Hazard Assessment:
New Tools for Busy Brewers

Craft Brewers Conference

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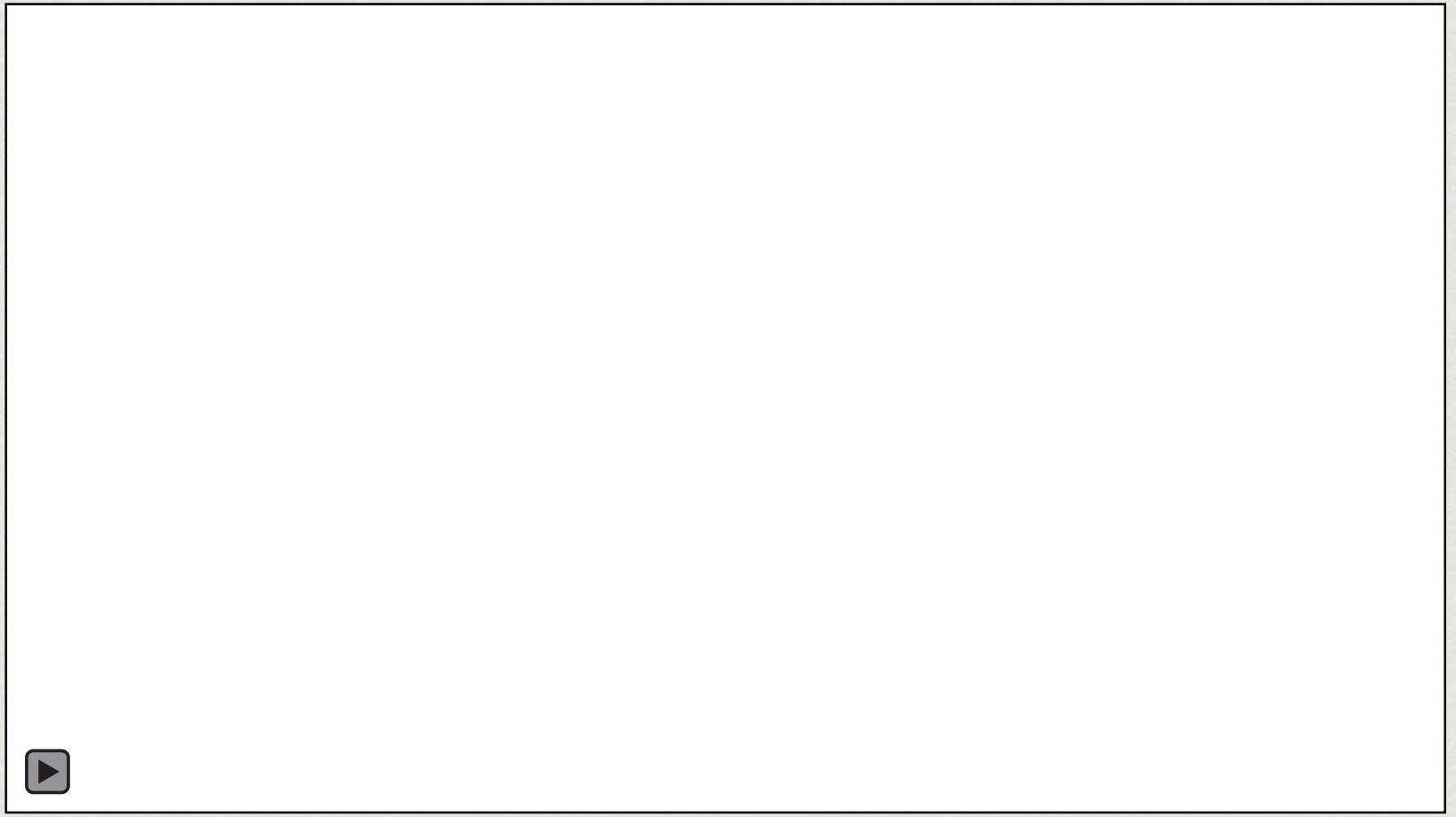
What Could Go Wrong?

