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Improving Safety Training – A Hands on Approach

Introduction

There are multiple approaches to safety training across the industry:

- o Virtual classroom
- o In-person classroom
- o Hands on training

The industry has transitioned toward utilization of virtual classroom or on-line training methods. Although efficient and value added for some topics, there are many aspects of operations that require Hands on Safety Training to be truly effective. Each organization should evaluate SIF Serious Incident to ensure employees who engage in (SIF) Serious Incident and Fatality potential activities are prepared to handle those activities. Furthermore, some companies have determined that certain SIF activities must be trained utilizing a hands on approach. This guideline will illustrate the impact and value of Hands On Safety Training with actual industry safety results and provide best practice examples.

Scope

The purpose of this Technical Information Paper(TIP) is to organize and provide information supporting the need for hands on safety training and multiple, best practice examples of effective hands on safety training. Beyond the development, and execution of hands on safety training, audit and verification ensuring skill and understanding are necessary.

This is the first TIP of this type based on sharing safety related best practices and will serve as a model for future safety related best practice topics.

Safety precautions

There are no particular safety precautions to reference for this guideline as the topic is safety focused in nature.

Limitations

Very few limitations exist with respect to sharing safety related information with wide application across the many aspects of the industry. Detailed, company specific safety results will not be shared.

Information sources

The basis for this paper consisted of multiple meetings with qualified safety professionals and seasoned industry professionals from all sections of the industry. Input was also gathered in collaboration with PPSA on a March 2023 joint webinar named “Improving Safety Training – A Hands on Approach” Additional information was gathered during the April 2023 “Improving Safety Training – A Hands on Approach” presentation at TAPPICON.

Requirements

As the industry transitions toward virtual classroom or on-line training methods, it is imperative that the impact of safety related training remain effective as there is nothing that is more important than getting employees home the way they came to work.

Three, key aspects of Hands On Safety training are illustrated in detail; including data supporting the effectiveness of a hands on approach from Solenis, effective interactive safety training methods utilized by Domtar, and further training methods and importance of audit and verification of knowledge by Sonoco. Information shared during the March 2023 “Improving Safety Training – A Hands on Approach” webinar has been included in this Technical Information Paper.

Data Supporting Effectiveness

“Road to Zero” safety results from 2007 to 2023 illustrate the effectiveness of hands on vs. virtual safety training. Application of hands on safety training is widely applicable across the industry including manufacturing sites, research facilities, universities, business travel, and many others. A typical progression is shown where in-person safety meetings, training and focus from 2007 to 2019 result in a continuously positive trend with fewer injuries.

The transition to virtual safety training during the pandemic reversed the positive trend resulting in higher recordable injury rates through 2020 and 2021. Returning to in-person safety training post-pandemic proved effective with much improved injury results.

The Road to Zero

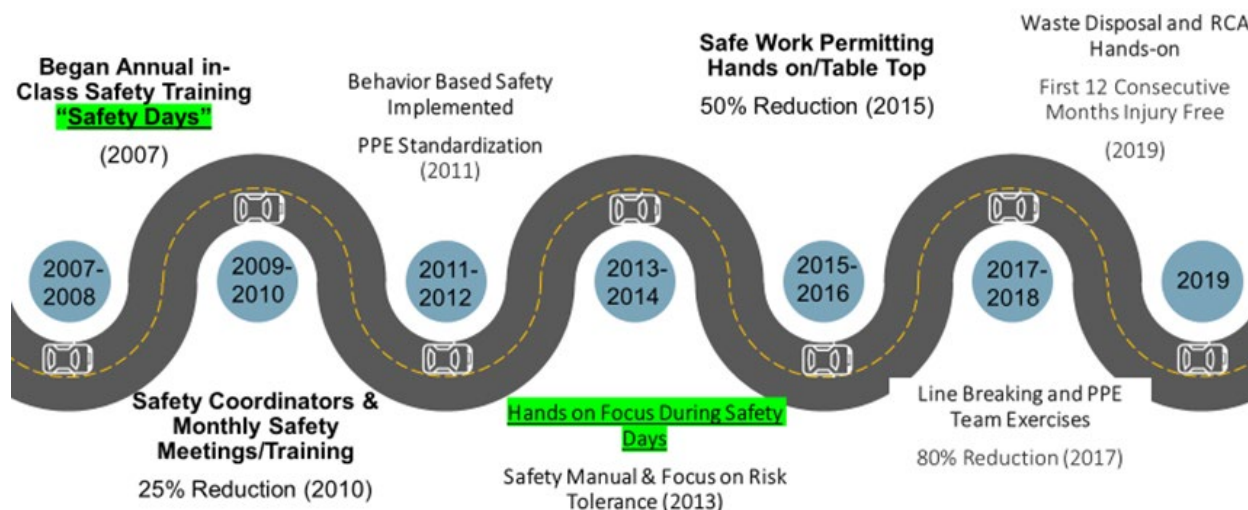


Figure 1.

