



Hazard Assessment: Mastering the Foundation of Brewery Safety

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Hazard Assessment

Understanding the hazards associated with a task so that you can:

- Implement hazard controls
- Avoid accident and injury



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Key Terms

How to Talk Safety

Five Terms to Know

1. **Incident:** *Opportunity* for something bad (“hazard”) to occur
2. **Accident:** Something bad *actually* occurred
3. **Prevention:** Avoiding hazards by changing how you behave
4. **Protection:** Reducing hazards with safety equipment
5. **Hazard Assessment:** Identifying hazards and proposing prevention and protection solutions



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Hazard Assessment

Inventory Your Injury Possibilities

What Could Go Wrong?

Hazard Assessment is the Tool





Safety

*Safety = Freedom from
Accidents and Incidents*



Hazard Assessment

***The Fundamental Means of
Reducing the Potential for
Accidents and Incidents***

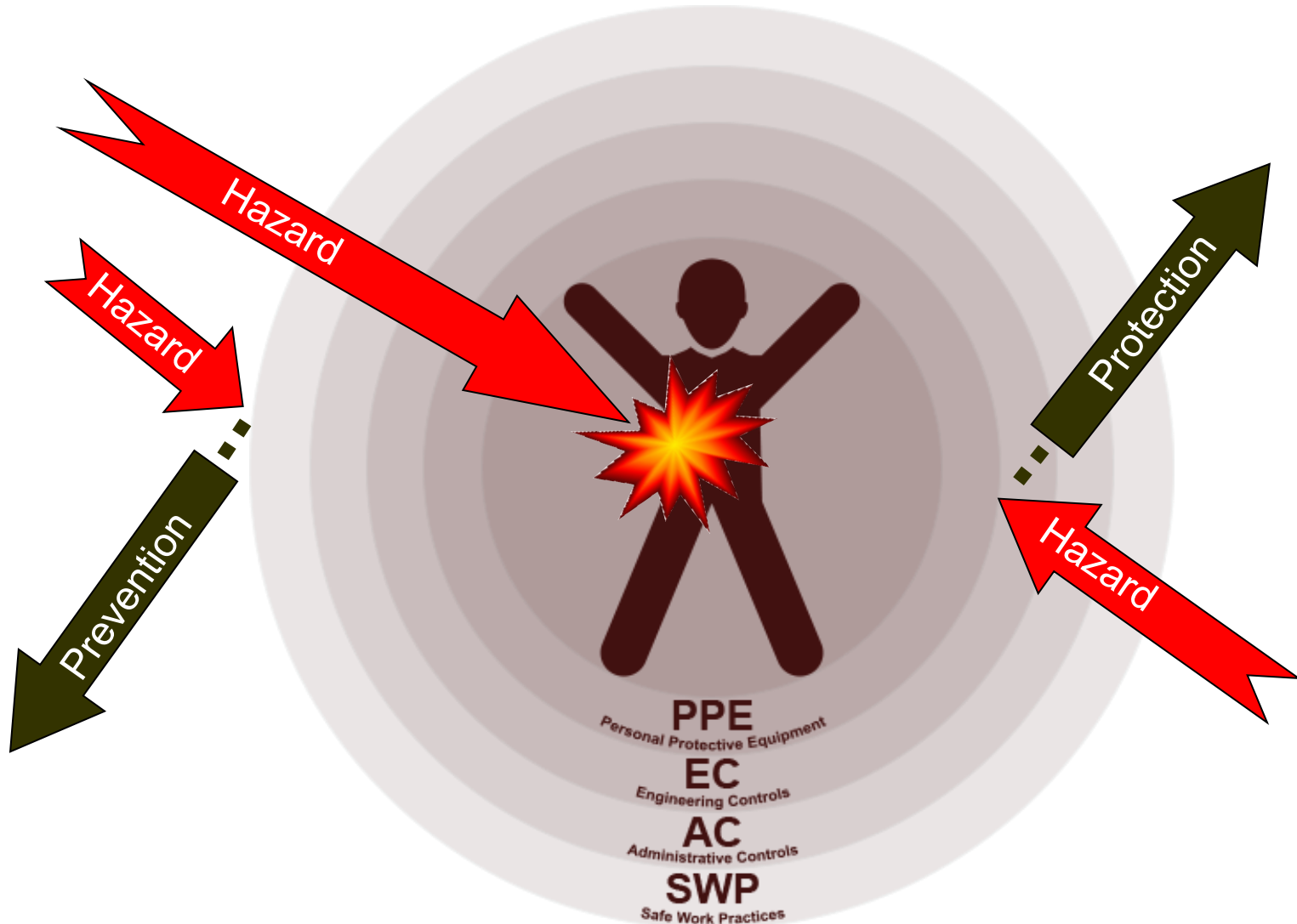


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Hazard Controls Strategies

Let's Get Started!

