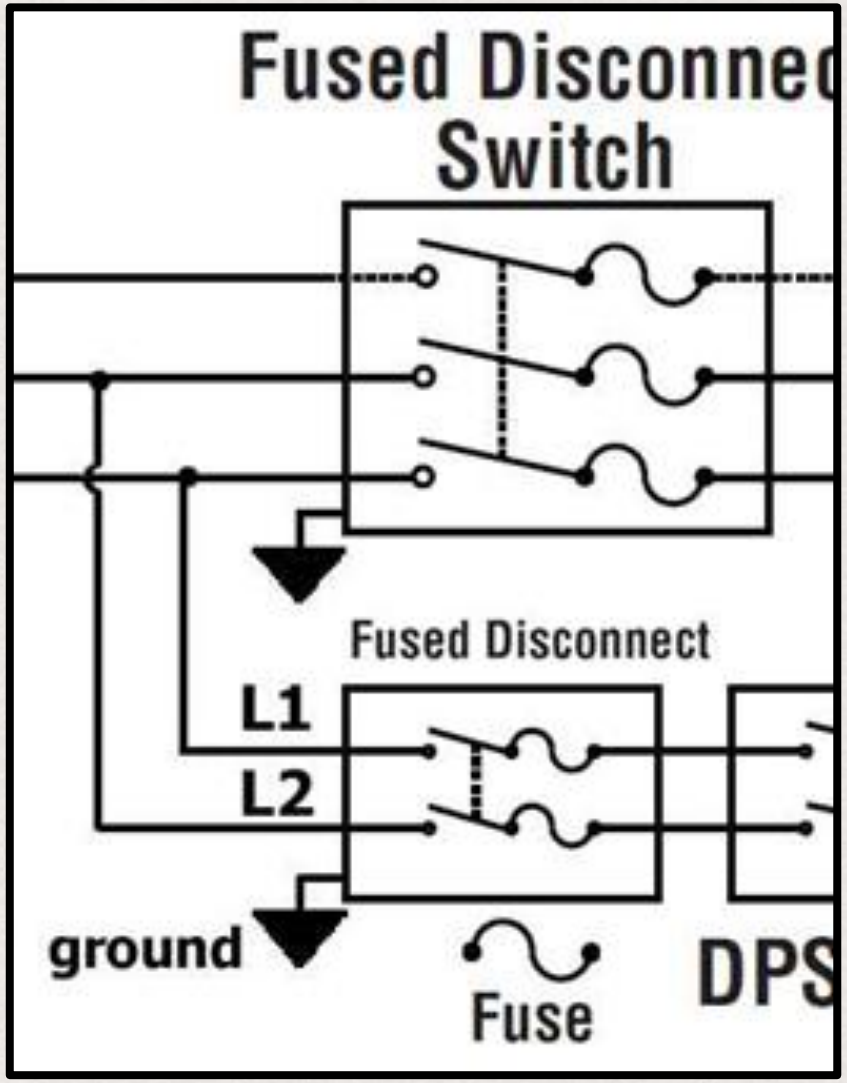
GROUNDING AND CIRCUIT INTERRUPTORS



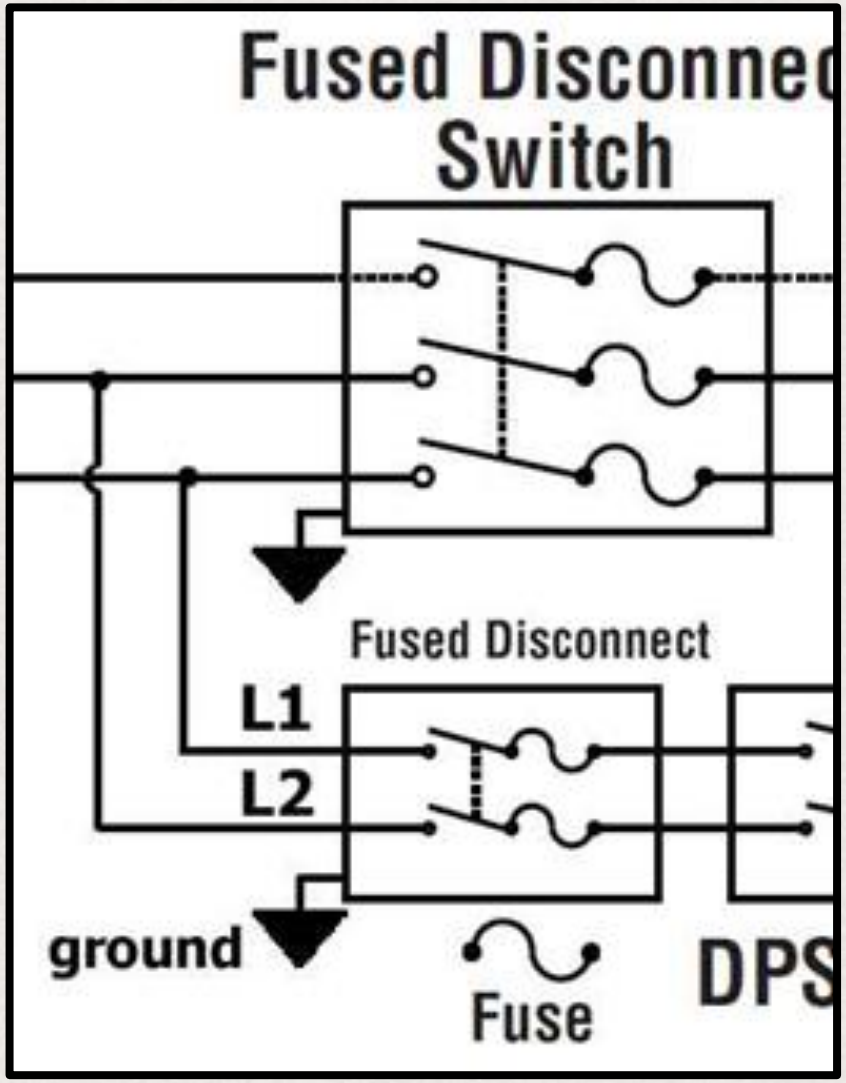
SWITCH VERSUS DISCONNECT



VS.



DISCONNECT VERSUS BREAKER



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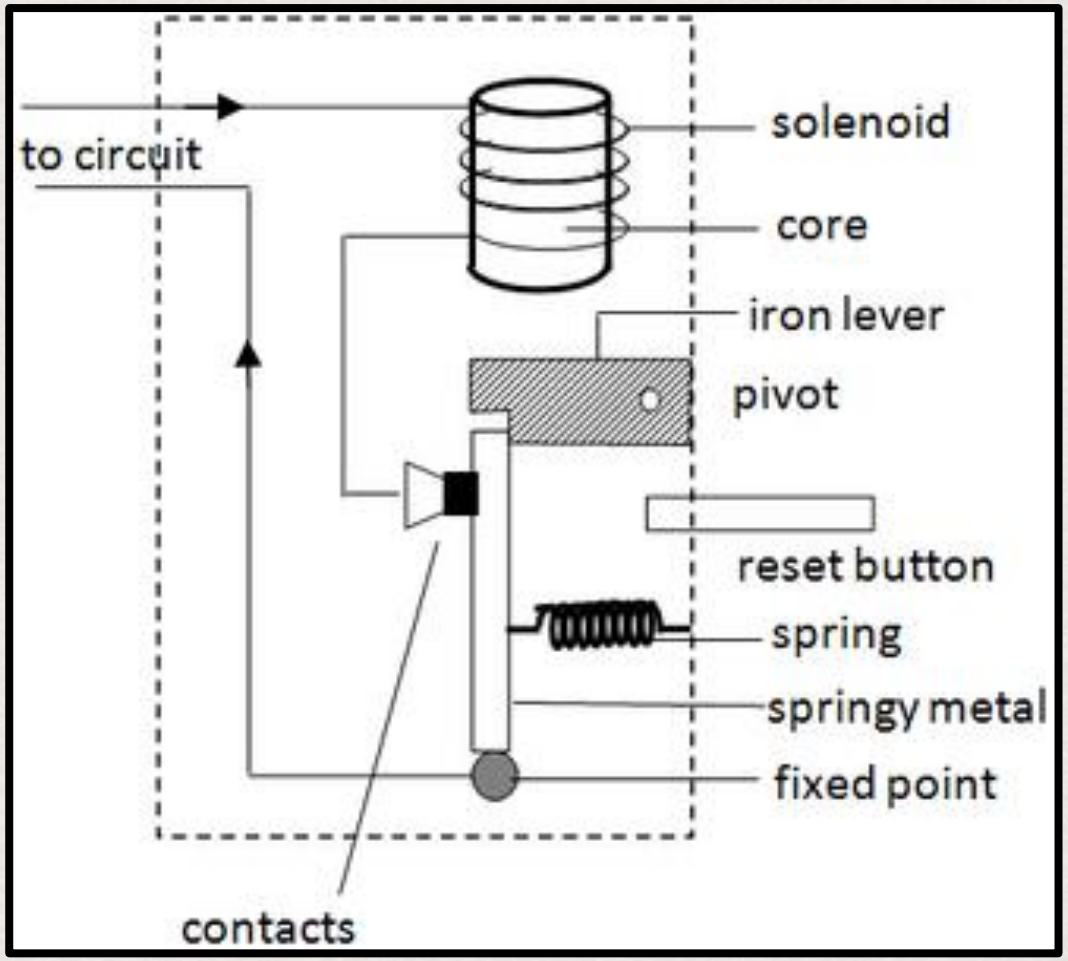
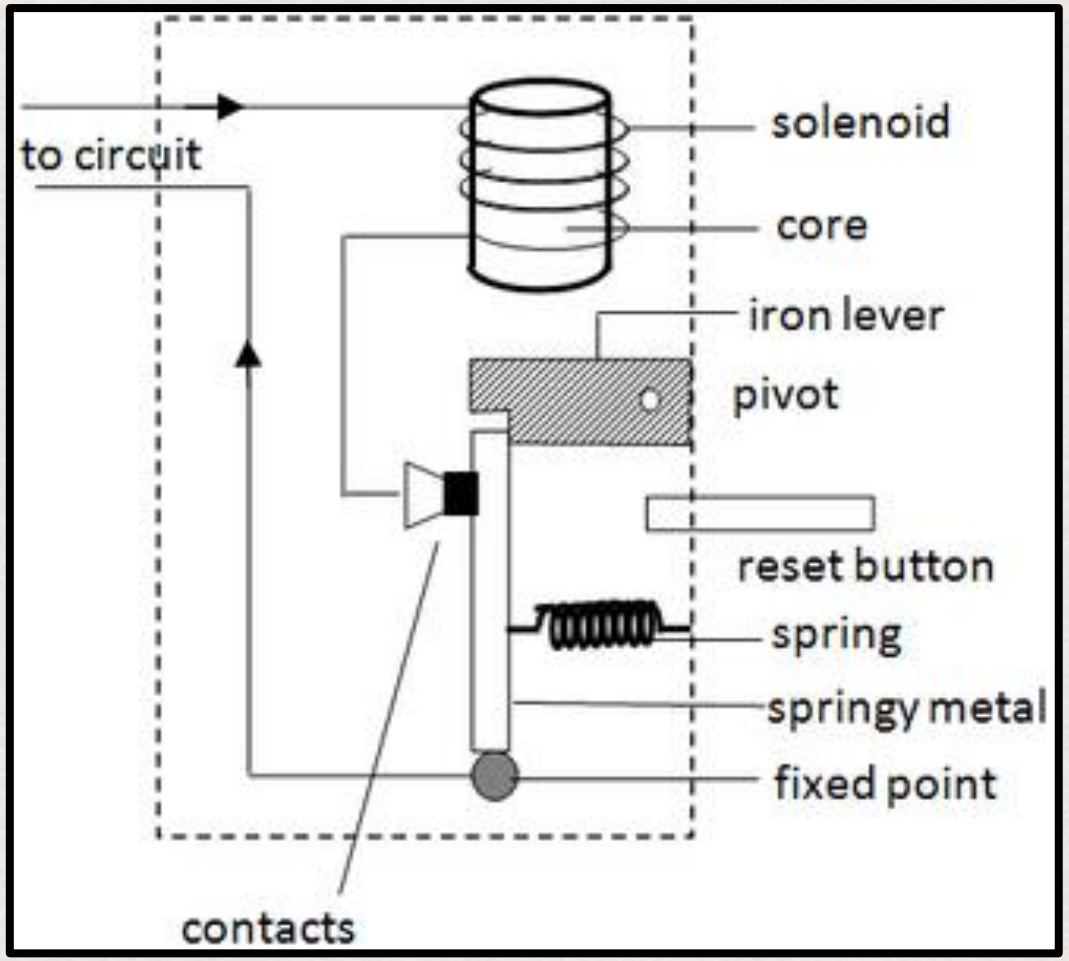