Hazard Assessment has the Answer

Understanding job hazards lets you:

- Reduce/eliminate safety hazards
- Avoid accident and injury
- Improve processes and quality
- Maintain healthy wellbeing



Source: “The Princess Bride”, Act III Communications, 1987

(Brewer)

(Owner)

Hazard Assessment

KEY TERMS AND THE H.A. PROCESS

What is Safety?

The freedom from hazards in the workplace

(or at home or recreation)

How Do We Achieve Safety?

We thoughtfully consider the steps of a task and then seek to reduce, avoid, or minimize hazards throughout the task

Hazard Assessment Process

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

Prevention

Avoiding or eliminating hazards by

- **changing how you behave**
- **process controls**

Protection

Reducing hazards with

- **personal protective equipment** (PPE)
- **administrative controls**

Hazard Assessment in 4 Logical Steps

1. Make a list of **Steps** involved in **Task**
2. Identify potential **Hazards** for each **Step**
3. Specify ways to **Control** each **Hazard**
4. Write/Revise a **Procedure** (SOP) with both **Task Instruction** and **Hazard Controls**

1.0 – Outline the Steps of the Task

1.1 – Drill Down to Instructional Level

(opt., but you have do it later for your SOP)

2.0 – Identify Hazards for each Step

2.1 – Assign Rankings for each Hazard

(opt., details in new Hazard Assessment BMP)

3.0 – Specify Hazard Controls for Each Potential Hazard

3.1 Engineering Controls

3.2 Administrative Controls

3.3 Personal Protective Equipment

3.4 Safe Work Practices

3.1 – Engineering Controls

Specialized, sometimes expensive

- **Control Kinetic & Potential Energy**
- **Control & Move Gases, Liquids, and Solids**
- **Monitoring of Hazards**