Types of Hazard Control



1. Safe Work Practices

- Common Sense
- No special equipment
- Most preventative



2. Administrative Controls



- Written, audible, visual information
 - Written programs
 - SOPs
 - Signage and labels
 - Alarms
 - Training

3. Engineering Controls

- Control Kinetic & Potential Energy
- Control & Move Gases
- Monitoring of Hazards



Control Power

- Electrical
- Mechanical
- Chemical
- Thermal



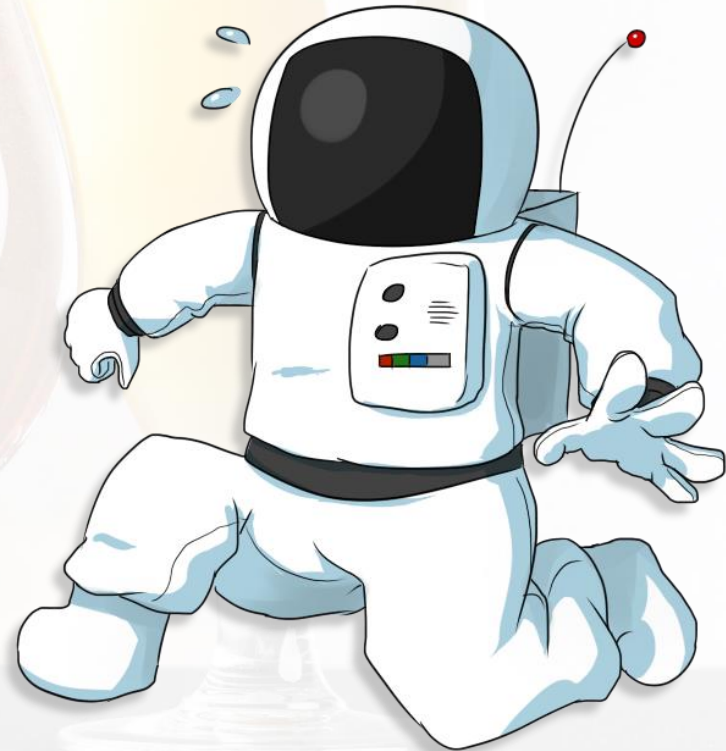
Control Pressure

- Fermentation
- Cleaning
- Packaging
- Cylinder security



4. Personal Protective Equipment (PPE)

- PPE is not failsafe
- When it fails you have no further defense
- Selection, use, cleaning, inspection, replacement