BREAKER VERSUS GFCI



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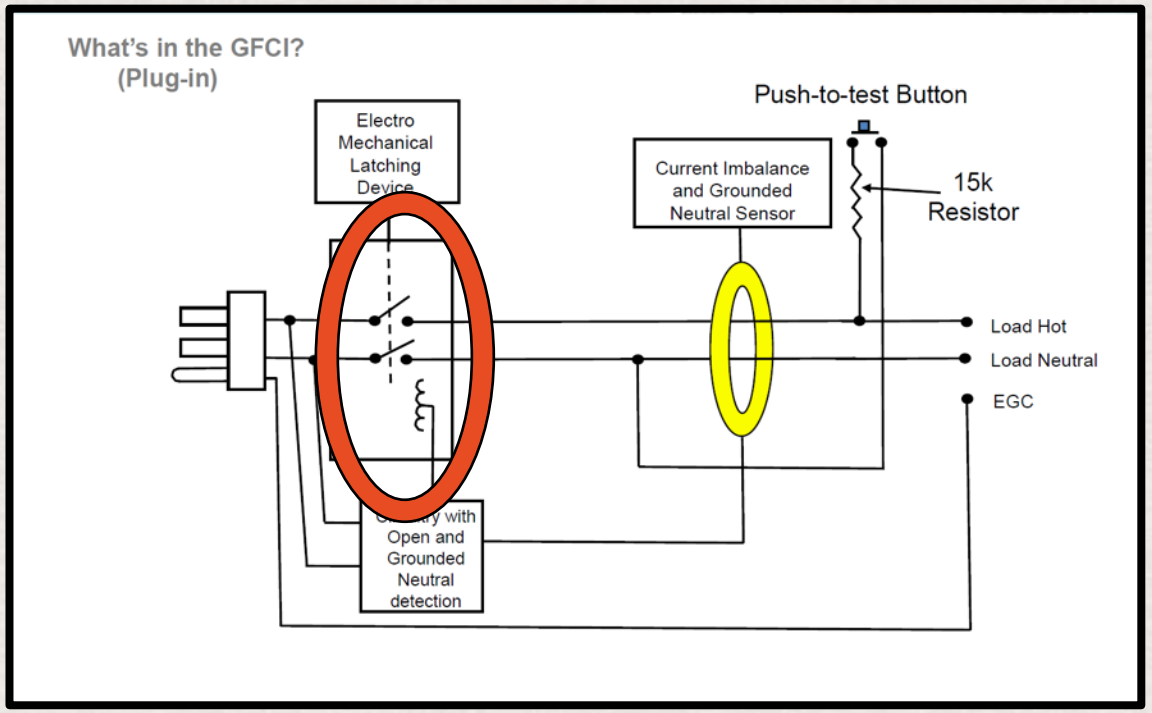
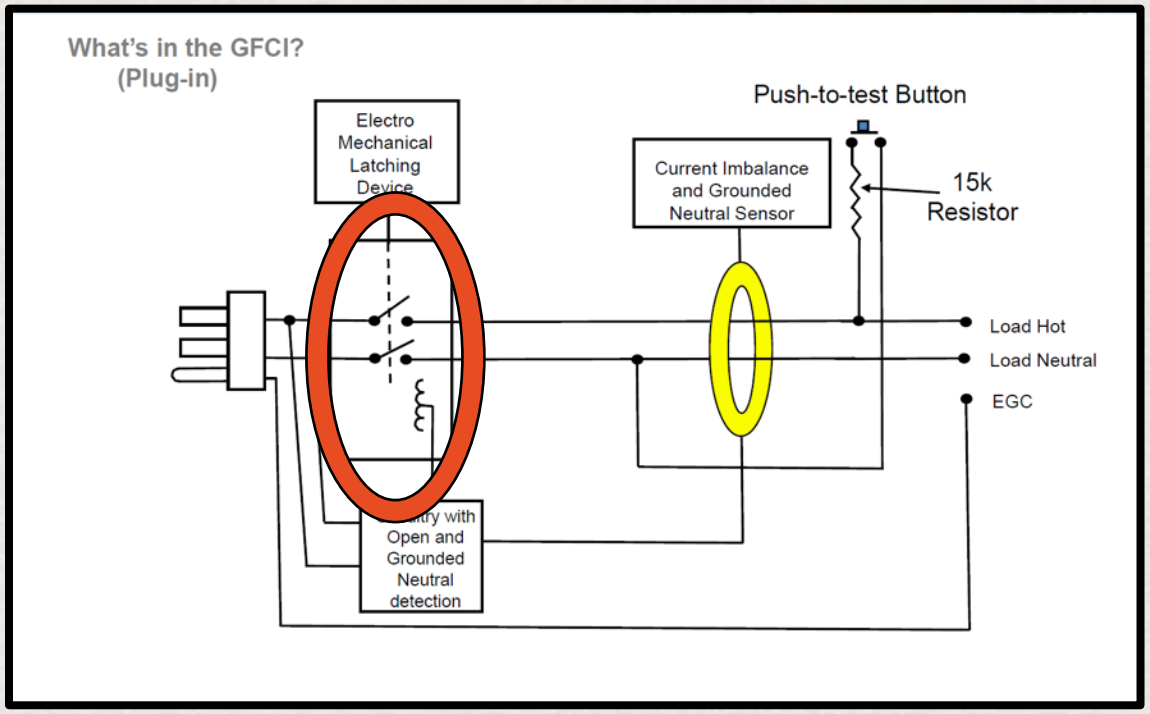


GFCI VERSUS GROUND WIRE



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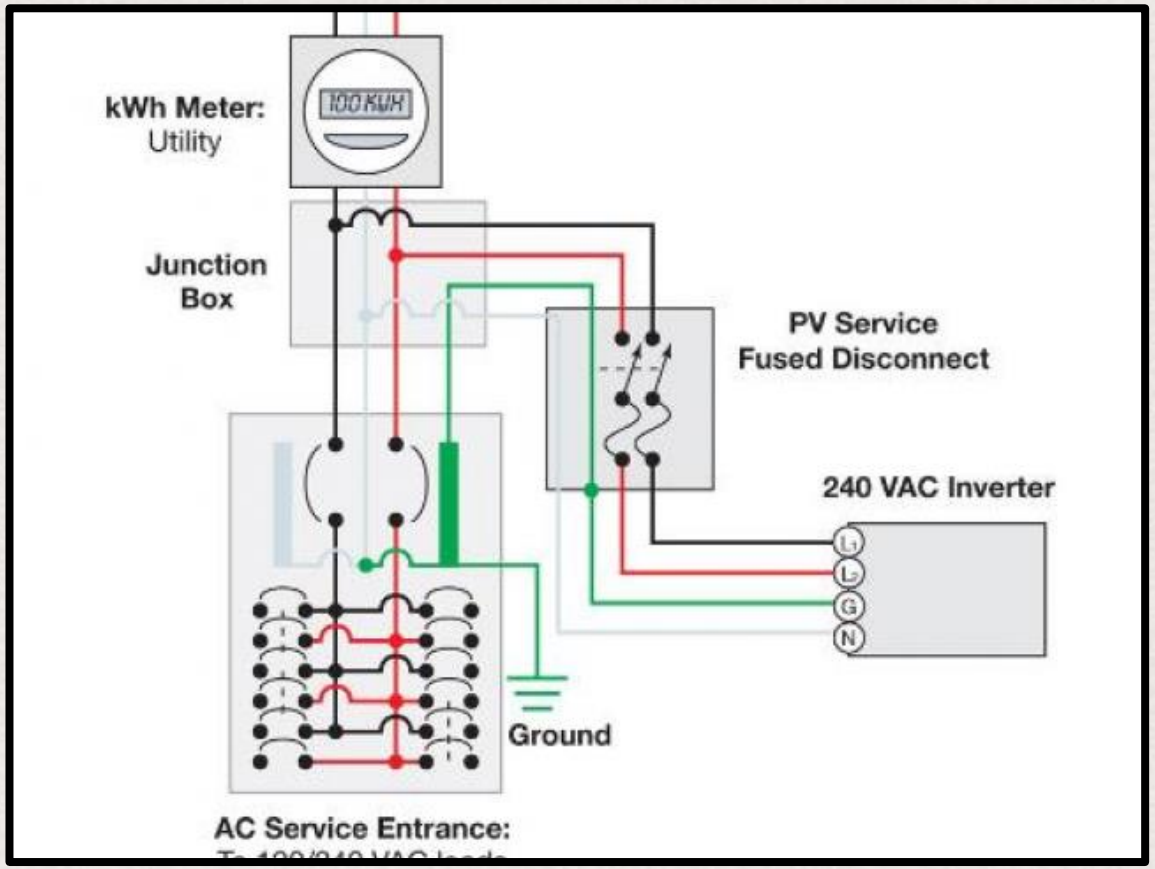


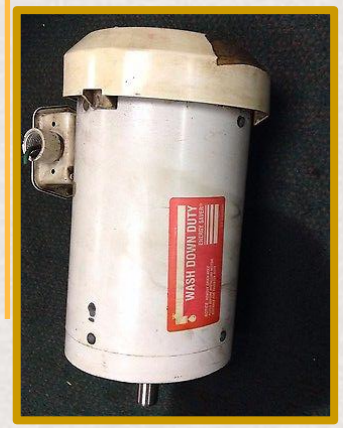
ELECTRICAL HAZARD CONTROLS

CHEAP & EZ

- Keep things dry
  - Squeegee, drains, fans
- Panels
  - Keep dust out
  - Keep CO_2 out
- Avoid Heat Buildup
  - Dust off equipment
  - Minimize extension cords

RESPECT "WASHDOWN"

- Motors are not water-tight, i.e. drain holes
- Water-resistant (WR) enclosures



SHUTOFFs

- Disconnect not a switch
- "within sight of" equipment
- "easy to reach"
- Clearly labeled OFF
- OFF is always down

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ANTEA GROUP

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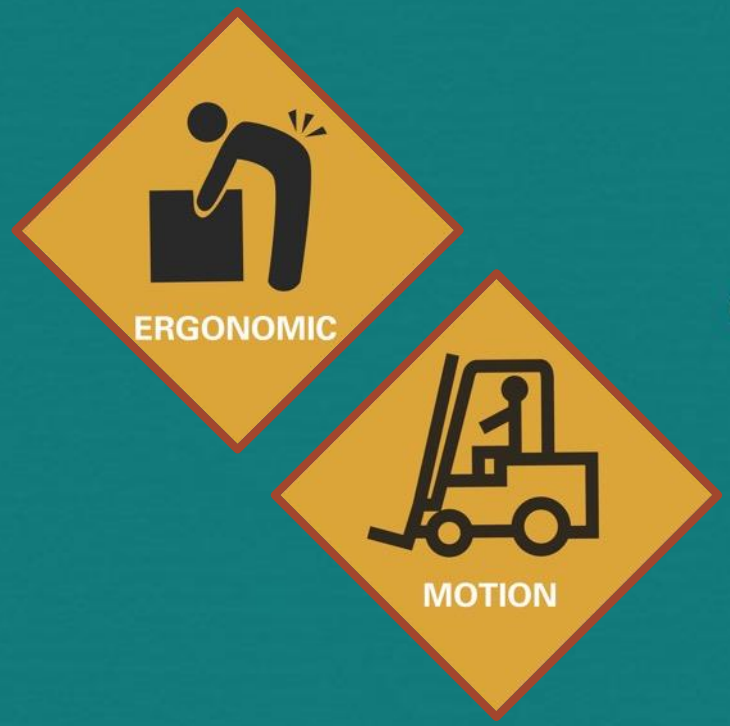
MATERIAL HANDLING

MANUAL MOVEMENT OF MATERIALS, PRODUCT, EQUIPMENT

BA BREWERS ASSOCIATION

#CraftBrewersCon

MATERIAL HANDLING



HAZARDS

- Lifting/moving heavy objects
- Bending, twisting, turning
- Falling objects
- Lifting, pushing, pulling
- Improperly stacked materials
- Struck-by or caught-in/-between hazards
- Falls, slips, trips, or loss of balance
- Repetitive motion
- Overexertion

OUTCOMES

- Sprains, strains, tears
- Soreness and pain
- Bruises and contusions
- Cuts, lacerations, punctures
- Falling objects, amputation, crushing, death

ERGONOMIC HAZARDS

MATERIAL LIFTING AND ERGONOMICS

MANUAL LIFTING

How many times have you seen this?

How many times have you DONE this?

160 lb.!!!

BREWERY ERGONOMIC STUDIES AND INJURY REPORTING

CONCLUSIONS

- Increased risk for upper extremity injury – shoulder, wrist, back MSDs
- Exposure to combination of ergonomic risk factors
- 50% of employees felt training and safety inadequate

ROOT CAUSES

- Improper lifting
- Repetitive work patterns
- Awkward postures: bending, twisting

Sources: NIOSH, Lavery

HEAVY DUTY

- Case of Beer – 30 lb.+
- Hop Box – 44 lb.
- Malt Bag – 50/55 lb.
- Keg (1/6 bbl) – 55 lb.
- Keg (1/2 bbl) – 160 lb.
- Full Oak Barrel – 500 lb.+
- Brewing Hoses – can be very heavy
- Various Others – packaging change-over parts, waste or recycling containers

BEFORE YOU LIFT/MOVE – THINK

- How heavy is the object?
- How can the object be lifted?
- Can you get help from a coworker?
- What is the proper way to lift the object(s)?
- Can you get help from equipment?
- Dollie, handtruck, pallet jack, forklift, hoist

If it's just too heavy, awkward, or large… Don't lift it.

LIFTING HAZARD CONTROLS

- **Reduce / Eliminate lifts**
  - Automate processes
  - Keg Vacuum Lift or Robot
  - Hoists / lifts
  - Bulk (silos, super sacks)
- **Two-person lifts**
- **Training on proper lifting**
- **Redesign tools / areas within appropriate heights**
  - Above knees, below shoulders
- **Rotate employees**
- **Encourage micro breaks**


PROPER LIFTING
WANT TO TRY?