Control Energy

- Electrical
- Mechanical
- Hydraulic/Pneumatic
- Thermal
- Chemical

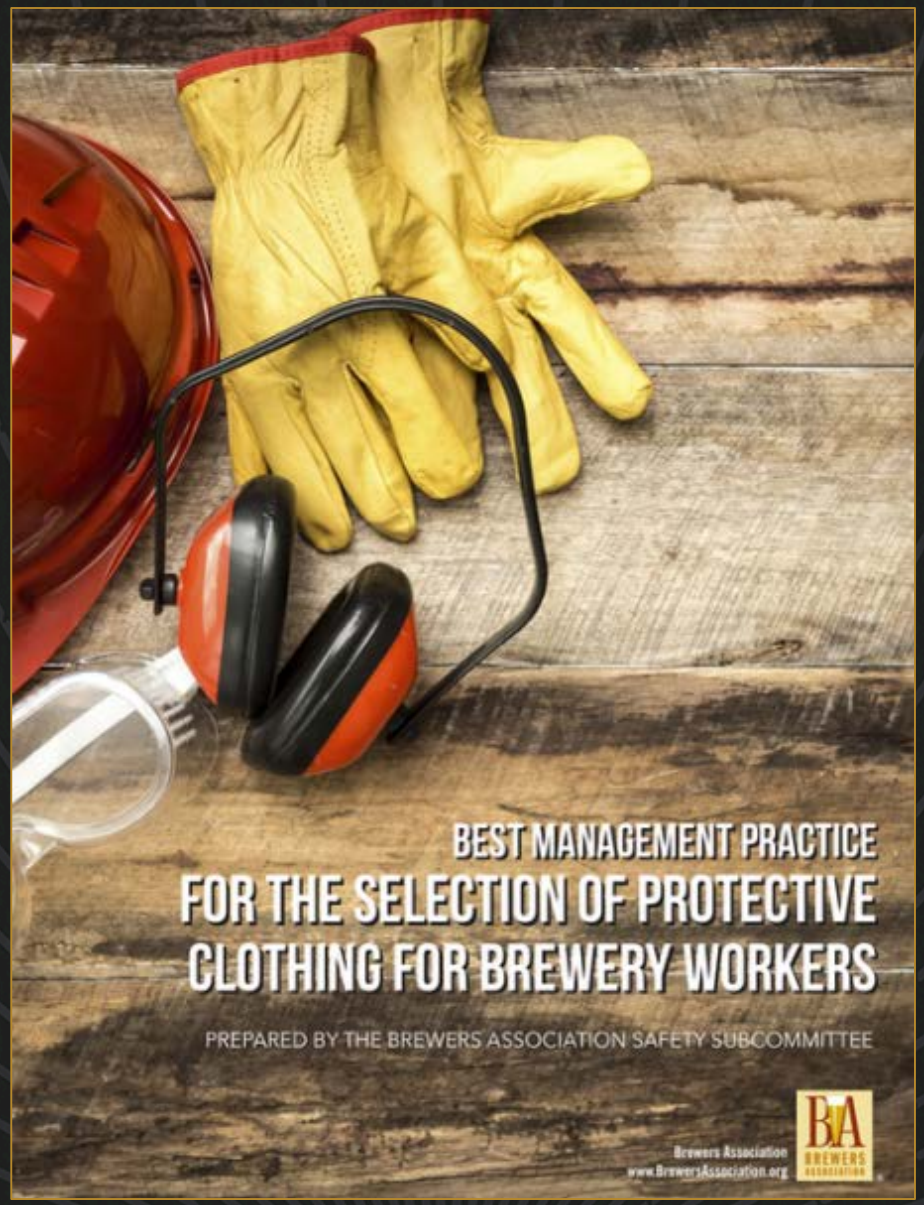
Control of Pressure

- Fermentation
- Cleaning
- Packaging
- Cylinder security

3.2 – Administrative Controls

Written, audible, visual information

- Written compliance programs
- Company policies
- Injury Recordkeeping
- Training
- Standard Operating Procedures (SOPs)
- Signage, labels, warnings, SDSs
- Alarms



3.3 – PPE: Personal Protective Equipment

Colorful, inexpensive, imperfect

- PPE includes “work clothes” and specialty protective gear
- A big help in reducing exposure to poorly controlled hazards
- When PPE fails it usually results in direct exposure to the hazard
- Assure correct selection, use, cleaning, inspection, replacement

Eye Protection

- Standard safety glasses
- Indirectly-vented goggles
- Face shields

Hand Protection

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

Nitrile Disposable – light duty use

Neoprene Hybrid – cold and light duty

Reusable Nitrile – Acids, Bases, Sanitizers

Foot Protection

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

Other Protection

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

Respiratory Protection

- Particulate protection: grain dust, filter aids
- Specialized: solvents, coatings, welding

The resistance to the unpleasant situation is the root of suffering.

Ram Dass

3.4 – Safe Work Practices

The Zen of Safety

- Common sense
- No special equipment required
- Often the most preventative
- Importantly…

  Safe Work Practices are realized by the individual in the moment

4.0 – Create or Revise an SOP

1. SOP is task-based and specific
2. Includes step-by-step task instruction
3. Specifies hazard control procedures and equipment
4. A vital written tool for safety, quality, and training… and regulatory compliance

Hazard Assessment Example

Caustic Washing of a Beer Tank

1. Set up CIP Machine

2.Dispense Caustic

3. Run Caustic in Tank

1.0 - Outline the Steps

Basic Outline of Steps in the Task

1. Connect CIP to FV
2. Fill CIP Tanks
3. Load Caustic
4. Circulate Caustic
5. Drain Caustic
6. Load Rinse
7. Circulate Rinse
8. Drain Rinse & Air Dry