Eye Protection

- Standard safety glasses
- Indirect vented goggles
- Splash shield



Indirect Vented Goggled



Direct Vented Goggled



Hand Protection

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



Foot Protection

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



Other Protection

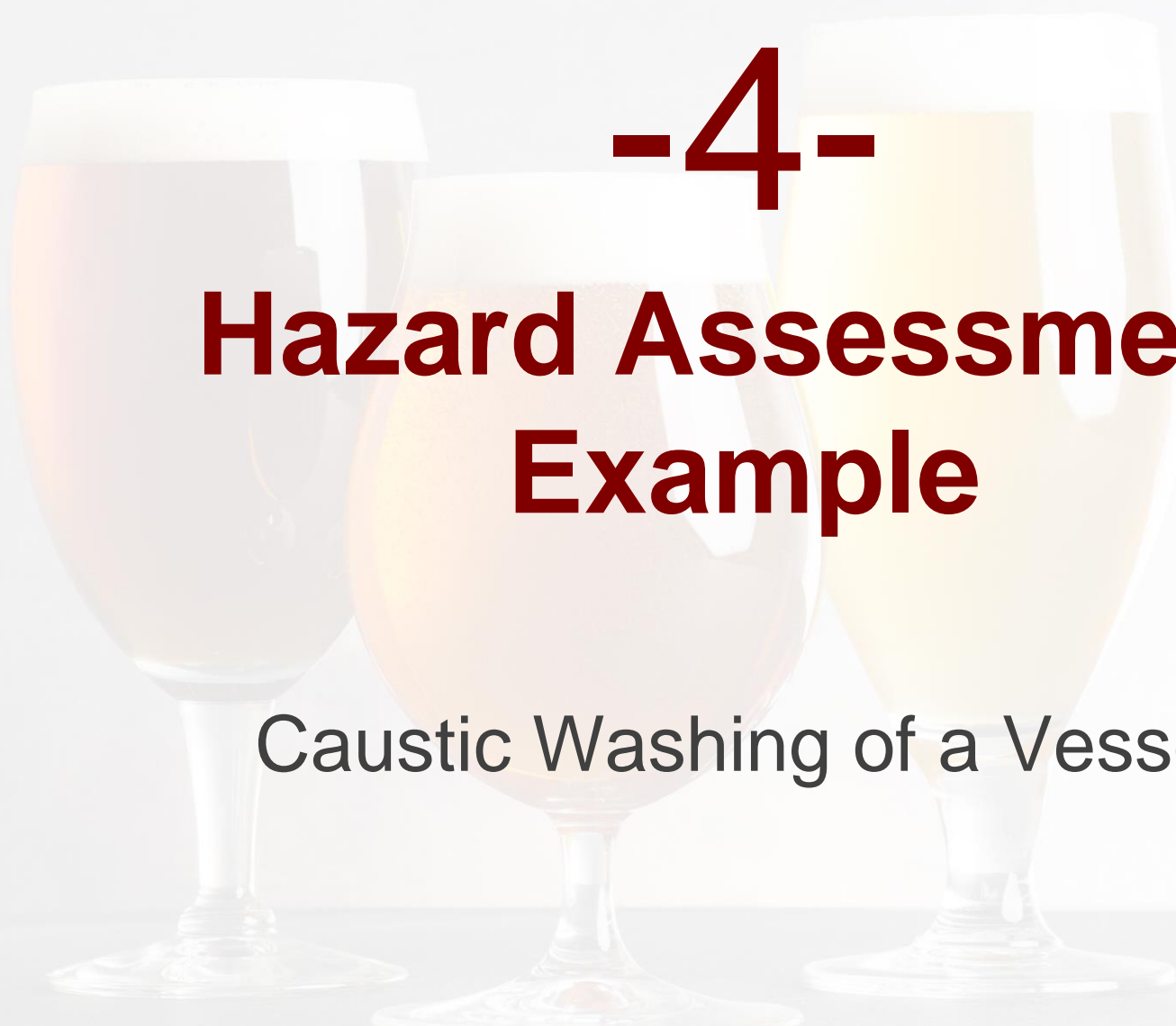
- Splash protection apron
- Fall protection harness, lanyard, and anchoring
- Hearing protection, disposable or reusable



Respiratory Protection

- Particulate protection
- Specialized: solvents, coatings, welding





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Hazard Assessment Example

Caustic Washing of a Vessel

Caustic Washing of Vessel



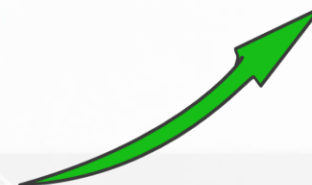
1. Set up CIP Machine



2. Dispense Caustic



3. Run Caustic in Tank



Outline Steps in Task

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



1 – List Steps in Task

1. Connect CIP to Vessel

1. Connect pump inlet to bottom drain on vessel with hose
2. Connect pump outlet to CIP arm on vessel
3. Crack open manway door
4. Open sample valve, if any
5. Close or blank all other flanges
6. Plug in CIP pump

2. Fill CIP with Caustic and Rinse

1. Add warm water to left tank up to overflow tube
2. Add hot water to right tank up to overflow tube
3. Add caustic to right tank

1 – List Steps in Task (cont.)

3. Load Vessel with Caustic

1. Open the caustic tank valve to the pump
2. Close the bottom drain valve on vessel
3. Turn on pump and dispense caustic tank contents into vessel
4. Turn pump off when caustic is transferred

4. Circulate Caustic in Vessel

1. Close caustic tank valve to pump
2. Open bottom drain valve on vessel
3. Turn pump on to circulate caustic for 20 minutes
4. Turn pump off

1 – List Steps in Task (cont.)

5. Send Caustic to Drain

1. Close the bottom drain valve on vessel
2. Disconnect return hose from CIP and place hose end into floor drain
3. Open bottom drain valve on vessel sending caustic to drain

6. Load Vessel with Rinse

1. Open rinse tank valve to the pump
2. Turn on pump and dispense warm rinse tank contents into vessel
3. Turn pump off when rinse is transferred

1 – List Steps in Task (cont.)