MATERIAL HANDLING

MECHANIZED MOVEMENT OF MATERIALS, PRODUCT, EQUIPMENT

BA BREWERS ASSOCIATION

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MECHANICAL MATERIAL HANDLING EQUIPMENT

ADVANTAGES OVER MANUAL MATERIAL HANDLING

- **Lower Cost of Labor**
  - Higher Efficiency
  - Capital Expense is Greater
- **Mechanized Material Handling**
  - Adds its own new hazards
  - Extra Certification / Training
- **Other Advantages**
  - Fewer Injuries
  - Lower Workers Comp Premium
  - Increased Productivity

“ROLL OUT THE BARREL”

EQUIPMENT EXAMPLES

verybrewingco
oulder, Colorado

reaksidebrews, littlesliquors and 640 oth

wingco There’s barrel magic happening ove
nehow @brewtographyproject always capture
rst #barrelaged

“KEG PARTY!”

EQUIPMENT EXAMPLES

“BUT WAIT, THERE’S MORE!”

EQUIPMENT EXAMPLES

MATERIAL HANDLER SAFETY BASICS

- Check capacity plate – Never overload
- Protective footwear
- Inspect before use
  - Look for cracks or other defects
  - Ensure wheels are in good condition
- Check floor for ruts, bumps, imperfections
- If view is obstructed, have a spotter assist
- Not for human transportation
- When going down an incline, push, don't pull
- Hand Truck – Place load over axle – the operator should only balance and push

CRANES AND HOISTING

- **Operated only by thoroughly trained and qualified workers**
- **Before operation know**
  - Load & counterbalance wt.
  - Capacity of the crane
  - Effective rigging methods
  - Center of gravity of crane plus load
  - When the load is safe to lift
- **Use accepted hand signals and verbal cues**
- **Non-essential people out of the way**

POWERED INDUSTRIAL TRUCKS (PITs)

- **PIT**
  - Mobile
  - Power-propelled truck
  - Can carry, push, pull, lift, stack materials
- **Includes**
  - Forklifts
  - Powered Stackers
  - Powered Pallet Jacks

P.I.T. "CRASH COURSE" – NO, DON'T CRASH!

MUST DO

- **Written Program**
- **Training Documentation**
- **Inspections**
  - Daily
  - Shiftly

YES, DO

- **Seat Belt, Backup Alarm, Horn, Lights, Safety Glasses**
- **Loads within Capacity, Low and Centered – The Stability Triangle**
- **Forks**
  - <6" operating
  - On the floor when parked

SWPs

- **Hands inside the Cage**
- **Travel at Appropriate Speeds**
- **Anticipate Pedestrians**
  - Eye contact
  - No mirrored eyewear
  - Use traffic mirrors
- **In and Out Carefully**
- **Replace Pallets**

P.I.T. “CRASH COURSE” – NO, DON’T CRASH!

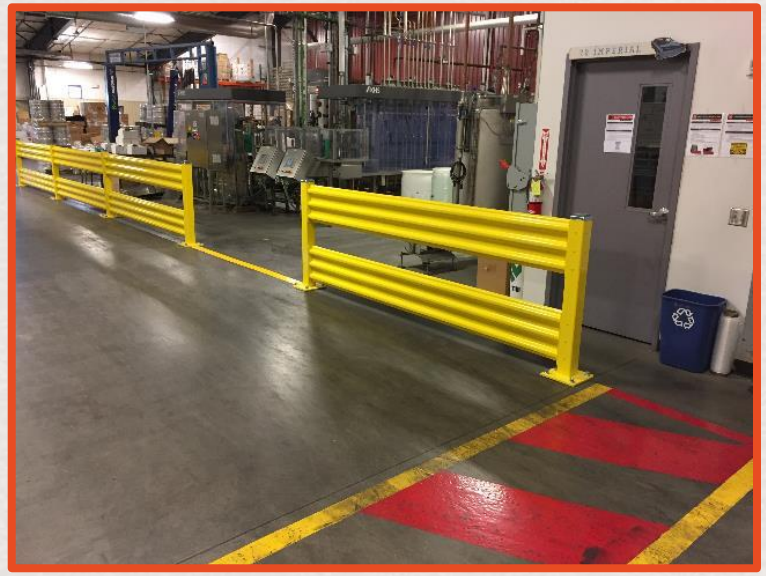
NO! NO! NO!

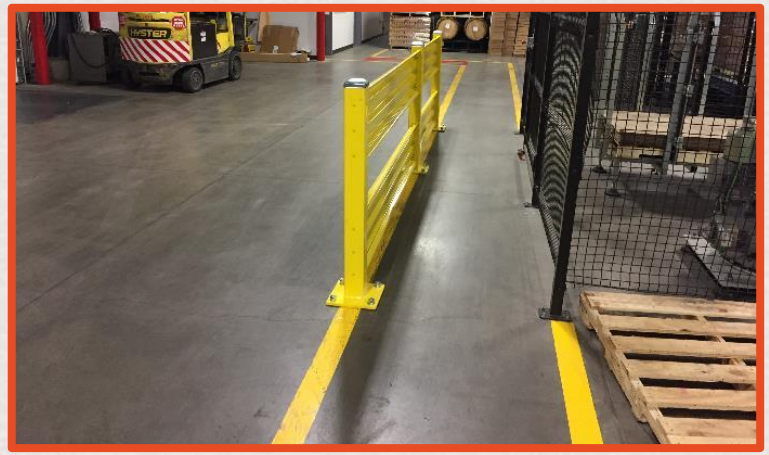
- Riders
- Impaired Operators
- Exceeding load or tilt
- Trying to Catch Falling Load
  - Kegs
  - Barrels
  - Supersacks

P.I.T. “CRASH COURSE” – NO, DON’T CRASH!

SEPARATE

- **PITs from Pedestrians**
- **Indicate On**
  - Floors
  - Wall Signs
  - Barricades
- **Protect With**
  - Bollards
  - Dock Boards
  - Wheel Chocks





TRAINING REQUIREMENTS

REQUIRED TRAINING

- **PITs**
  - Before Use
  - Every 3 years
  - Re-training in certain cases
- **CRAINS/HOISTS**
  - Before First Use
  - Annual Refresher

RECOMMENDED TRAINING

- **GENL MATL HANDLING**
  - How to Recognize / Avoid Material Handling Hazards
- **HAND TRUCKS, PALLET JACKS**
  - Before Use
- **BACK SAFETY**

CRAFT BREWERS CONFERENCE

& BrewExpo America®

BA BREWERS ASSOCIATION

#CraftBrewersCon

DOCUMENT YOUR BOOTCAMP TRAINING

Take Online Quiz

- **Take it by THE END OF CBC!**
- **Need an Accomodation for Language or Disabilty? Email: technical@brewersassociation.org**

Passmark 75%

Certificate Emailed

QUIZ LINK

https://brewersassociation.wufoo.com/forms/2022-safety-bootcamp/

#CraftBrewersCon

CLEANERS, SANITIZERS, ADDITIVES, YOU NAME IT!

CHEMICAL SAFETY

BA BREWERS ASSOCIATION

#CraftBrewersCon

HAZARD WARNING SIGNS

BREWERY HAZARDS

Standardized Key Words and Color Schemes

CAUTION

Minor to Moderate Injury Potential

Black on Yellow

WARNING

Death or Serious Injury is Possible

Black on Orange

DANGER

Death or Serious Injury Likely

Black and Red on White Background

Standardized Key Words and Color Schemes

NOTICE

General Information

Blue Panel on White

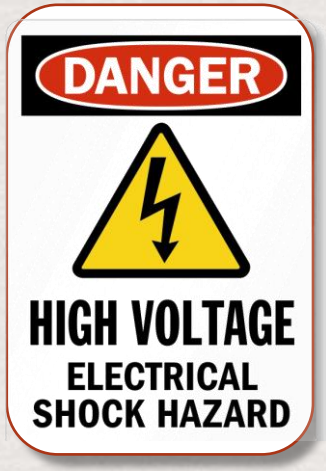
INSTRUCTION

General Safety Recommendations

Green Panel on White

ELECTRICAL & FIRE SAFETY

No Standard Format



Often Red on White

Inappropriate use of DANGER sign

Get ready to play...

Join at slido.com #CBC22

Decide if the sign uses the appropriate terms, coloring!

SIGN SEEN ON WALL IN SHIPPING DEPARTMENT

Q4: Is this sign legit?

Sign It! *or* **Redesign It!**

SIGN SEEN NEAR CANNING LINE DURING FRIDAY WASHDOWN

Q5: Are the signal word and color right for the hazard depicted?

Sign It! *or* **Redesign It!**

PLACARD MOUNTED ON OUTSIDE WALL NEAR BREWERY LOADING DOCK

Q6: Does this NFPA sign correctly identify *brewery hazards* for emergency responders?

Sign It! *or* **Redesign It!**


FIRE DEPT
BELL'S

CLEANERS, SANITIZERS, ADDITIVES, YOU NAME IT!

HAZARD COMMUNICATION

CHEMICAL SAFETY

KNOWLEDGE AND SKILLS

- **WHY CHEMICALS?**
  - Special Properties
    - DISSOLVE GRIME
    - SANITIZE EQUIPMENT
    - PROTECT SURFACES
    - IMPROVE PROCESSES
- **INFORMATION**
  - Manufacturer Supplied
    - LABEL, SDS, SPECS
  - Employer Provided
    - SIGNAGE, SOP, TRAINING
    - CONTROL EQUIPMENT
    - PPE

CHEMICAL USAGE HAZARD ANALYSIS

TASKS

- Routine cleaning and sanitizing
- Brewing and filtering operations
- SS passivation
- Draught line cleaning
- Lab assays
- Shipping/receiving and warehousing
- Maintenance projects

OUTCOMES

- Skin, eye damage
- Respiratory distress
- Damage to brewery equip.
- Beer contamination
- Slippery surfaces

CONTROLS

- Substitution and Elimination
- Good housekeeping
- SWP – caution
- Maintaining SDSs, labels, signs, and placards
- Proper PPE use, selection, inspection, replacement

CHEMICALS IN BREWERIES/PUBS

1

CORROSIVES

- Acid Cleaners
- Caustic Cleaners
- Alkaline Powders

2

OXIDIZERS

- Hydrogen Peroxide
- Peracetic Acid
- Nitric Acid / Iodine
- Ozone
- Chlorine Dioxide

3

OTHER BEER PRODUCTION

- Non-Oxidizing Sanitizers (Quats)
- Glycol Coolant
- Lab Reagents
- Water Treatment
- Filter Aids
- Glues

4

ASPHYXIANTS

- SIMPLE
  - Carbon Dioxide
  - Nitrogen
- CHEMICAL
  - Carbon Monoxide
- OXYGEN
  - Ambient: 20.9%
  - Deficient: <19.5%
  - Enriched: >23%

