Mapping and Mitigating High-Consequence Risks

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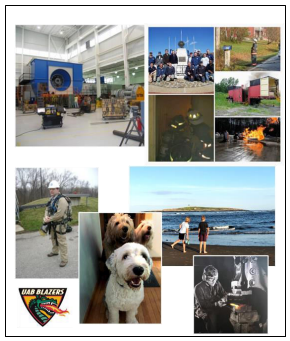
Intro



Issue Identification

Hazard or Risk?

Controls

Personal action plan

Issues Identification

Discuss your H&S issues/problems and list them on the team's flip chart. Include:

- Where will the next Serious Incident occur in your operation?
- Which specific job task is most likely to have that serious injury?
- Why are you worried about this?

As a group, highlight team's top issues (3-4).

Each team will report its priorities

2021 ETD Benchmarks Severe Injury

Utilities (NAICS 22112)

1. Line-of Fire – 30%
2. Electrical – 28%
3. Falls – 28%
4. Heat – 11%
5. Fire/Explosion – 4%

Contractors (NAICS 23713)

1. Line-of-Fire – 41%
2. Falls – 21%
3. Electrical – 20%
4. Heat – 8%
5. Ergonomic – 4%

*OSHA Severe Injury Reports & OSHA Fatality and Catastrophe Investigation Summaries

2021 ETD Benchmarks Fatality

Utilities (NAICS 22112)

1. Electrical – 72%
2. LOF – 14%
3. COVID – 14%

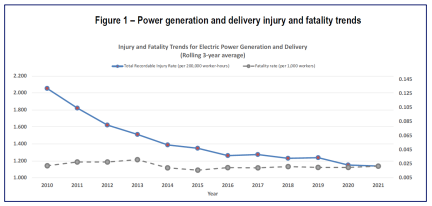
Contractors (NAICS 23713)

1. Electrical – 33%
2. LOF – 25%
3. Falls – 25%

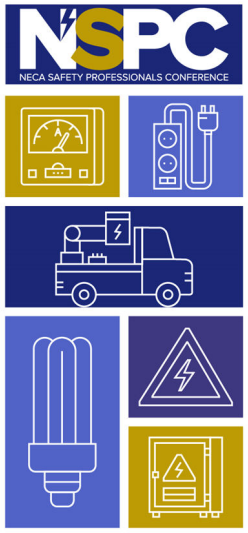
** (1) drowning, (1) COVID, (1) NC*

*OSHA Severe Injury Reports & OSHA Fatality and Catastrophe Investigation Summaries

Our Industry



What hurts people is not what kills people



What is the difference between a hazard and a risk?

Understand: Hazards, Exposures, Risk, & Residual Risk

Hazard – Potential Source of Harm

- Hazard is one type of risk
- Lower level controls permit the hazard to exist!
- Risk and hazard are not the same
- Absolute Safety (Hazard or Risk Elimination) is not realistic ***(0,0,0)***

Risk:

- Everyone is seeking to manage risk
- They are all guessing – if we knew….we would not be dealing with risk.
- Safety interventions that do not alter people's acceptance of risk simply redistribute the burden of risk, not reduce it. (**Wearing a helmet, doesn't prevent the motorcycle accident**).
- Residual risk should be acceptable (ALARP)

Let's think about our work

First thing we ask workers to do is remove primary safeguard or create the hazard:

- Remove Electrical Panel Cover
- Work energized
- Remove Access Cover on Confined Space
- Dig a big hole (trench) to enter it
- Remove machine guard to make repairs

Our work is **not** inherently safe. People create safety in practice (Conklin)