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(opt.) Drill Down to Instruction Level

a. Add cool water to left tank up to overfill tube

b. Add hot water to right tank up to 1” below overfill tube

c. Dispense 4,000 ml caustic into plastic beaker

d. Add caustic to right (hot) tank

e. Rinse beaker and put back on caustic drum

2.0 - Identify Hazards

NO.	STEP	HAZARDS
1	CIP to FV	Slips & Trips, Electrical
2	Fill CIP Tanks	Slips & Trips, Temperature, Concentrated Caustic
3	Load Caustic	Slips & Trips, Temperature, Dilute Caustic
4	Circulate Caustic	Slips & Trips, Temperature, Dilute Caustic
5	Drain Caustic	Slips & Trips, Temperature, Dilute Caustic
6	Load Rinse	Slips & Trips
7	Circulate Rinse	Slips & Trips
8	Drain Rinse	Slips & Trips

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6	Load Rinse	Slips & Trips
7	Circulate Rinse	Slips & Trips
8	Drain Rinse	Slips & Trips

3.0 – Specify Hazard Controls

Identified Hazards for Step 2, Filling the CIP Tanks

NO.	STEP	HAZARDS
2	Fill CIP Tanks	Slips & Trips, Temperature, Conc. Caustic

Slips and Trips Hazard Controls

PREVENTION (SWP & AC)	PROTECTION (EC & PPE)
Avoid walking in puddles	Textured surfaces
Keep eyes on the floor	Slotted drain covers (not open)
Walk like a duck (lower ctr. of grav.)	Waterproof, slip resistant boots
Organize or stow hoses and cords	

Hot Temperature Hazard Controls

PREVENTION (SWP & AC)	PROTECTION (EC & PPE)
Stand back when filling, recirculating	Thermostatic temp. control
Disconnect tri-clamps carefully with valves closed	Long pants, long sleeved shirt
	Rubber boots, rubber gloves, safety glasses

Concentrated Caustic Hazard Controls

PREVENTION (SWP & AC)	PROTECTION (EC & PPE)
Read, understand SDS; Observe labels & placards	Appropriate pumps, non-reactive
Trained in chemical handling	Long pants, long sleeved shirt
Good housekeeping	Rubber boots, gloves, apron
Rinse affected surfaces	Goggles & splash shield
Dispense where/when others will not be affected	

Dilute Caustic Hazard Controls

PREVENTION (SWP & AC)	PROTECTION (EC & PPE)
Read, understand SDS	Appropriate pumps, non-reactive
Label working solutions if transferring to next shift	Long pants, long sleeved shirt
Trained in chemical handling	Rubber boots, gloves, apron
Good housekeeping; safety signage	Goggles or safety glasses with side shields
Dispense where/when others will not be affected	

Electrical Hazard Controls

PREVENTION (SWP & AC)	PROTECTION (EC & PPE)
Switch off equipment before plugging in	Grounded circuits
	Waterproof housings, fixtures
	Equipment in good repair

4.0 – Write/Revise Your S.O.P.

Original Outline of Steps, plus Procedural Instructions and Hazard Controls

1. Connect CIP to FV
2. Fill CIP Tanks
3. Load Caustic
4. Circulate Caustic
5. Drain Caustic
6. Load Rinse
7. Circulate Rinse
8. Drain Rinse & Air Dry

Kick Your SOPs Up a Notch with HA

4.1 – Refine your process with Hazard Assessment findings

Before

After

4.2 – Numerical Prioritization

- Rank potential hazards by likelihood, severity, and detectability
- Prioritize safety improvement efforts
- Identify and re-work high hazard tasks