5

FLAMMABLES

- Alcohols
- Propane
- Natural Gas
- Lab Reagents

6

FACILITIES CHEMICALS

- Lubricants
- Paints
- Janitorial
- Pest Control
- Food Service

SAFE WORK PRACTICES – ATTENTIONING THE HAZARDS

HOUSEKEEPING

- Keep Labels Visible
- Keep Clear Pathways
- Put Away Equipment

WALKING, WORKING AND EXITING

- Avoid Spills
- Rehearse Emergency Procedures

HYGIENE

- Wash PPE and Hands After Chemical Use

ENGINEERING CONTROLS FOR BREWERY CHEMICALS

Secondary Containment

Chemically Compatible Equipment

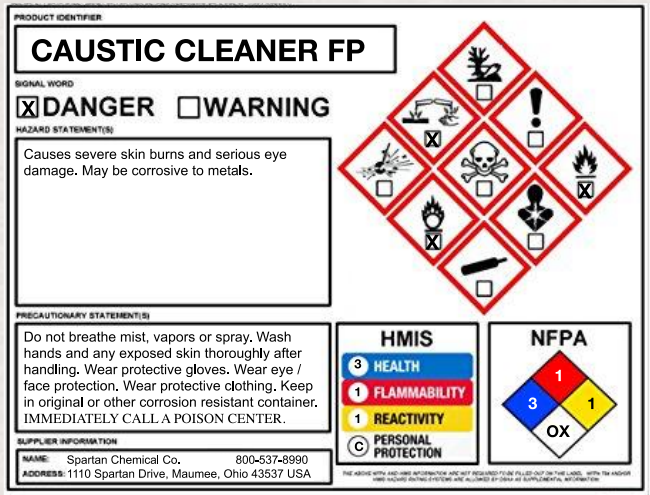
Ventilation and Monitoring

ADMINISTRATIVE CONTROLS FOR BREWERY CHEMICALS: HAZCOM

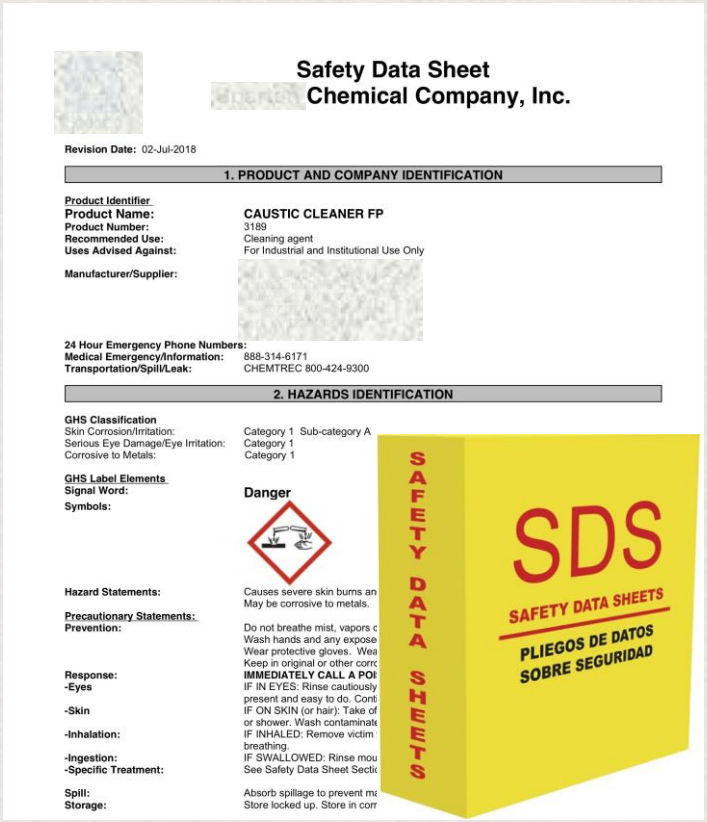
WRITTEN PROGRAM

- Responsibilities
- SDSs & Labeling
- Training
- PPE

LABEL



SDS



SIGNS

PLACARDS

PHYSICAL, CHEMICAL, AND BIOLOGICAL HAZARDS

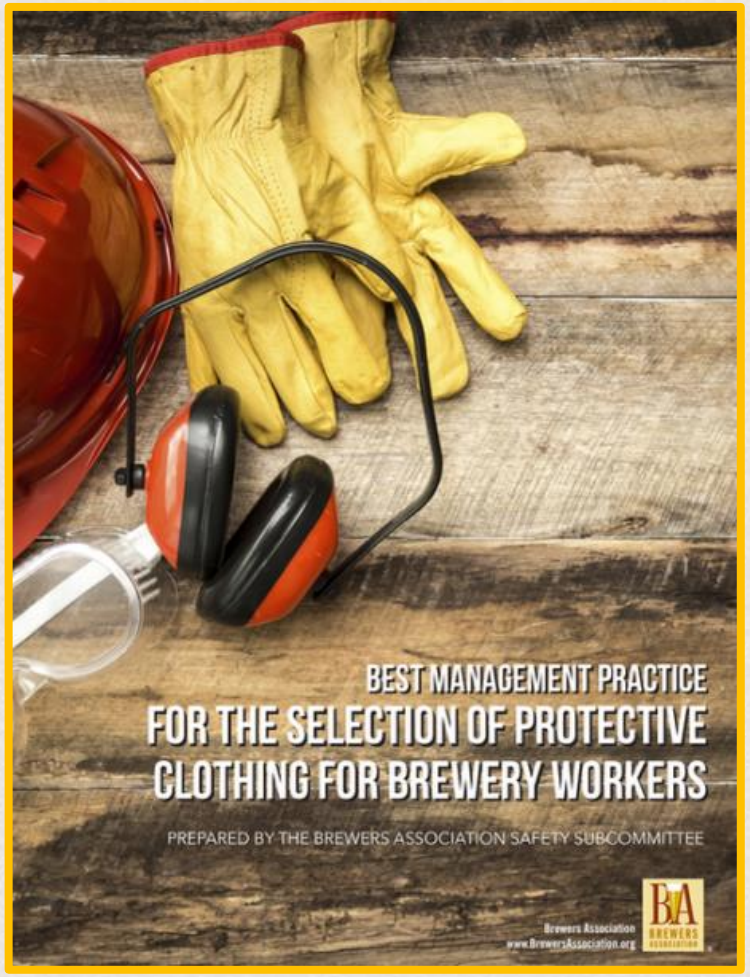
PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE LIMITATIONS

REMEMBER:

PPE DOES FAIL

- NOT Failsafe
- Last Line of Defense
- Poor Understanding
  - Selection
  - Use
  - Cleaning
  - Inspection
  - Replacement
- Poor Fit
  - Uncomfortable
  - Gender / Body Shape
  - Facial Irregularities



EYE PROTECTION

FROM SPLASHES

- Standard Safety Glasses
- Indirect Vented Goggles
- Face Shield

HAND PROTECTION

FROM DIRECT CONTACT

- Inexpensive disposable nitrile
- Neoprene hybrid over woven or latex base
- Heavy duty reusable nitrile

Nitrile Disposable
Low hazard use

Neoprene Hybrid
Mod hazard use

Heavy Nitrile
Acids, Bases, Sanitizers
Mod/High hazard use

FOOT PROTECTION

FROM SPILLS, PUDDLES, CONTAINER WEIGHT

- Sturdy leather or synthetic work shoes/boots with reinforced toe and shank
- Knee-high rubber (PVC) with reinforced toe and shank
- Low-rise rubber (PVC) with reinforced toe and shank or rubber pullover over sturdy work boot

PPE FOR WOMEN AND ATYPICAL BODY SHAPES

PROPER FIT

- Safety – reduced tripping, caught-by incidents
- Comfort – reduced chafing, blistering
- Confidence
  - Employer cares about you
  - Avoid looking out of place

OUTSIDE OF AVERAGES

- All Genders
- Smaller, taller, thinner, wider

OTHER PROTECTION

VARIOUS HAZARDS

- Splash protection apron
- Fall protection harness, lanyard, and anchoring
- Hearing protection, disposable or reusable

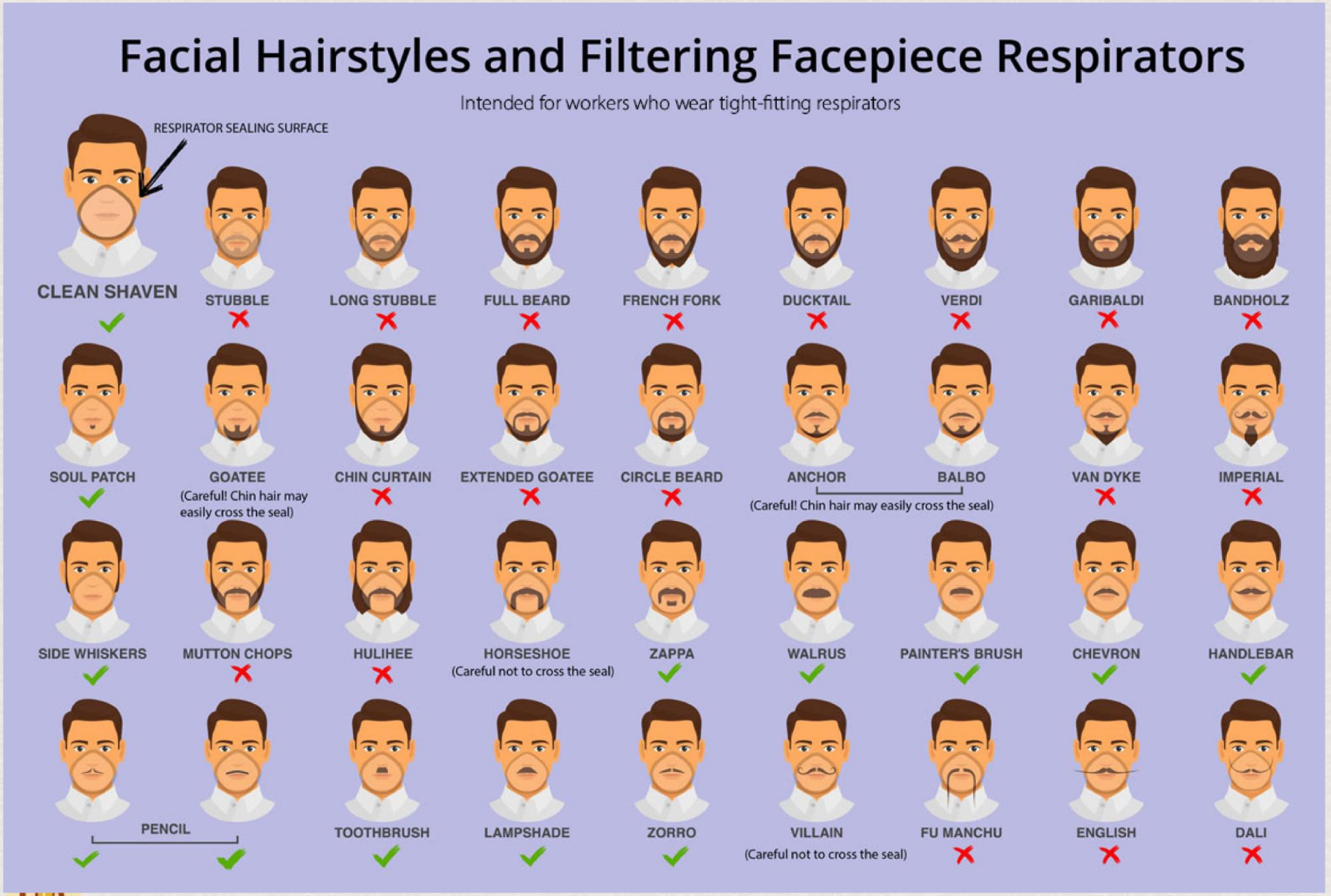
RESPIRATORY PROTECTION

None of These Work in the Absence of Sufficient Oxygen!!

FOR DUSTS, MISTS, VAPORS, AEROSOLS

- Chemical Mists/Vapors
  - Brewery Washdown
  - Paints, Coatings, Solvents

- Particulate protection
  - Grain Dust
  - DE Filter Aids
  - Metal, Wood, Plastic Fabrication/Welding



SOME FACIAL HAIR STYLES CAN BE USED WITH ½-FACE RESPIRATORS

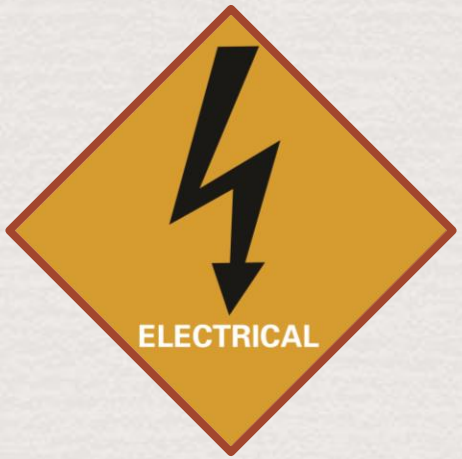
- Respirator surface contact area must be 100% against clean shaven skin
- Only disposable dust masks can be worn without fit testing, medical evaluation, and special training

PPE STARTS SAFETY CONVERSATIONS

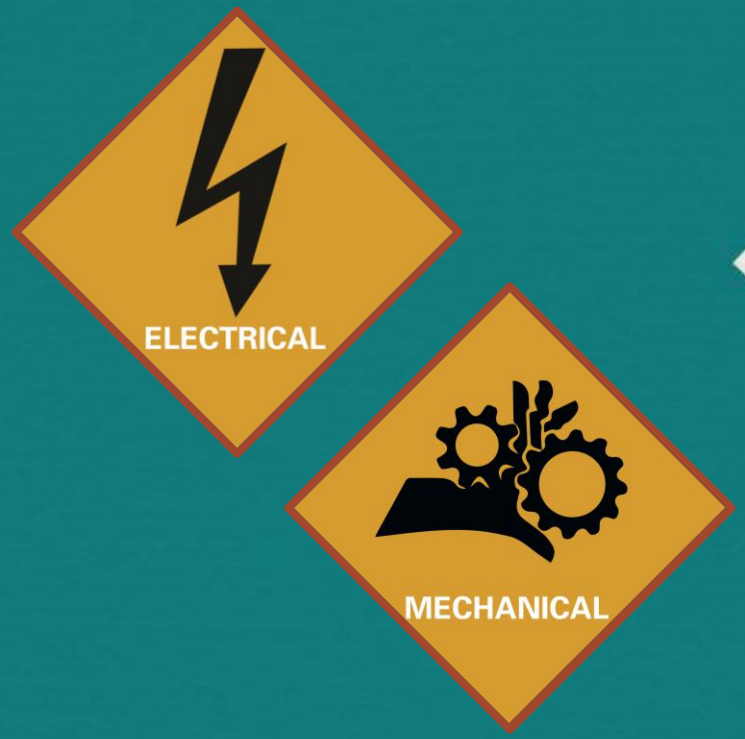
CONTROL OF HAZARDOUS ENERGY

WHAT WE ALL CALL

LOCKOUT / TAGOUT



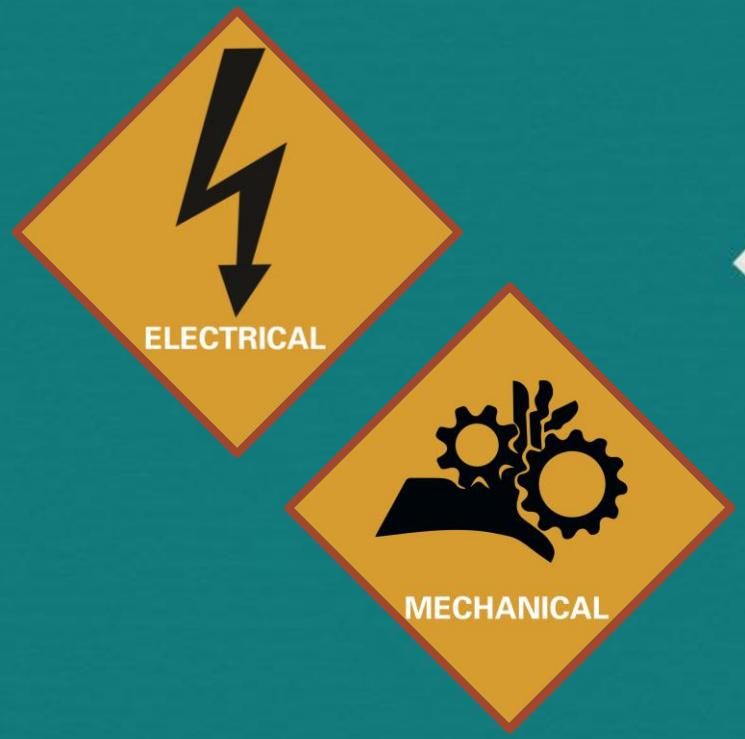
CONTROL OF HAZARDOUS ENERGY (LO/TO)



IS LO/TO THAT IMPORTANT?