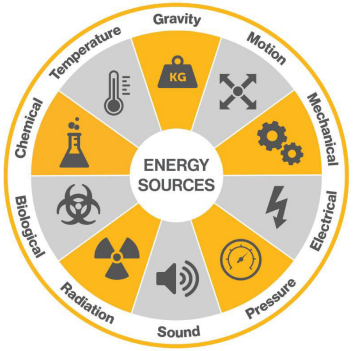
Some Facts About Risk

Risk exists in all systems to some degree

Risks are defined (named) in terms of the consequences that could result

Once a risk is defined, it can be quantified

Once it is quantified, it can be reduced



NECA SAFETY PROFESSIONALS CONFERENCE

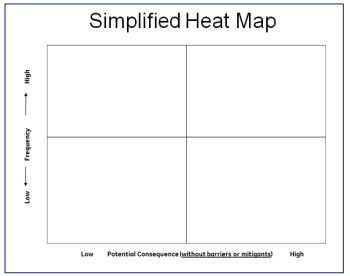
Graham on Risk

Build a Simple Heat Map

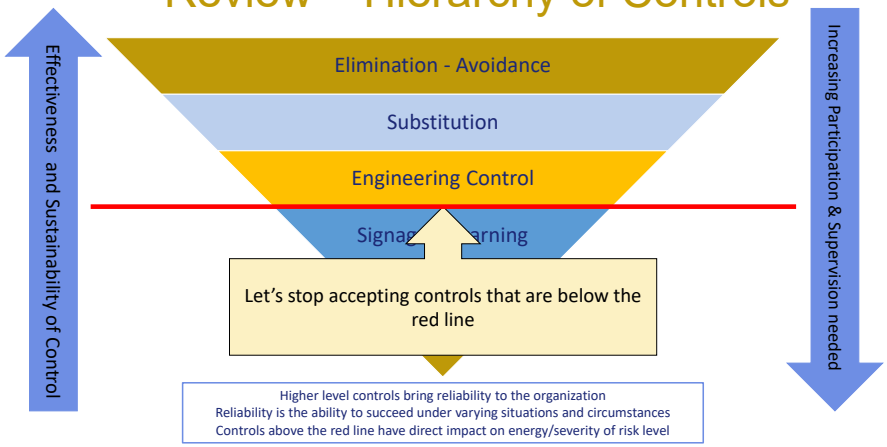
Look at the issues on your easel pad.

As a group plot them on the heat map.

Assume no protections are in place.



Review – Hierarchy of Controls



High Energy Control Assessments

Let's Practice

Scenario

- A double circuit, live line pole set next to industrial road.
- The hole has been prepared for installation.

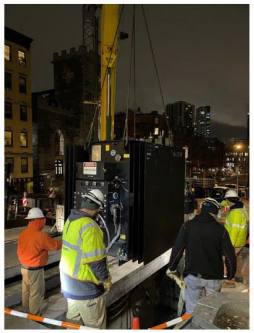
Observations

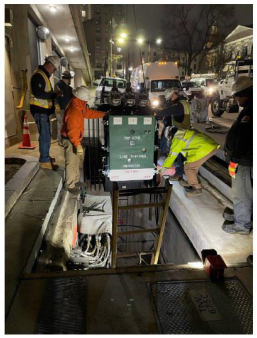
- Equipment has no mechanical issues and is maintained properly.
- The bucket trucks were set up properly and stabilized.
- There is no swinging control on the load (sling job rather than claw on digger)
- Proper fall protection is used.
- Cover on all conductors, live line insulation is sufficient.
- Proper PPE for electrical contact is used.
- The roadway is closed to traffic with hard barricades.
- Equipment was moving at the time of observation.

Let's Practice

High Energy Hazard	High Energy Icon	Direct Control	Direct Control
Work at height in bucket	Gravity: Fall from elevation ≥ 4 ft	Yes	Proper fall arrest system
Live electrical lines	Electrical: Electrical contact with source ≥ 50 volts	Yes	Sleeves
Potential for arc flash	Electrical: Arc flash	Yes	Proper arc-rated PPE
Suspended load lateral swing	Motion: Other	No	Exclusion zone
Suspended load	Gravity: Suspended load	No	Proper rigging needed and/or exclusion zone with hard barricade
Side boom tracking	Motion: Mobile equipment/traffic with workers on foot	No	No energy mitigation, and operation was vulnerable to human error.
Traffic with worker on foot	Motion: Mobile equipment/traffic with workers on foot	Yes	Roadway closed with hard barricades

Let's Practice





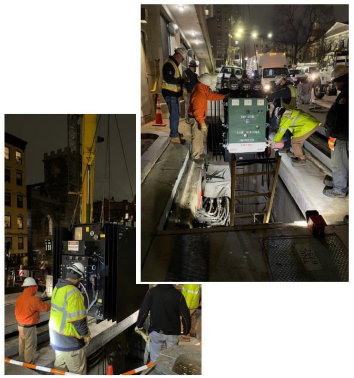
Scenario

- Network transformer being replaced into an 8 ft vault next to traffic.
- The traffic is blocked by machinery and work vehicles.

