University of Michigan Safety Culture Improvements at the Central Power Plant

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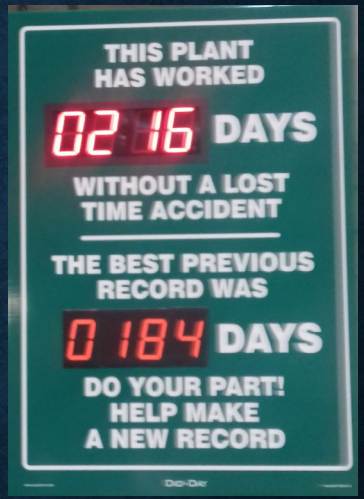
AGENDA

- Safety Culture – Industry vs University
- Specific Initiatives
  - Culture
  - Processes and Training
  - PPE
- Measurable Outcomes
- Where to Begin

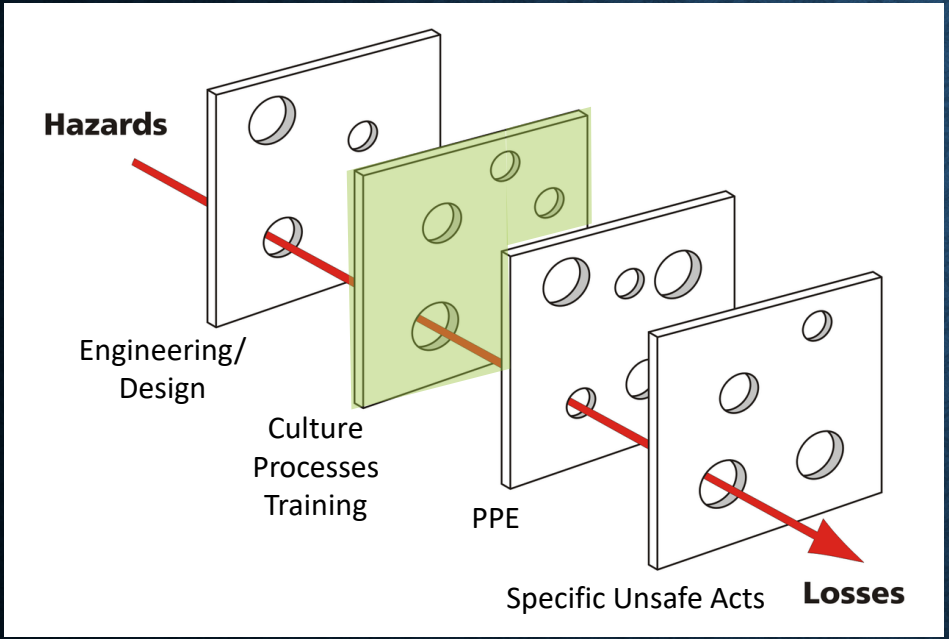
Safety is our #1 Priority

SAFETY CULTURE: INDUSTRY VS UNIVERSITY

- Injury rates in industry versus the university is very different
- How did we compare to the Power Generation DART value of 1.9?
- Different work cultures
- Procedures
- Previous record for Days Since Last Lost Time Accident was 184 days



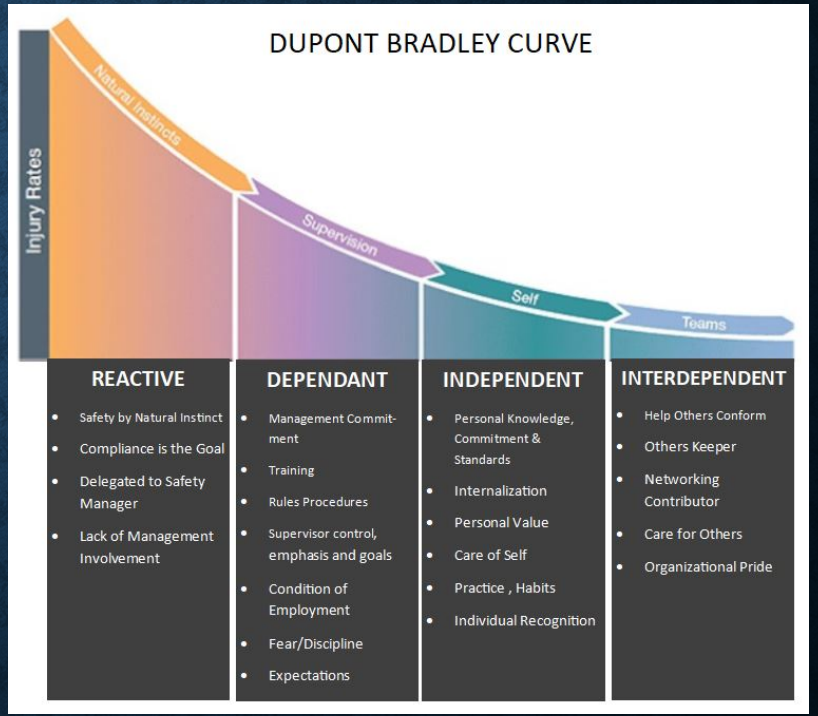
SWISS CHEESE MODEL



Cumulative act affect - The Swiss cheese model of accident causation illustrates that, although many layers of defense lie between hazards and accidents, there are flaws in each layer that, if aligned, can allow the accident to occur.