- **ISOLATES and CONTROLS hazardous energy sources**
  - Electrical
  - Mechanical
  - Chemical
  - Gravity
  - Pneumatic, etc.
- **Requires Specialized Equipment**
  - Use LO/TO devices only for LO/TO work

CONTROL OF HAZARDOUS ENERGY (LO/TO)



WHEN TO USE LO/TO

- Remove or bypass any safety device on a piece of machinery
- Place any part of your body into a point of operation where a danger zone exists during an operating cycle

WHEN IS LO/TO REQUIRED?

- Risk of unexpected energization or start-up of equipment
- Work with risk of uncontrolled release of hazardous energy
- High voltage electrical and live electrical work
- Confined space entry
- Removal or disabling of safety systems or devices

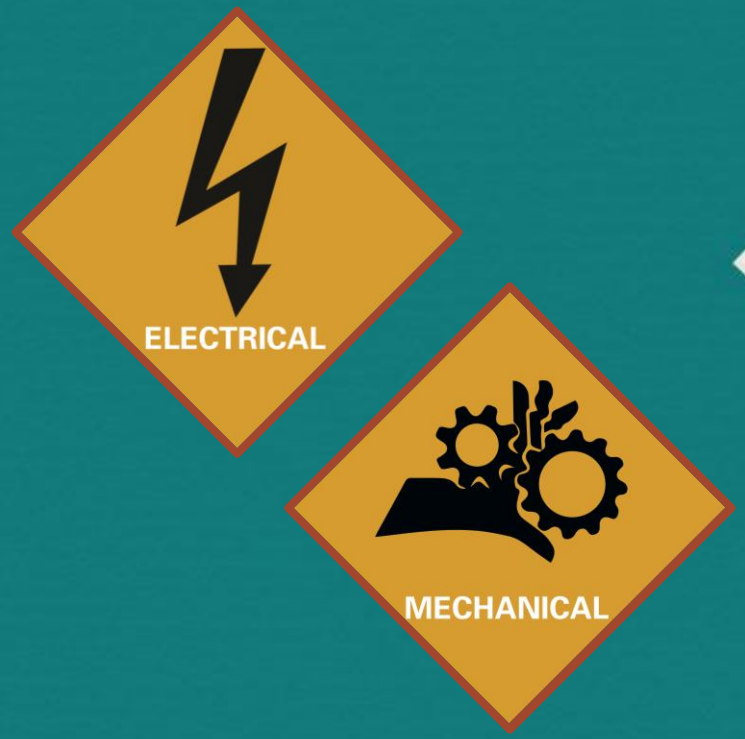
NOT REQUIRED FOR

- Minor Tool Changes
- Minor Adjustments

MUST Meet all three

- Occurs during normal production operations on easily surveyable equipment
- Activities are routine, repetitive and integral
- Performed using alternative measures to safely perform task without being exposed to hazardous energy

CONTROL OF HAZARDOUS ENERGY (LO/TO)



TYPES OF HAZARDOUS ENERGY

- Electrical
- Mechanical
- Stored or potential (springs, gravity, etc.)
- Thermal
- Hydraulics (fluid) or pneumatic (air)
- Chemical
- Radiation (nuclear gauges)

ENERGY CONTROL PROCEDURE (ECP)

ECP is an SOP that describes shutdown and startup for systems with multiple energy sources

- **Procedural steps**
  - shutting down
  - isolating, blocking, and securing
  - restoring

- **Procedural steps**
  - placement, removal, and transfer of LO/TO devices
  - who has responsibility for them
- **Requirement for testing a piece of equipment to verify effectiveness of LO/TO devices – a.k.a. The TRY STEP**

TRY STEP

- **Verifies isolation**
- **May release residual or stored energy**
- **Confirms correct energy sources are controlled**
- **Keep persons safe while performing the Try Step**

ENERGY CONTROL PROCEDURE (ECP)

EQUIPMENT-SPECIFIC

- Often includes images
- Color-coded energy control points

ONLINE ECP GENERATORS

- Subscription-based
- Some free tools available

LINK360 **Lockout/Tagout Posted Procedure**

ID#:	1234567890	Facility: Test Area: (Good Hope) - CDC	Location: CDC Shop Floor
Created:	10/8/2013		
Revised:	10/8/2013	Description: HTST-1 Separator	

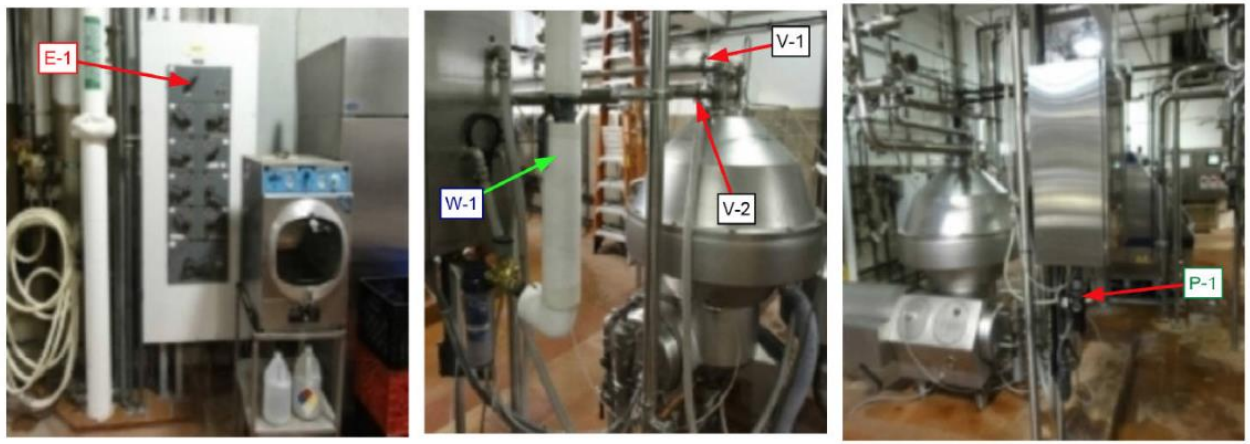
5 Lockout Points

Note: Hydraulic and pneumatic equipment can store energy. Ensure all pressures have bled off before proceeding. - ALSO - Machine can store kinetic energy. Ensure machine has come to a complete stop before proceeding.

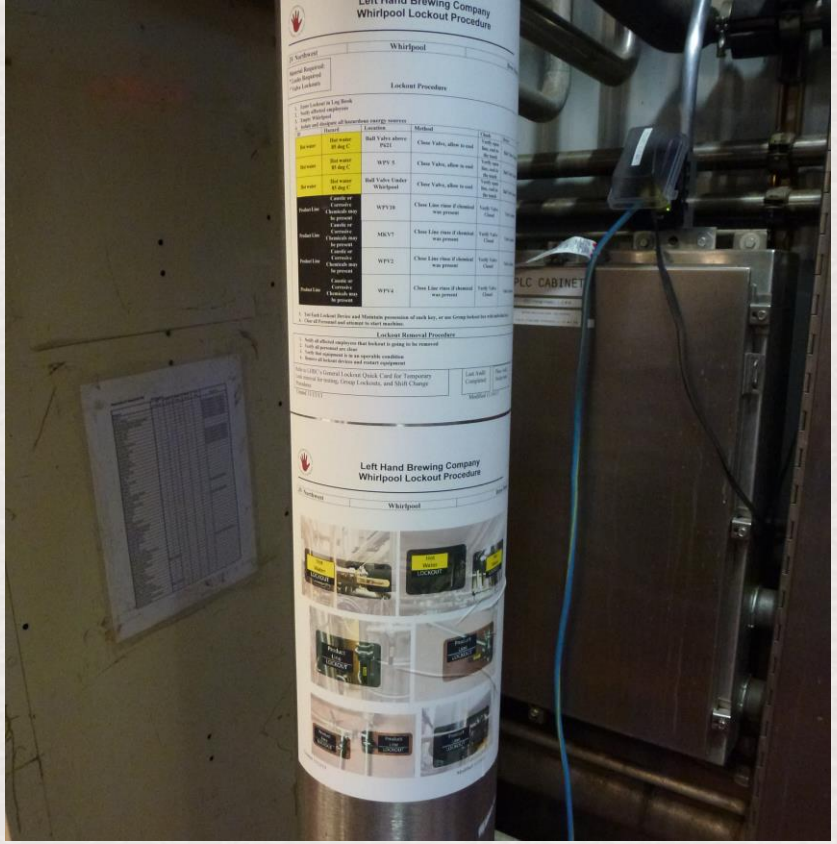
Lockout Application Process

1. Notify affected personnel. 2. Properly shut down machine. 3. Isolate all energy sources. 4. Apply lockout devices, locks, & tags. 5. Verify total de-energization of all sources.

MCC SWBB21 | North Side | South Side



Energy Source	Location	Method	Device	Verification
1 Electrical 480V	Disconnect is located on MCC SWBB21 (Bucket 1).	Turn Disconnect to the off position and lock out.	Lock and hasp	Attempt restart at all control panels.
2 Pneumatic 100 PSI	Ball Valve P-1 is located on the South side of the machine.	Turn Valve to the off position and lock out.	Lock and hasp	Verify pressure has bled off.
3 Water City Water Supply	Ball Valve W-1 is located on the East side of the machine.	Turn Valve to the off position and lock out.	Ball valve lockout	Verify pressure has bled off.
4 Valve				



ENERGY CONTROL PROCEDURE (ECP)

ECPs

- Keep close to work station
- Code ECP to energy control points on equipment
- Mark control points

CONTROL DEVICES HANDY

- Keep required devices close to work station

LO/TO INDICATORS

TAGS

- Provide a message

HASPS

- Allow multiple locks

LOCKS

- Only used for LO/TO
- Only 1 key
- Key kept by operator being protected by LO/TO

LO/TO DEVICES

ELECTRICAL TYPES

PLUG LOCKOUT

- Isolates plug end from being plugged in

BREAKER DEVICES

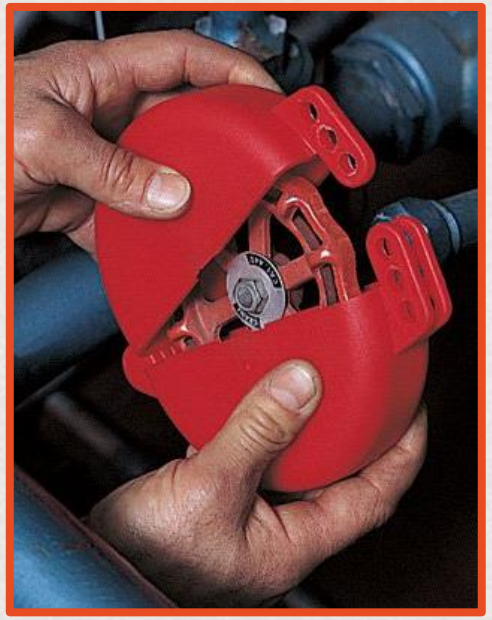
- Isolates energy at electrical panel

DISCONNECT LOCKOUT

FLUID CONTROL

VALVE DEVICES

- Ball valve
- Butterfly
- Gate valve



LO/TO SUMMARY - ACHIEVE A ZERO ENERGY STATE

TASKS

- **Brewhouse Vessel Cleaning**
- **Packaging**
  - Conveyors
  - Fillers
  - Drop Packers
  - Palletizers
- **Single Sources**
  - Electric Cords

OUTCOMES

- **Mechanical Hazards**
  - Crush/Pinch
  - Flying Objects
- **Electrical**
  - Electric shock
  - Electrocution
- **Fluid Energy Release**
  - Bodily Injury

CONTROLS

- **Engineering**
  - LO/TO Devices
- **Administrative**
  - Energy Control Procedures
  - SOPs & Training

Audience Poll – YES or NO

Join at: slido.com #CBC22

Q7: Do you have a written procedure for safely entering brewhouse vessels for cleaning?

