DEPARTMENT OF
FIRE PROTECTION AND
SAFETY ENGINEERING
TECHNOLOGY

Hazard Identification and Control

FPST 2023

Types of Hazards

- Condition
- Behavior
- Practice
- Operation

Chemical	**Physical**
Biological	**Ergonomic**

Malicious Threat

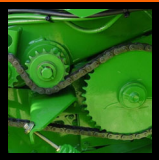
Chemical Hazard?

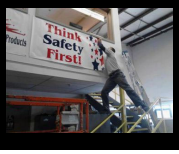
- Can you think of an example of a chemical hazard you have encountered in a work environment?
- What about home?

Home

Physical Hazards

- Electrical
- Fire / Explosion
- Noise
- Radiation
- Thermal stress
- Caught in / on / between, pinch points
- Slips/trips/falls
- Striking against
- Struck by





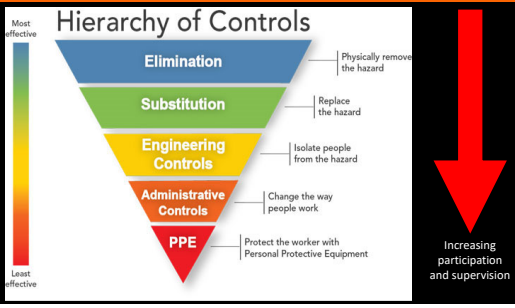
Biological Hazards

- Bloodborne Pathogens
- Sick Building Syndrome
- Plant and insect poisons
- Animals, reptiles

Ergonomic Hazards

- Repetition
- Forceful Exertions
- Awkward positions
- Contact Stress
- Vibration
- Work Area Design
- Tool or equipment design

Hazard Controls



Elimination

- How would you physically remove the hazard?

Substitution

- How would you use substitution to eliminate or reduce the fall hazard?

Engineering Controls

- Designing protection into a system
  - Intrinsically safe
  - Designed in safety factors
  - Fail-safe designs

Engineering Controls

- How would you engineer out the hazard?

Administrative Controls

- Warning Signs
- Procedures

Warnings

- What warning signs could be used here?

Administrative Controls

- What administrative control could be used in this situation?

Personal Protective Equipment

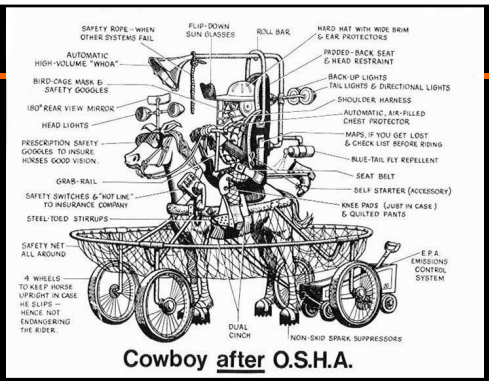
- Safety harnesses and lanyards
- Hearing protection
- Safety glasses
- Face shields
- Respirators
- Gloves

Personal Protective Equipment

- What PPE should be used?

PPE

- If you jump to PPE first, what happens if PPE fails?
  - You should have layers of protection, such as warnings + administrative controls + PPE, if elimination, substitution and engineering controls are not feasible
- A word of caution regarding PPE…you can have too much



Cowboy after O.S.H.A.

Hazard Control Methods

- Most of the time, a combination of hazard control methods is used
- Interim protection must be provided once a hazard is identified until the final solution is implemented

Condition: Cleaning equipment with Chemical Solvent
Hazard: Skin/Respiratory Irritation from Contact with
Risk: Medium

Control Type	Control	Reasonable?
Elimination	Find new technology or equipment to eliminate need for cleaning	
Substitution	Use non-toxic or less harmful chemical	
Engineering Control	Design and build an automated process for cleaning where the worker is not exposed to chemical.	
Administrative Control	Training program re: safe use Clear work practices established Post signs warning employees about chemical its hazards, and proper use	
PPE	Gloves, safety goggles, respiratory protection	

Writing a Hazard Description

- A fall hazard condition was observed at the River Pump platform.
- Employees were exposed to an unguarded opening to a lower level approximately 15 feet below without an adequate guardrail which could result in severe injury or fatality.

Writing a hazard description

1. State the Hazard (condition, behavior, practice or operation)
2. State the real or potential exposure to hazard
3. State the most probable outcome
4. Identify any regulatory references
5. Recommend appropriate corrective actions

Writing a Hazard Description

- Write in the 3rd person
  - *1st person – I*
  - *2nd person – you*
  - *3rd Person – they or it*
- Use plain language
- Delete all unnecessary words (a, the, it)
- Use words that the reader can picture
- Use past tense

HAZARD OBSERVATION

Copy and paste this blank template for each hazard observed.

Number:	1	Hazard Description:	Hazard Type/Subtype:
Date:	08/15/17	A fall hazard condition was observed at the River Pump platform. Employees were exposed to an unguarded opening to a lower level approximately 15 feet below without an adequate guardrail which could result in severe injury or fatality.	☐ Chemical: _____ X Physical: ___Fall Hazard_____ ☐ Biological: _____ ☐ Ergonomic: _____ ☐ Other: _____
Area:	Seminole Power Plant – River Pumps		
Location/ Equipment:	Lift Platform – lower level		Energy Exchange: Fall to below
OSHA ref:	1910.28(b)(1)(i)		

Recommended Corrective Action (list the appropriate hierarchy of hazard control level):

Install a removable rigid guardrail across the opening (Engineering Control).

HAZARD OBSERVATION

Number:	1 Should correspond with photo number in ppt	Hazard Description: Should use 1-3 sentences to clearly explain what the hazard is.	Hazard Type/Subtype: Must have type selected and subtype listed ☐ Chemical: _____ ☐ Physical: _____ ☐ Biological: _____ ☐ Ergonomic: _____ ☐ Other: _____
			Energy Exchange: Must have at least 1

Recommended Corrective Action (list the appropriate hierarchy of hazard control level):
Should use 1-3 sentences to clearly explain their recommended corrective action including identifying the hierarchy of hazard control. Deduct points if PPE was recommended when there was a better control not considered.