SAFETY CULTURE: INDUSTRY VS UNIVERSITY

- Dupont Bradley Curve
  - 2017 – Reactive
    - PPE worn at discretion of employee
    - High level of Lost Time Injuries
    - No proactive processes
    - “Safety Police”
  - 2018 – Dependent
    - Initial JSA process rolled out
    - Fear of retribution when “holding up work for safety” prevalent
    - Supervisors emphasize safety goals
    - Hazard and Near Miss Process initiated
  - 2019 – Independent
    - PPE standards are being adhered to
    - Team reviews hazards and suggests safer methods when appropriate
    - Recognition of staff

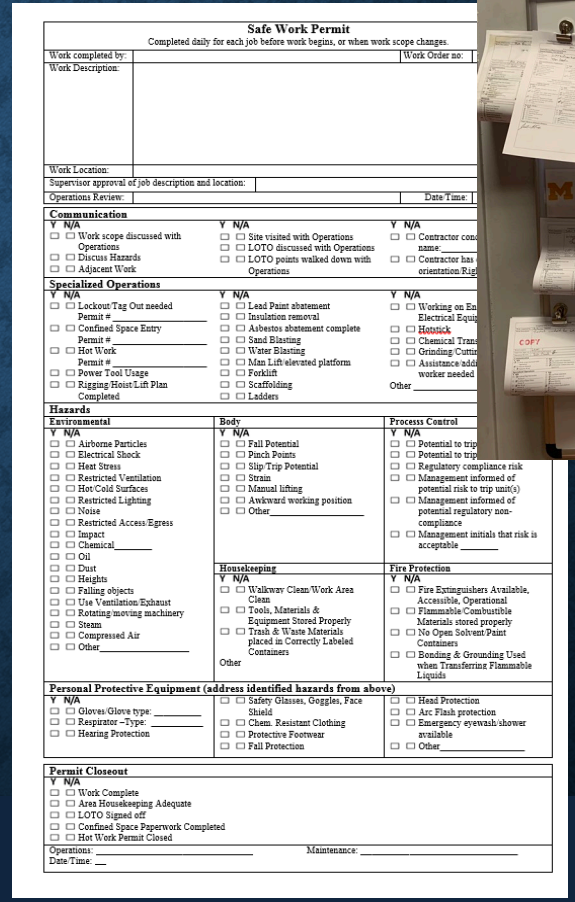


CULTURE

- Staff Recognition Programs
  - Peer to Peer
- Team meals for milestones
- Positivity Moments prior to team meets
  - Positivity Training and leaders
- Survey with 1:1 discussion on issues and improvement ideas

PROCESSES AND TRAINING

- Right to Know Indoctrination
- Safe Work Permits (SWP)
  - 3-way communication
  - Job Site Hazard Analysis
- Site Attendance Log
- LOTO procedure improvements
- Operations Training Program Overhaul



Safe Work Permit

Completed daily for each job before work begins, or when work scope changes.

Work completed by: | Work Order no:

Work Description:

Work Location:

Supervisor approval of job description and location:

Operations Review: | Date/Time:

Communication

Y	N/A		Y	N/A		Y	N/A	
☐	☐	Work scope discussed with Operations	☐	☐	Site visited with Operations	☐	☐	Contractor cond name:_____
☐	☐	Discuss Hazards	☐	☐	LOTO discussed with Operations	☐	☐	Contractor has orientation/Rig
☐	☐	Adjacent Work	☐	☐	LOTO points walked down with Operations			

Specialized Operations

Y	N/A		Y	N/A		Y	N/A	
☐	☐	Lockout/Tag Out needed Permit # _____	☐	☐	Lead Paint abatement	☐	☐	Working on En Electrical Equip
☐	☐	Confined Space Entry Permit # _____	☐	☐	Insulation removal	☐	☐	Hotstick
☐	☐	Hot Work Permit # _____	☐	☐	Asbestos abatement complete	☐	☐	Chemical Trans
☐	☐	Power Tool Usage	☐	☐	Sand Blasting	☐	☐	Grinding/Cuttin
☐	☐	Rigging/Hoist/Lift Plan Completed	☐	☐	Water Blasting	☐	☐	Assistance/addi worker needed
			☐	☐	Man Lift/elevated platform	Other _____		
			☐	☐	Forklift			
			☐	☐	Scaffolding			
			☐	☐	Ladders			

Hazards

Environmental

Y	N/A	
☐	☐	Airborne Particles
☐	☐	Electrical Shock
☐	☐	Heat Stress
☐	☐	Restricted Ventilation
☐	☐	Hot/Cold Surfaces
☐	☐	Restricted Lighting
☐	☐	Noise
☐	☐	Restricted Access/Egress
☐	☐	Impact
☐	☐	Chemical_____
☐	☐	Oil
☐	☐	Dust
☐	☐	Heights
☐	☐	Falling objects
☐	☐	Use Ventilation/Exhaust
☐	☐	Rotating/moving machinery
☐	☐	Steam
☐	☐	Compressed Air
☐	☐	Other_____