BA BREWERS ASSOCIATION

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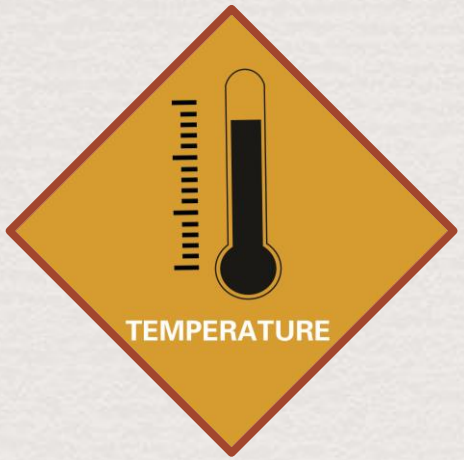
CONFINED SPACES

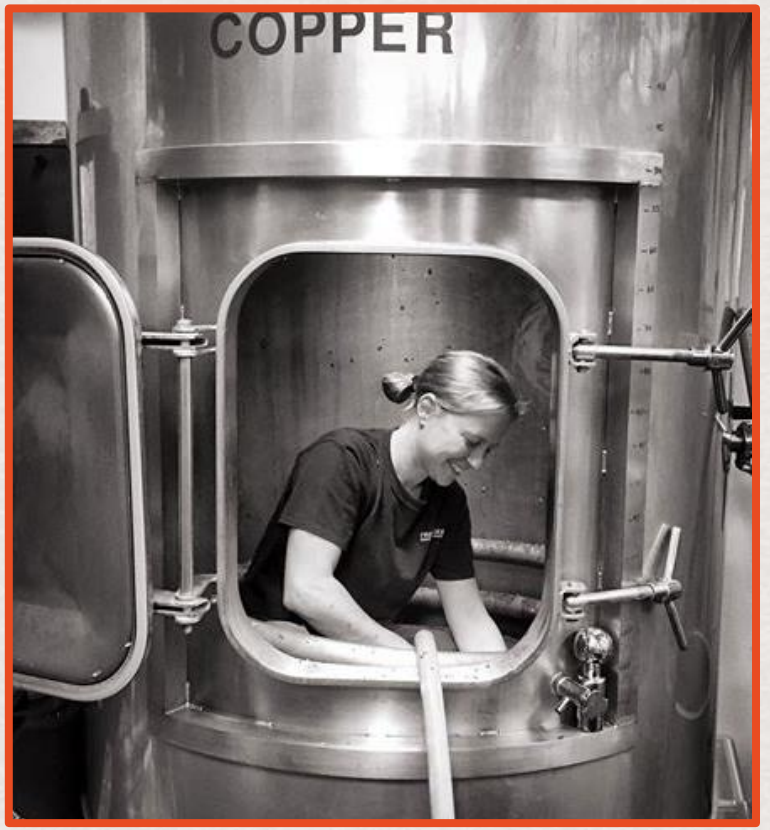
INCREASE YOUR AWARENESS & SYSTEMATIZE YOUR PROCEDURES



CONFINED SPACES

ACCIDENTS

- **Confined space accidents are rare**
  - Often fatal
  - Often involve more than one person
- **Accidents are easily preventable**
- **Majority of deaths are would-be rescuers**



DEFINITION

“CONFINED SPACE” MEETS *ALL* THREE:

1. Large enough to bodily enter and perform work
2. Limited means of entry or exit
3. Not designed for continuous human occupancy

EXAMPLES

- Brewhouse Vessels MT, LT, BK, WP, HLT, CLT
- Fermenters
- Bright Tanks
- CIP Tanks
- Yeast Brink
- Wastewater treatment tanks, sumps
- Grain Silos

PERMIT-REQUIRED CONFINED SPACE (PRCS)

IT'S A "PRCS" IF IT IS A "CONFINED SPACE"AND ALSO MEETS *ANY* ONE OF FOUR CRITERIA

1. Potential to contain hazardous atmosphere

- O_2 deficient atmosphere
- Elevated CO_2 levels

IT'S A "PRCS" IF IT IS A "CONFINED SPACE"AND ALSO MEETS *ANY* ONE OF FOUR CRITERIA

PERMIT-REQUIRED CONFINED SPACE (PRCS)

2. Engulfment Hazard

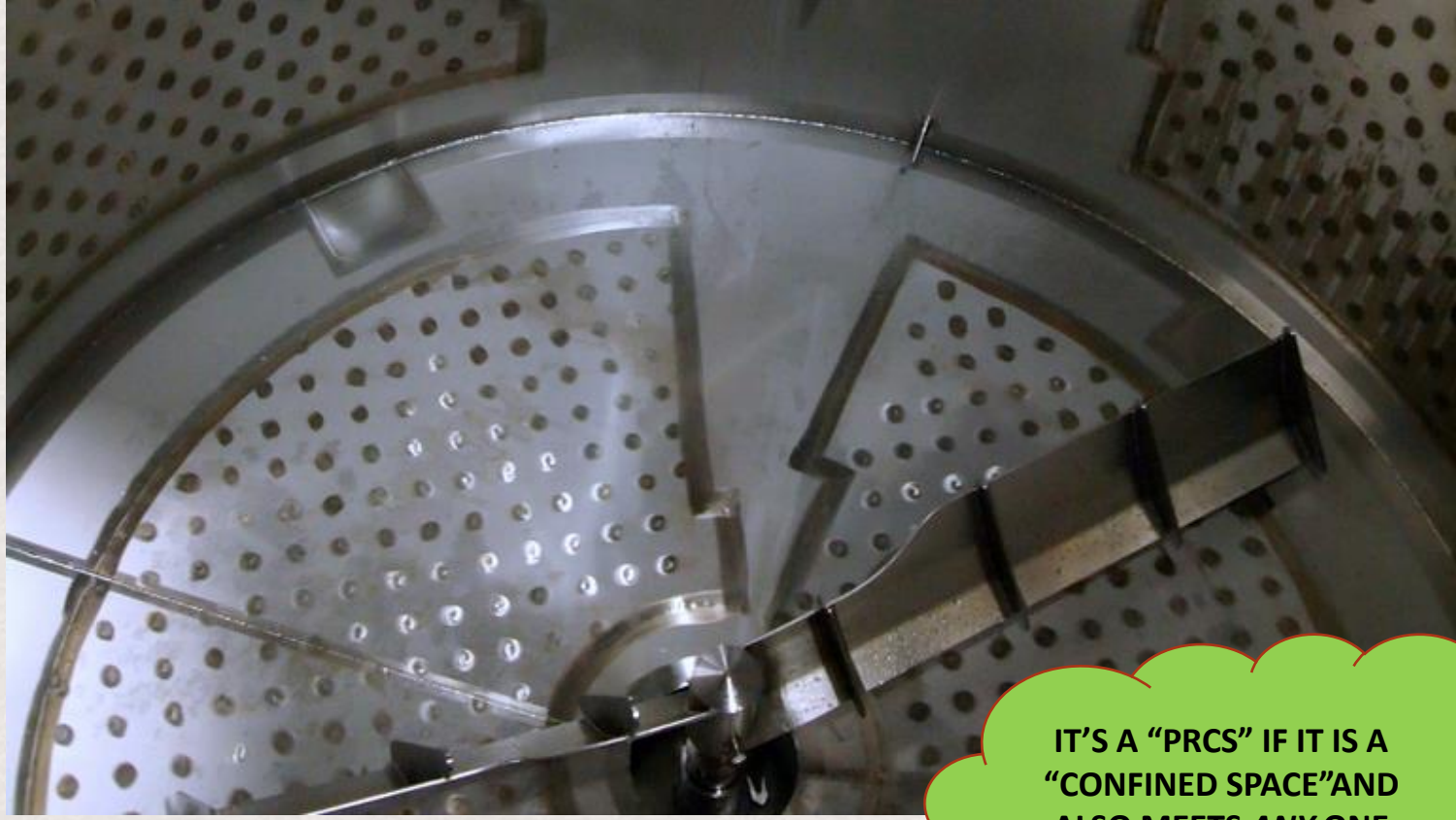
- Grain
- Spent grain
- Water

IT'S A "PRCS" IF IT IS A "CONFINED SPACE"AND ALSO MEETS *ANY* ONE OF FOUR CRITERIA

PERMIT-REQUIRED CONFINED SPACE (PRCS)

3. Inwardly converging walls or downward sloping floor

- Silos
- Fermenters



IT'S A "PRCS" IF IT IS A "CONFINED SPACE"AND ALSO MEETS *ANY* ONE OF FOUR CRITERIA

PERMIT-REQUIRED CONFINED SPACE (PRCS)

4. Contains any other recognized serious safety or health hazards

- **Mash mixer**
- **Lauter tun rakes**

WHAT CONSTITUTES ENTRY?

- **Any part of the entrant's body breaks the plane of an opening into a confined space**
- **Examples**
  - **Inspecting inside of FV/BBT**
  - **Emptying spent grain from LT**
  - **Cleaning FV**
  - **Equipment Repairs**

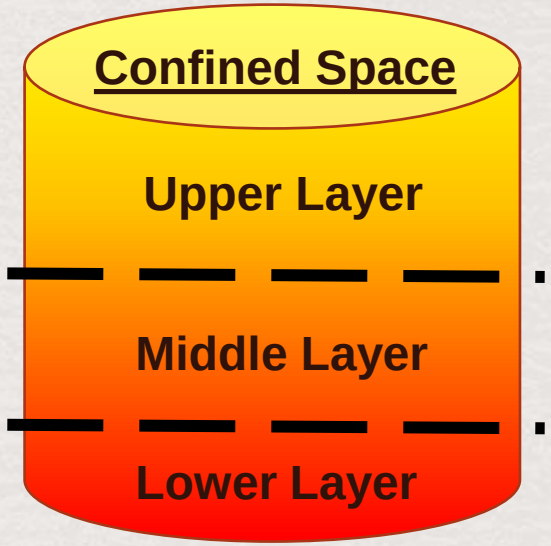
HOW DO YOU PROPERLY ENTER A PERMIT-REQUIRED CONFINED SPACE?

ENTERING MEANS

If any part of the entrant's body breaks the plane of an opening into a confined space…

YOU MUST HAVE

- Written Program
- Hazard Assessment of Spaces
- Entry Permits
- Atmospheric Testing
- Specific Safe Procedures
- Authorized Entrant, Attendant
- Emergency Rescue Procedures
- Training



RETRIEVAL SYSTEM

- OSHA: “A mechanical device must be available to retrieve personnel from a vertical space more than 5 feet deep.”

PROPER PRCS RESCUE REQUIRES MONITORING AND RETRIEVAL GEAR AND 4-MINUTE RESPONSE TIME

ATMOSPHERIC TESTING

- Test all levels/depths, multifunction meter
- Document readings on the permit or in hazard assessment

BREWERY ATMOSHPERIC HAZARDS

- FV/BBTs: Excess CO_2 or N_2, O_2 Deficiency
- Wastewater treatment: H_2S
- Near direct flames or propane PITs: CO

RECLASSIFICATION

- Space poses no actual or potential atmospheric hazard
- All hazards within the space can be eliminated without entry into the space (LO/TO)
- Useful for Brewhouse Vessels – MT, LT, BK, WP

WHAT ARE THE ALTERNATIVES TO PRCS ENTRY?

REQUIREMENTS

- Written Program
- Hazard Assessment
- Written LOTO Procedure
- Control Devices
- Training

ALTERNATE PROCEDURE

- Only hazard is actual or potential atmospheric hazard
- Must have forced air ventilation and atmospheric monitoring
- MIGHT BE for used for Cellar Vessels – for example if only hand or face enter – DOCUMENT IT!

CONFINED SPACE SUMMARY

TASKS

- Brewhouse Vessel Cleaning
- FV/BBT Cleaning
- Grain Silo Inspection
- Water and Waste-water Inspection

HAZARDS

- O_2 Deficiency
- Mechanical Hazards
- High Temperature

CONTROLS

- Air Monitoring
- Engineering
  - LO/TO
  - Forced Air Flow
- Administrative
  - Hazard Assessment
  - Reclassification
  - SOPs & Training

PRESSURE AND VACUUM HAZARDS

BREWERS ASSOCIATION

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PRESSURE HAZARDS

PRESSURE HAZARDS

- Compressed Air
- Compressed Gases: CO_2, N_2, O_2
- Beer Under Gas or Hydrostatic Pressure
- Keg Cleaning
- Packaging Systems
- Draught Systems
- Kettle Pressure
- Pumped Fluids and Hot Water

POTENTIAL ENERGY HAZARDS

- PRESSURE
- VACUUM
- PNEUMATIC
- HYDRAULIC
- HYDROSTATIC

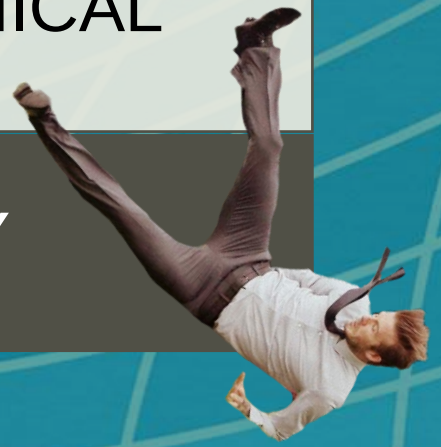
PRESSURE

- SPRINGS
- ELASTICS

TENSION

- FALLING OBJECTS
- FALLING PERSONS
- MECHANICAL FAILURE

GRAVITY



PRESSURE HAZARD ASSESSMENT

TASKS

- Moving Beer
- Keg Cleaning
- Vessel CIP
- Using Compressed Air and Gases: CO_2, N_2, O_2
  - Oygenating
  - Carbonating
  - Packaging
- Wort Production
- Securing Loads

OUTCOMES

- Equipment Failure
  - Tank Vacuum Implosion
  - Tank Pressure Explosion
- Flying Objects
- Chemical Spray
- Asphyxiation
- Wort Burns
- Face and Eye Injury
- Traumatic Injury

CONTROLS

- Use gauges
- Primary & Secondary Regulators
- Cylinder Restraint
- Pressure / Vacuum Relief Valves
- Burst Disks
- Proper Fittings
- Care in Use

DON’T BE A HOSER!