The Road to

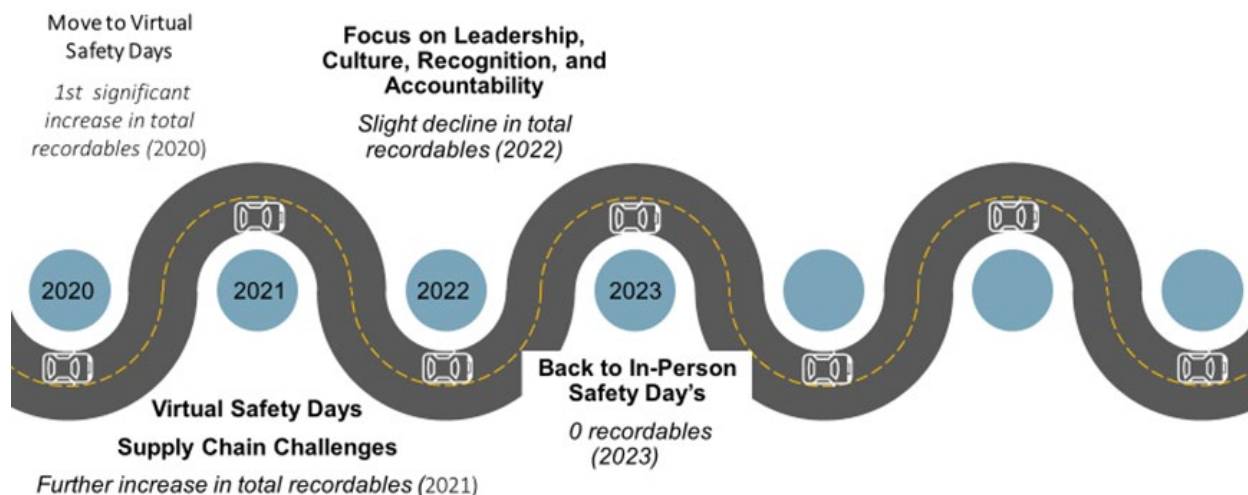


Figure 2.

Industry Example of Interactive Safety Training

Various methods of hands on safety training are illustrated below. Details on how to do lockout tagout training or standard requirements are not part of this TIP. Rather, effective methods utilized by industry to facilitate hands on training for the various topics are covered and available for application as each company sees fit.

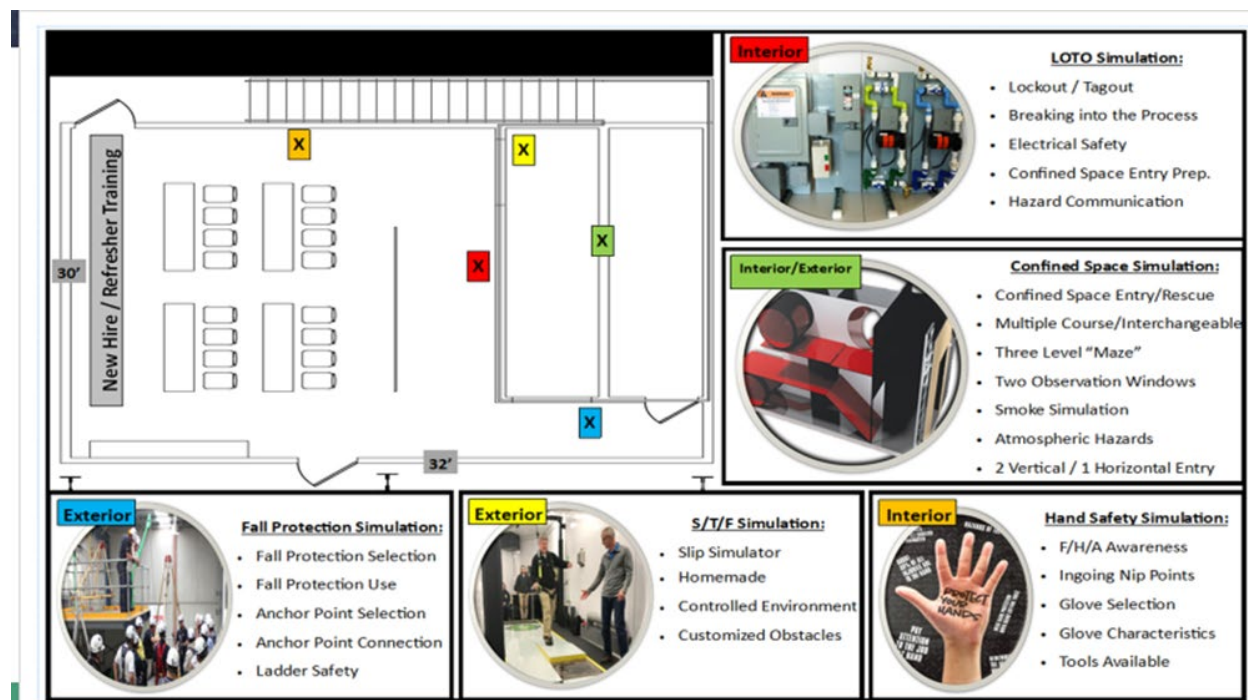


Figure 3.