Body

Y	N/A	
☐	☐	Fall Potential
☐	☐	Pinch Points
☐	☐	Slip/Trip Potential
☐	☐	Strain
☐	☐	Manual lifting
☐	☐	Awkward working position
☐	☐	Other_____

Housekeeping

Y	N/A	
☐	☐	Walkway Clean/Work Area Clean
☐	☐	Tools, Materials & Equipment Stored Properly
☐	☐	Trash & Waste Materials placed in Correctly Labeled Containers

Other

Processs Control

Y	N/A	
☐	☐	Potential to trip
☐	☐	Potential to trip
☐	☐	Regulatory compliance risk
☐	☐	Management informed of potential risk to trip unit(s)
☐	☐	Management informed of potential regulatory non-compliance
☐	☐	Management initials that risk is acceptable _____

Fire Protection

Y	N/A	
☐	☐	Fire Extinguishers Available, Accessible, Operational
☐	☐	Flammable/Combustible Materials stored properly
☐	☐	No Open Solvent/Paint Containers
☐	☐	Bonding & Grounding Used when Transferring Flammable Liquids

Personal Protective Equipment (address identified hazards from above)

Y	N/A				
☐	☐	Gloves/Glove type: _____	☐	☐	Safety Glasses, Goggles, Face Shield	☐	☐	Head Protection
☐	☐	Respirator –Type: _____	☐	☐	Chem. Resistant Clothing	☐	☐	Arc Flash protection
☐	☐	Hearing Protection	☐	☐	Protective Footwear	☐	☐	Emergency eyewash/shower available
			☐	☐	Fall Protection	☐	☐	Other_____

Permit Closeout

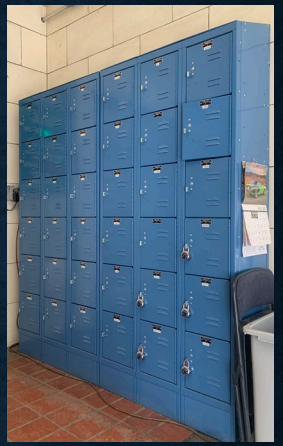
Y	N/A	
☐	☐	Work Complete
☐	☐	Area Housekeeping Adequate
☐	☐	LOTO Signed off
☐	☐	Confined Space Paperwork Completed
☐	☐	Hot Work Permit Closed

Operations: _____ Maintenance: _____

Date/Time: __

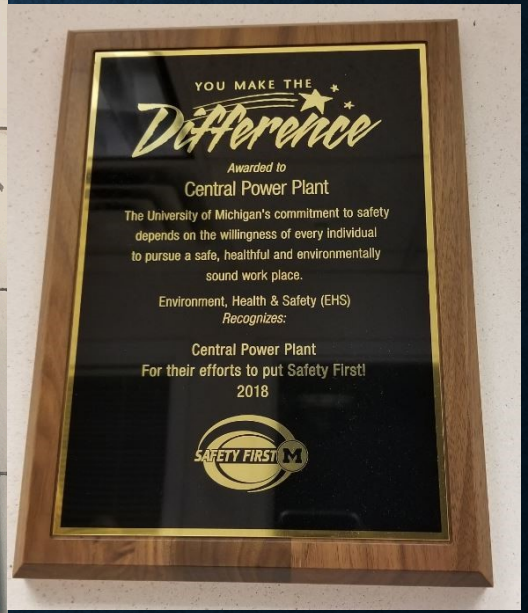
PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Before
  - Hearing protection with lax enforcement and safety glasses
  - Some PPE available for visitors at entrance in the security guard shack but not always worn
  - Varied standards of what was expected
  - PPE lockers locked by MGMT key to access
- Now
  - Added mandatory hard hat inside the plant
  - Task specific PPE
    - Gloves
    - Bump caps
    - Face shields
  - Individual cubbies at entrance for reoccurring employees
- Key Successes and Lessons Learned
  - Much more adherence to PPE policy
  - Management set clear expectations
  - Allow some variation to items for better inclusion



MEASURABLE OUTCOMES AND AWARDS

- Injury rates in the CPP has improved
  - Recent record for Days Since Lost Time Accident was 643 days
  - Also now tracking and reporting OSHA Recordable Injuries which has a record of 397 days
- Earned the UM Safety First Award and luncheon



WHERE TO BEGIN

- Outsider perspective
  - Audit/Peer Review each other
  - Contractor POV
- Use your data to identify where your site is on the Bradley Curve
- Honest discussions between management and bargained for staff on what the real issues are
- Celebrate your successes as they come
- Consider new processes that may help reinforce your commitment to safety
- Change takes time, be patient and consistent

QUESTIONS AND DISCUSSION