- “THE RIGHT TUBE FOR JOB”
- USE APPROPRIATE COMMERCIAL FITTINGS
- INSPECT REGULARLY!

PROTECT AGAINST FAILURE

- SECONDARY REGULATORS
- PRESSURE-VACUUM RELIEF
- REGULAR INSPECTION OF SYSTEM COMPONENTS

PRESSURE FAILURES: CELLAR VESSELS

TASKS

- CIP cleaning
- Fermentation
- Racking
- Carbonating, nitrogenating

CAUSES

- Temp. delta in a closed system
- CO_2 - Caustic rxn.
- Transfer w/o open inlet valve
- Runaway fermentation
- PRV/VRV failure or absence

HAZARDS

- Implosion
- Explosion
  - Beer cannon
  - Tank rocket
- Flying objects
- Production Shutdown and Product Loss

PRESSURIZED SYSTEMS

CELLAR VESSEL HAZARD CONTROLS

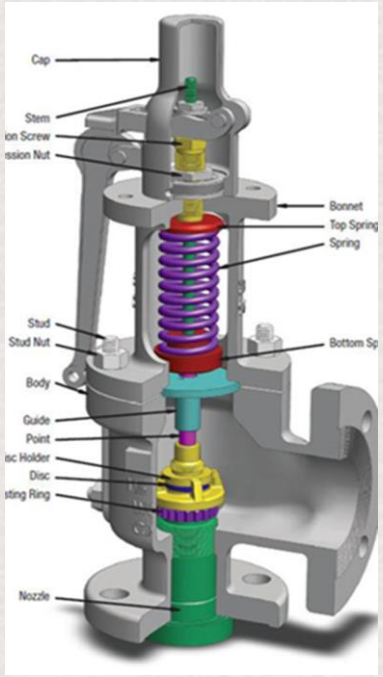
ENGINEERING CONTROLS

- Safety valve
- Pressure Relief Valve (PRV)
- Vacuum Relief Valve (VRV)
- Burst disk, or Rupture disk
- Correct sizing and pressure/vacuum settings

PROCEDURAL & SWP

- Follow an SOP
- Understand chemical and physical reasons for tank failure
- Know MAWP
- Inventory valves
- Schedule relief valve inspection and cleaning

TYPES OF PRESSURE RELIEF DEVICES

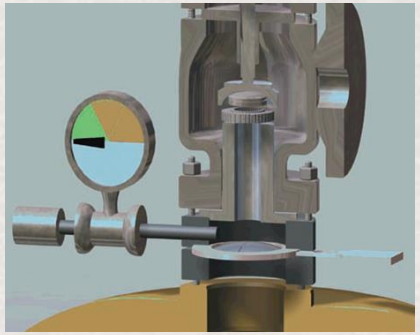


Conventional Pressure Relief Valve

Common Spring-loaded Tri-clamp Pressure Relief Valve

Rupture Disk

Storage Tank Relief Device (protects overpressure and vacuum)



Pressure Relief Valve / Rupture Disk Combination

Lever Action Pressure Relief Valve

PRESSURE FAILURES: PACKAGING & DISPENSE

TASKS

- Keg cleaning, filling
- Canning, bottling lines
- Draught dispense system

CAUSES

- Lack of pressure protection
  - Secondary regulator
  - Safety valve
- Improper hose, fittings, couplers
- Improper order of opening/closing lines

HAZARDS

- Hose/Fitting failure
- Flying objects
- Chemical spray
- Production Shutdown and Product Loss

PRESSURIZED SYSTEMS

PACKAGING AND DISPENSE HAZARD CONTROLS

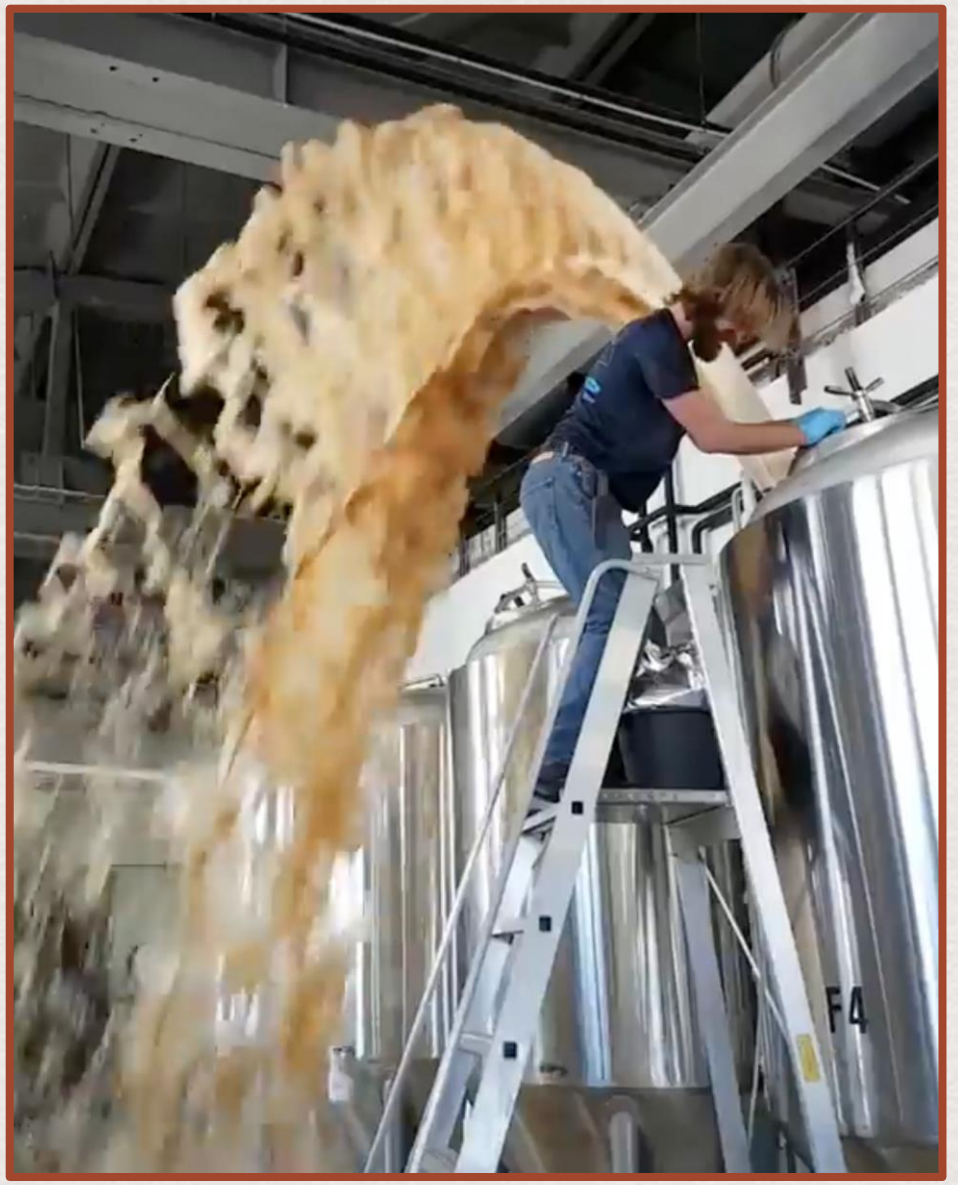
ENGINEERING CONTROLS

- Secondary regulators and pressure gauges at point of equipment connection
- Safety valves
- Plexiglas panels
- Proper connections
  - Oetiker clamps
  - Factory installed hose fittings
  - DO NOT USE worm clamps

PROCEDURAL & SWP

- Follow an SOP
- Understand how to depressurize system before uncoupling
- Know correct operating pressure of all equipment
- Regularly inspect, cleaning, replace wearable parts

DRY HOPPING FAILS



DRY HOPPING FAILS, a.k.a. “POPCORNING” or “HOP VOLCANO”

TASKS

- Dry Hopping
- Adding Seasonings or Fruit Flavoring
- PRV Cleaning

HAZARDS

- Flying Objects due to Pressure
- CO_2 Overexposure
- Risk of Falling from Height

CONTROLS

- Engineering Controls
- Established Procedures
- Safe Work Practices
  - Working at height
- PPE
  - Fall protection

DRY HOPPING

HAZARD CONTROLS

PRESSURE HAZARDS

- Blow down CO_2 head pressure per an SOP
- Keep pressure gauges and PRVs clean, operational
- Don’t exceed design volume
- Add ingredients slowly
- Consider hop doser or recirculation equip.

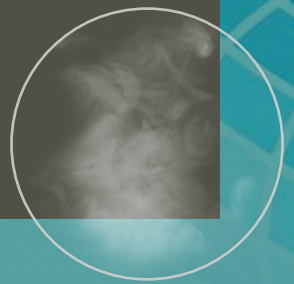
WORKING AT HEIGHTS

- Choose best system your resources allow
  - Scissor lift
  - Rolling platform stairs
  - Extension ladder or step ladder
- Harness, Anchor, Tether
- Catwalk

THERMAL HAZARDS

- SCALDING LIQUIDS
- STEAM
- DIRECT CONTACT

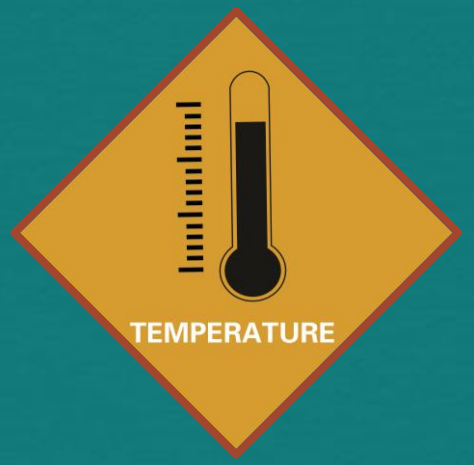
BURNS



- HEAT STRESS
- HYPOTHERMIA
- CLIMATE CHANGE

ENVIRONMENTAL

KETTLE BOILOVERS



KETTLE BOILOVERS

TASKS

- Wort Boiling
- Hop Addition

HAZARDS

- Deep Tissue Burns/Fatality
- Permanent Disability
- PTSD
- Production Shutdown and Product Loss

CAUSES

- Overcharging kettle volume
- Lack of foam controls
- Rapid hop addition
- Failure to monitor temp.

KETTLE BOILOVERS

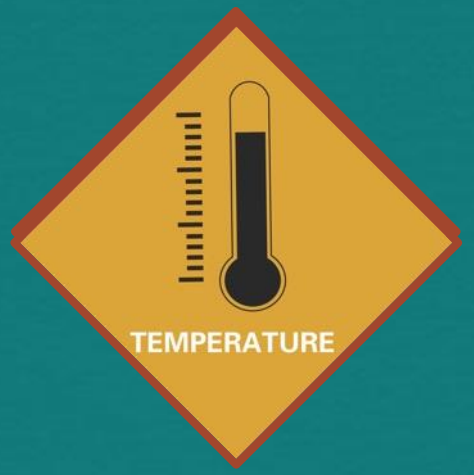
ENGINEERING CONTROLS

- Foam shutoff switch
- Anti-foam agent
- Spray hose to cool
- Temperature sensor
- Manway positioning in regard to operator

PROCEDURAL

- Stick to design volumes: min. 25% freeboard
- Avoid “line of fire”
- Gradual hop addition, only after hot break
- Follow an SOP
- Eye protection, insulated gloves, long pants over boots

HOT WORK HAZARDS



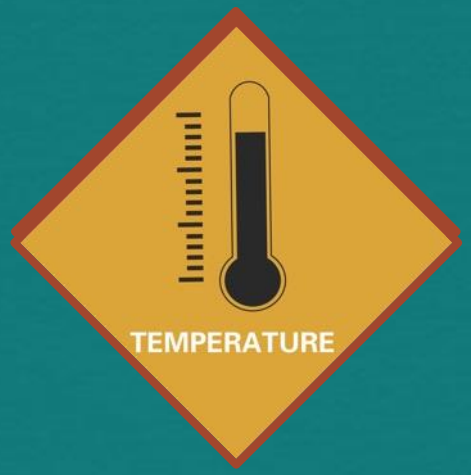
HEAT HAZARDS

- Brewing hot side
  - Mash, Kettle, WP
  - Spent Grain
  - Steam
- Hot cleaning cycles
  - CIP
  - Keg Line
- Hot Wastewater
- Welding & Torch Cutting
  - Heat, UV Light
  - Hazardous Gases, Fumes
  - Slag and Splatter
  - Fires

HEAT CONTROLS

- Isolate workers from hazard
- Insulation
- Process Labeling
- Appropriate for Type
  - Long sleeves, pants
  - Foot protection
  - Thermal gloves
  - Eye and face shielding

ADVERSE TEMPERATURE HAZARDS



HEAT OUTCOMES

- Early Signs
- Heat Exhaustion
- Heat Stroke

COLD OUTCOMES

- Hypothermia
- Frostbite

CONTROLS

- Prevention
  - Hydration
  - Food Energy
  - Avoid diuretics, i.e., alcohol, caffeine
  - Removal from Adverse Environment
- Other Controls
  - Temp Controlled Workspace
  - Appropriate clothing
  - Training
  - Rest cycles


GET UP
GET DOWN

DOCUMENT YOUR BOOTCAMP TRAINING

Take Online Quiz

- **Take it by the End of CBC!**
- **Need an Accommodation for Language or Disabilty? Email: technical@brewersassociation.org**

Passmark 75%

Certificate Emailed

QUIZ LINK

https://brewersassociation.wufoo.com/forms/2022-safety-bootcamp/

EMERGENCY ACTION

EMERGENCY ACTIONS

- Exiting
- Fire
- Injury
- Chemical Spill
- Natural Events
- Terrorism / Violence

ARE YOU PREPARED?