Observations

- Vault is de-energized
- 1 am, temperature 30F
- Machinery & work vehicles can handle the energy of traffic coming in.
- Transformer is rigged properly and used within limits
- The crane is not moving at the time of observation.
- Equipment has no mechanical issues.

Let's Practice



High Energy Hazard	High Energy Icon	Direct Control	Direct Control
Suspended load lateral swing (Motion and potential for pinch point)	Motion: Other	No	No exclusion zone **with hard barricade**
Suspended load (Gravity and potential for fall/crush)	Gravity: Suspended load	Yes	Proper rigging
Electrical conduit	Electrical: Electrical contact with source > 50 volts	Yes	De-energization
Potential for arc flash	Electrical: Arc flash	Yes	De-energization
Fall into 8 ft vault	Gravity: Fall from elevation > 4 ft	No	No barricade
Traffic passing by work zone	Motion: Mobile equipment/traffic with workers on foot	Yes	Machinery & work vehicles barrier

Safety is not the absence of accidents.

Safety is the presence of defenses.

Use the tools!

Use Heat Map, You should be able to describe:

- Why is the high energy hazard present
- What is the magnitude of the potential risk

Build Capacity to Start Work Safely

- Use the energy wheel and STKY
- Teach and expect the use of direct controls
- Make the use of the direct controls reliable (easy button)

Personal Action Plan

Action (What)	Resources (Who)	Date (When)

Please complete the Online Evaluation

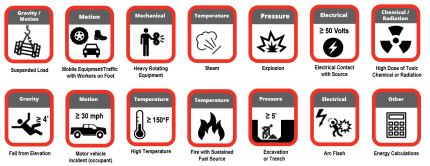
https://www.surveymonkey.com/r/2024NationalSafetyProfessionalsConference

Supporting Material

High - Energy Control Assessment Definitions

High Energy Hazard: A hazard that exceeds 500 foot-pounds of physical energy.

- These hazards are most likely to cause a SIF if an employee contacts the energy.
- The 13 high-energy icons represent common high-energy hazards, but do not represent all high-energy hazards.
- Some high-energy hazards require energy computations (e.g., falling tools, pipeline pressure).
- High-energy hazards are relevant and should be recorded if there is reasonable potential that employees could interact with the hazard in the normal course of their work

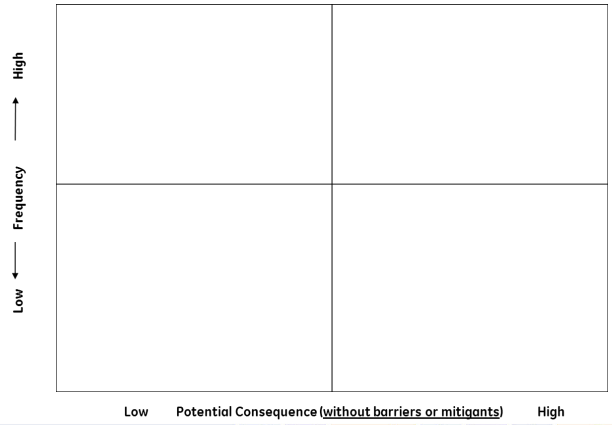


High - Energy Control Assessment Definitions

Direct Control

• A physical safeguard that is:
  • (1) specifically targeted to the high-energy source,
  • (2) effectively mitigates exposure to the high-energy source when installed, verified, and used properly,
  • (3) is effective even if there is unintentional human error during work that is unrelated to the installation of the control.

Simplified Heat Map



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