7. Circulate Rinse in Vessel

1. Close rinse tank valve to pump
2. Open bottom drain valve on vessel
3. Turn pump on to circulate rinse for 10 minutes
4. Turn pump off

8. Send Rinse to Drain

1. Close the bottom drain valve on vessel
2. Disconnect return hose from CIP and place hose end into floor drain
3. Open bottom drain valve on vessel sending rinse to drain
4. Drain CIP tanks, disconnect all hoses and fittings, allow vessel to air dry

2 – Identify Hazards

NO.	STEP	HAZARDS
1	CIP to Vessel	Slips & Trips, Electrical
2	Fill CIP Tanks	Slips & Trips, Temperature, Corrosive (alk)
3	Load Caustic	Slips & Trips, Temperature, Corrosive (alk)
4	Circulate	Slips & Trips, Temperature, Corrosive (alk)
5	Drain Caustic	Slips & Trips, Temperature, Corrosive (alk)
6	Load Rinse	Slips & Trips
7	Circulate	Slips & Trips
8	Drain Rinse	Slips & Trips

3 – Specify Hazard Controls

SLIPS & TRIPS

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 hoses, cords with aisles	
Put away unneeded hoses, cords	

3 – Specify Hazard Controls (cont.)

ELECTRICAL

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

3 – Specify Hazard Controls (cont.)

TEMPERATURE, hot solutions

PREVENTION (SWP & AC)	PROTECTION (EC & PPE)
Stand back when filling, recirc'ing	Thermostatic temp. control
Disconnect tri-clamps carefully	Long pants, long sleeved shirt
	Rubber boots, rubber gloves
	Eye protection

3 – Specify Hazard Controls (cont.)

CORROSIVE, concentrated caustic

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	

3 – Specify Hazard Controls (cont.)

CORROSIVE, dilute caustic

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	

4 – Do Task with Controls

Step 1 - CIP to Vessel

- Electrical
- Slips & Trips
 - Organize hoses, cords with aisles
 - Slotted drain covers (not open)



4 – Do Task with Controls (cont.)

2. Fill CIP Tanks

- Corrosives
 - PPE & work clothes
 - Labels, placards
 - Cautious action
- Temperature
 - PPE & work clothes
- Slips & Trips



HA Results in Improvements

Before



After



4 – Do Task with Controls (cont.)

3 & 4 – Load Caustic and Circulate

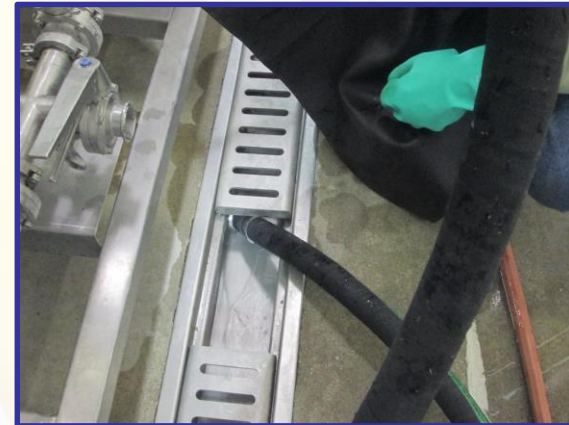
- Corrosives
- Slips & Trips
- Temperature



4 – Do Task with Controls (cont.)

5. Drain Caustic

- Corrosives
- Slips & Trips
- Temperature



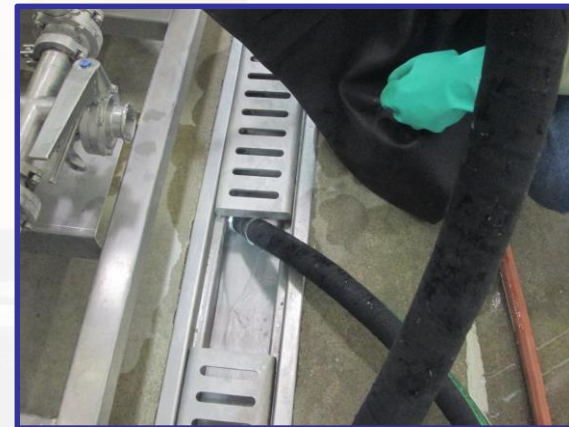
4 – Do Task with Controls (cont.)

Repeat for Steps:

6. Load Rinse

7. Circulate

8. Drain Rinse



4 – Wrap Up Task



Three beer glasses are arranged in a row on a light surface. The glass on the left contains a dark beer with a thick white head of foam. The middle glass contains a golden beer with a thick white head of foam. The glass on the right contains a pale beer with a thick white head of foam. The text '-5-' and 'Summary' is overlaid in the center of the image.

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Summary

Foundation of Safety

- Outline the *task* in *steps* (creating SOPs)
- Evaluate *hazards* at each *step*
- Identify best *hazard control strategies*
 - PREVENTION (SWP & AC)
 - PROTECTION (EC & PPE)
- Do the work *safely*
- Engage staff & document choices
- Keep expanding to include other tasks



Contact

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