Preparedness

PRE-PLANNING

- In-house
- Emergency services
- Contractors
- Conduct drills

EQUIPMENT, SUPPLIES

- Fire, Spill, First Aid, Security
- Communications
- Lighting, Power Back-up

Emergency Planning

- Chain of Command
- Map the Exits
- Shutdown Procedures
- Fire Extinguishers
- First Aid Supplies
- Spill Cleanup Gear
- Annual Training Req’d.

OSHA-REGULATED EMERGENCY PLANNING

EAP

- **Fire/Emerg. Reporting**
- **Evacuation**
  - Procedures, Routes
  - Stay Behind Reqmts.
- **Headcount**
- **Rescue/Medical Duties**
- **Names or titles of Key EAP Personnel**
- **Recommended**
  - Alarms
  - Alternate Comms.
  - Secure Records

FPP

- **List of Fire Hazards**
- **Hazmat Procedures**
  - Handling
  - Storage
- **Ignition Sources**
  - Location
  - Control
- **Fire Protection Equip.**
  - Appropriate for hazards on-site

1ST AID

- **First Aid Supplies**
  - On hand
  - “Adequate”
- **Eyewash or Shower**
  - “Suitable facilities”
  - “Within work area”
  - ”For immediate use”
- **Either:**
  - “Close proximity” to emergency care
  - “Adequately” trained person(s) on-site

OTHER EMERGENCY PLANNING CONSIDERATIONS

NATURAL DISASTERS

- **Emergency Reporting**
  - Police, fire, EMS
  - Utility outages
  - Social media channels
- **Evacuation / Shelter Plans**
  - Procedures, Routes
  - Stay Behind Rqmts.
- **Power Supplies**
- **Contractors**
  - Building, utilities repair

VIOLENCE

- **Police Notification**
- **Recommended Minimum Program**
  - Employee Manual
- **Consider Carefully**
  - PTSD, etc.
  - Legalities
  - Liabilities

Written Programs

THREE PROGRAMS SHOULD LIST

- In-house Responsibilities
- Emergency Services info
- Emergency Contractor info
- Schedule for Inspections & Drills
- Required Equipment

REMINDER: OTHER COMMON OSHA-REQUIRED WRITTEN PLANS

HAZCOM

- **Hazard Communication for Working with Hazardous Chemical Products**
  - Written Program
  - Maintain SDSs
  - Labels & Signs
  - Provided PPE and Trained in Proper Use

FORKLIFT

- **Written Program**
- **Certification Training**
  - 18 yrs+
  - Good for 3 yrs.
  - Classroom and Practical Exam
- **Daily**
  - Inspections
  - Proper Use

CONFINED SPACE

- **Written Program**
- **Inventory of Spaces**
  - Permit-Required
  - Reclassified
  - Alternate Procedures
- **Permit Entry System**
  - Staffing
  - Monitoring
  - Retrieval / Rescue

Audience Poll –
WHAT ABOUT YOU?

Q9: At your current place of employment, have you ever been involved in a drill for any kind of emergency action?

MENTAL WELL-BEING

FROM WITHIN

- Being emotionally literate and self aware
- Communicating effectively

FROM WITHOUT

- External stresses
  - From work
  - From outside work
- Learning how to listen
- Make and respect healthy boundaries

Hazard Assessment of Poor Well-Being

HAZARDS

- Toxic culture
- One bad apple
- Losing an employee
- Distraction
- Fatigue

OUTCOMES

- Employees aren't engaged, don't care about work, product and sales suffer
- Lowers the bar for all, some employees can't do their job
- Their personal suffering, co-workers strain to catch up, work quality suffers
- Accidents and injuries; self-harm

CONTROLS

- Work on improving communication, listen to employee feedback, be intentional, management must lead by example.
- Get rid of this person!
- Be proactive so that this doesn't happen!

THERE ARE NO “HARD” CONVERSATIONS –

JUST CONVERSATIONS

- **Remove fear/bias/assumptions (we’re all human!)**
- **Focus on facts and how YOU feel, not how you think others feel**
- **Stay receptive to the other person’s response; active listening!**
- **Be assertive, but open to negotiation**

THIS TAKES PRACTICE!

MORE COMMUNICATION TIPS

- **LISTEN** – You don't have to solve
- **ASK OPEN QUESTIONS** – “Wow, how did that make you feel?”
- **KEEP IT CASUAL** – e.g., while you're working on a task together
- **REPEAT IT BACK** – e.g, “I hear you, It *has* been a tough month.”
- **CHECK IN REGULARLY** – If you think someone is really struggling

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Certificate Emailed

QUIZ LINK

https://brewersassociation.wufoo.com/forms/2022-safety-bootcamp/

#CraftBrewersCon

BIRKO®

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BREWERS ASSOCIATION

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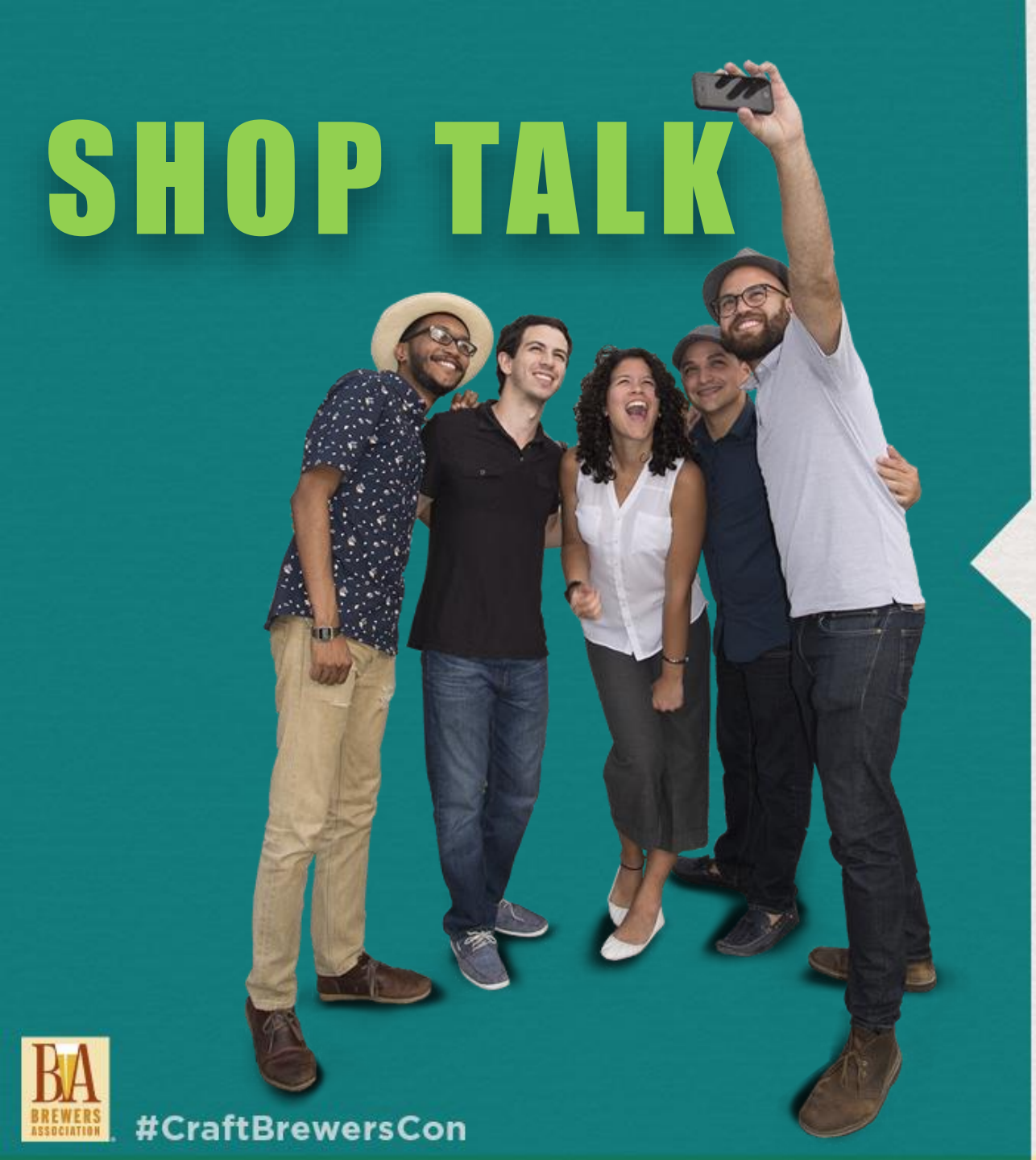
BOOTH 2721

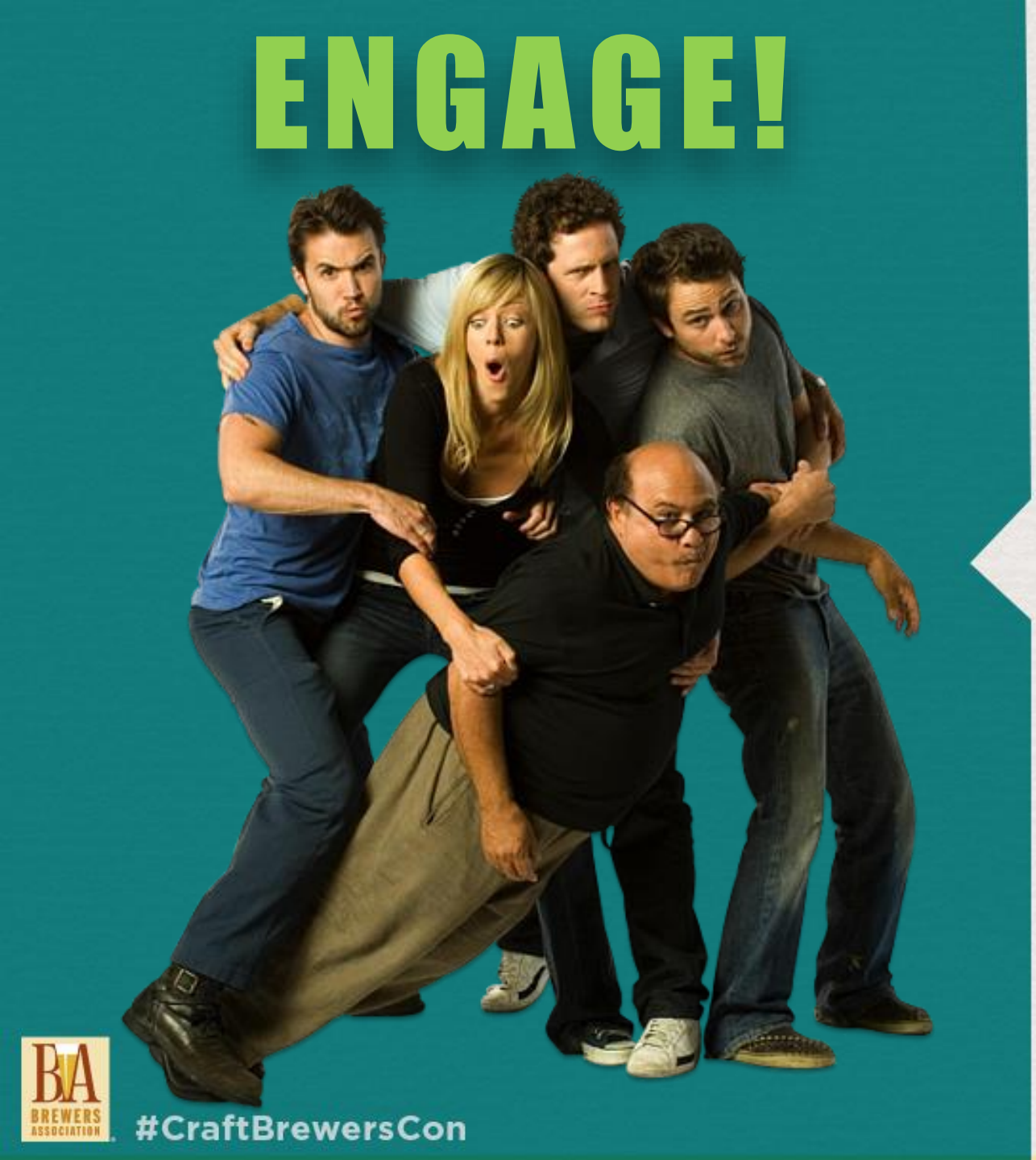


CONVERSATIONS

NORMALIZE – Talking about safety: make it a natural conversation

SOCIALIZE – Safety Meet-Up – Tomorrow 4:15pm – Room M100E!

SOCIAL MEDIA – Set a *good example*



ALWAYS DOING

ACT – Start or join a safety committee

LEARN – Pick up and share safety skills

GROW – Do more. Maybe the BA Safety Committee?

RIGHT NOW

Q&A – Lightning round

ASK – Longer questions use BA Forum

REVIEW – Leave a review on Conference App

QUIZ – By Midnight tonight!

GET SAFE!

BE SAFE!

STAY SAFE!!

BA BREWERS ASSOCIATION

CRAFT BREWERS CONFERENCE

& BrewExpo America