Improv Example

Hazard Assessment Process

1. Outline steps in a task
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2. Identify Hazards

3. Specify Hazard Controls

1. Engineering Controls
2. Administrative Controls
3. Personal Protective Equipment (PPE)
4. Safe Work Practices

NO.	STEP	HAZARDS
1		
2		
3		
4		
5		
6		
7		
8		

1.0 – List Steps

2.0 – Identify Hazards

NO.	HAZARDS	CONTROLS
1		
2		
3		
4		
5		
6		
7		
8		

3.0 – Hazard Controls

3.1 Engineering Controls

3.2 Administrative Controls

3.3 Personal Protective Equipment

3.4 Safe Work Practices

Hazard Assessment BMP

Hazard Assessment Form

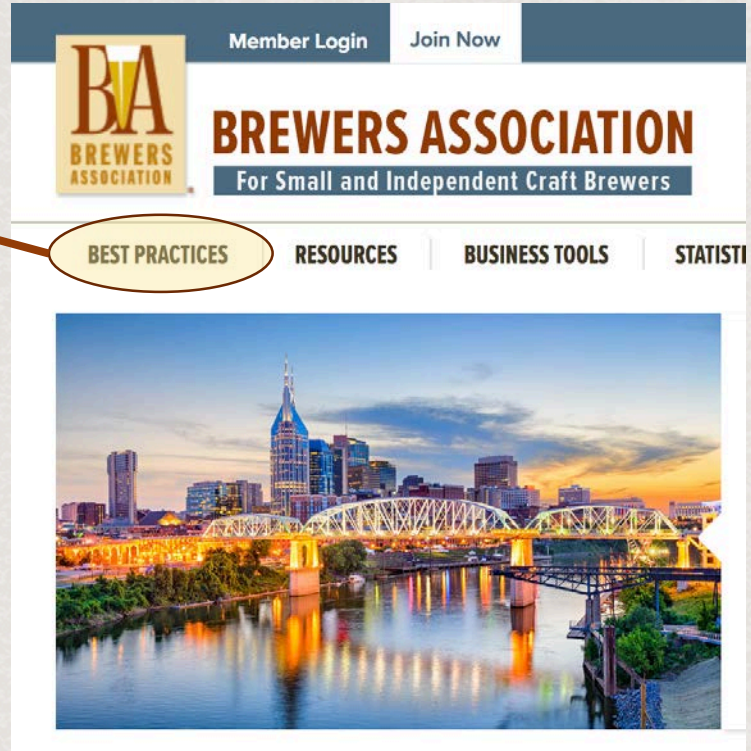
TASK:	HA DATE:
DEPT:	INITIALS:

STEP	DESCRIPTION	HAZARDS	CONTROLS	PPE	FMEA NO.

4.0 Revise Your Standard Operating Procedure

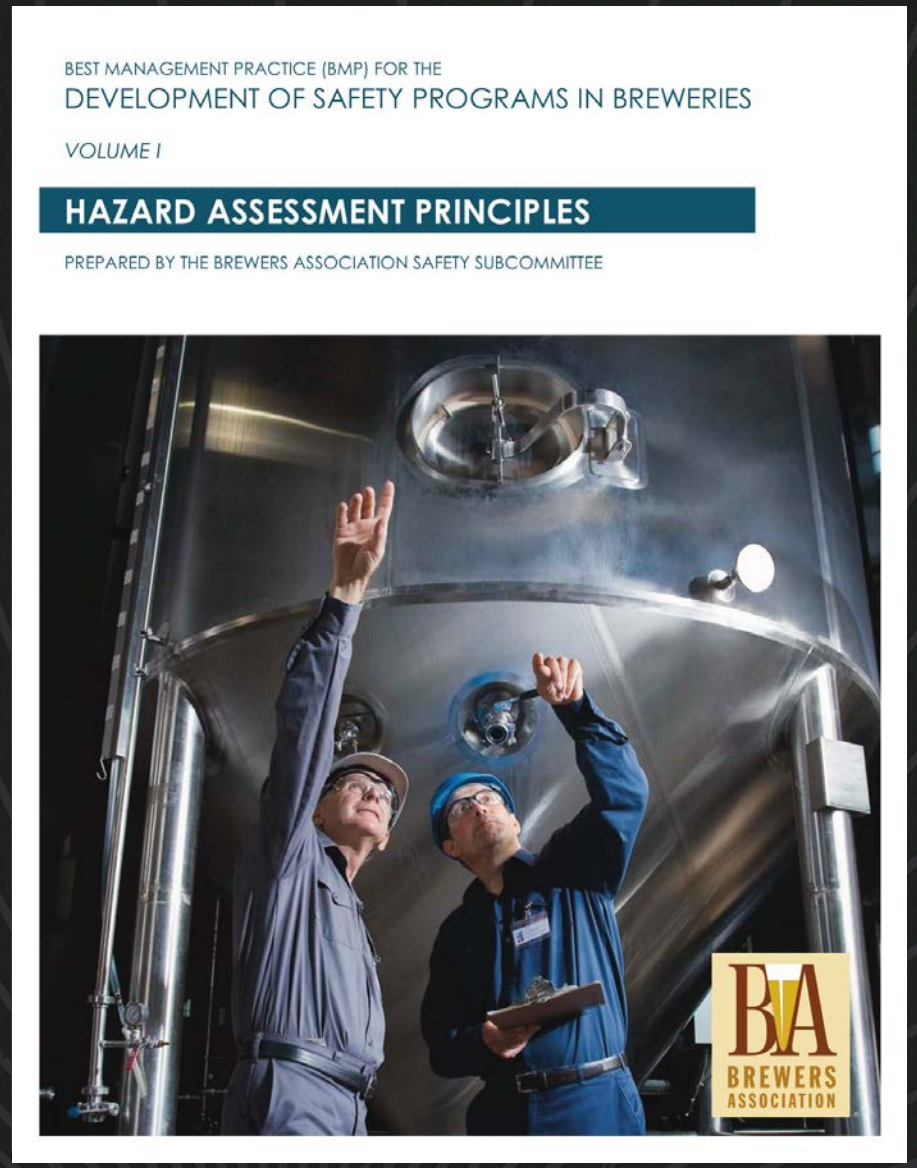
BEST PRACTICES | RESOURCES | BUSINESS TOOLS | STATISTICS | GOVERNMENT AFFAIRS | GUILD

- Industry Updates
- Brewery Safety
  - FREE Online Safety Training
  - Safety Ambassador
  - Safety Exchange
  - Hazard Assessment Principles
  - Confined Spaces
  - Protective Clothing
  - Powered Industrial Trucks
  - Compressed Gas Cylinders Management
  - Surviving an OSHA Inspection
- Good Manufacturing Practices for Craft Brewers
- Engineering
  - Design and Construction of Brewery Quality Labs
- Hops
  - Hop Breeding Program
  - Grower Codes
  - Cost of Hop Production
  - Hop Resources
- Malt
  - Barley Characteristics
  - Managing Supply Chain Quality
  - Barley Resources
- Sustainability
  - Sustainability Manuals
  - Sustainability Benchmarking Tools
  - Sustainability Ambassador
- Quality
  - Quality Priority Pyramid
  - FSMA FAQs for Brewers
  - Food Safety Plan for Craft Brewers
  - Quality Ambassador
  - ASBC Methods of Analysis
  - Quality Management Book
  - Guide to Quality Craft Beer
  - Date Lot Coding
  - Basics of Beer Quality Workshop
- Draught Beer Quality
  - Draught Beer Quality Ambassadors
  - Draught Quality Resources
- Kegs
  - Guidelines
  - Repatriation



brewers association CRAFT BREWERS conference & BrewExpo America

NEW!



brewersassociation.org Click “Best Practices”

Best Management Practice: Hazard Assessment Principles

Hot off the Press!

- Frequently Asked Questions
- Detailed Examples
- Numerical Prioritizing
- Sample and Template Forms
  - Brewery Hazard Placard
  - Hazard Assessment Process
  - Numerical Prioritizing
  - Standard Operating Procedure (SOP)

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Disclaimer

The author, BA Safety Subcommittee and the Brewers Association believe the recommendations in this presentation are appropriate and essential for protecting the health and safety of the craft beer industry's hardworking, dedicated employees. However, no list of hazards or recommendations will be necessarily be complete for every possible working situation. This presentation does not contains an exhaustive list of all possible workplace hazards or controls. Working in a craft brewery presents many inherent dangers and should not be taken lightly. Proper identification and management of hazards in the brewery can prevent serious injury or death.

Any appearance of a commercial product in this presentation is coincidental and does not constitute an endorsement by the author, the BA Safety Subcommittee or the Brewers Association.

Contact Info

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Thank you for your attendance!