Interactive Safety Training Room



Classroom:

- Wi-Fi Enabled
- Touchscreen – Smartboard Technology
- Video conferencing capability
- Safety interactions (see next slide)
- Seats 25-30 Comfortably

Figure 4.

Interactive Safety Training Room



Safety interaction w/in classroom:

- Confined Space
- Lockout/tagout - Breaking into the process
- Slip/Trip/Fall (not shown in photo)
- Nip Point Awareness
- Electrical safety
- Fall Protection (not shown in photo)

ALL IN 1 LOCATION– 1 stop shop for hands-on safety training!

Figure 5.

Interactive Safety Training Room – Confined Space



Confined Space:

- Simulation ready
 - Viewing windows and CCTV live feed capture employee entry, egress, rescue
 - Atmospheric change represented throughout via Andon lighting (red/yellow/green)
 - Space changes occur via:
 - Concert smoke
 - Lighting dimmer/blackout
- Horizontal and Vertical entry locations
- (2) separate courses (easy & advanced)
- Rescue tripod employee removal capable - 2nd level

Figure 6.

Interactive Safety Training Room – Confined Space

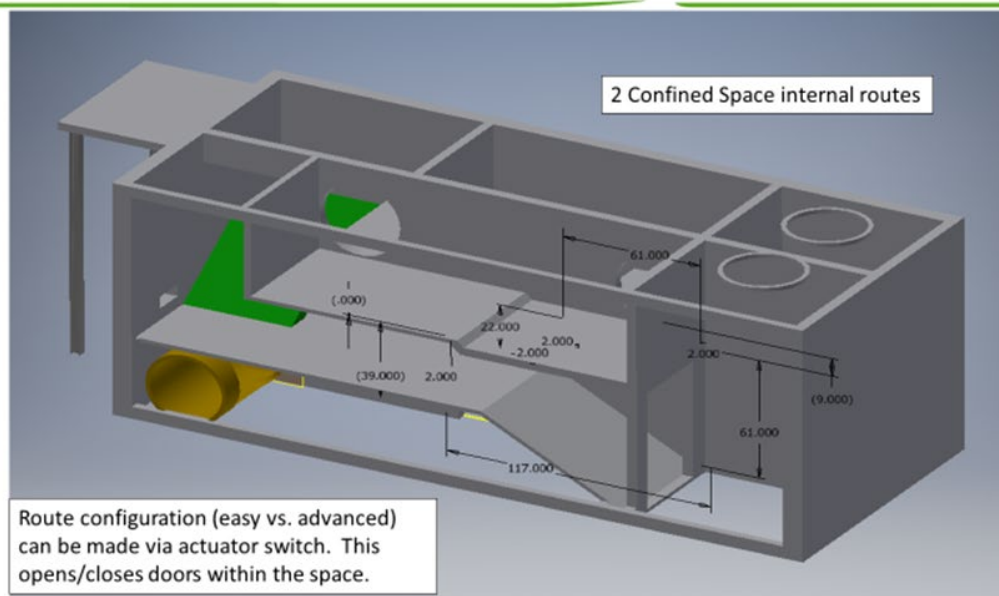


Figure 7.

Interactive Safety Training Room – Confined space

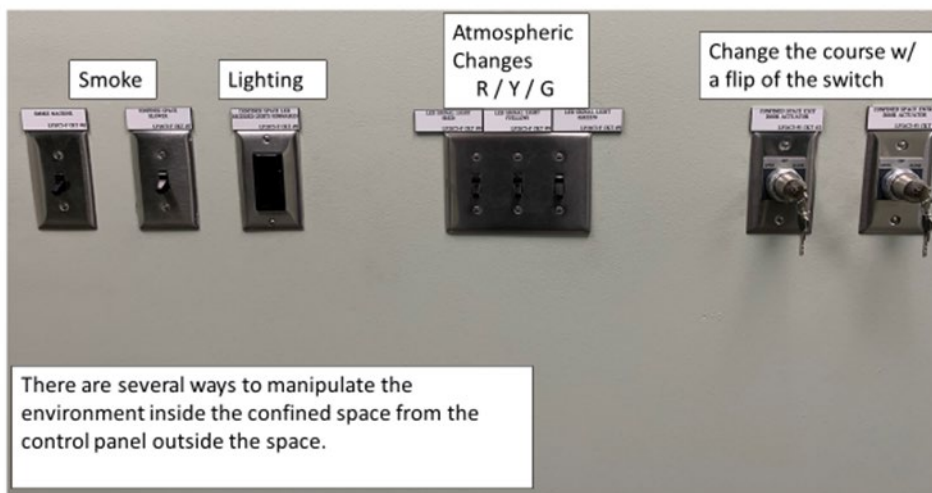


Figure 8.

Interactive Safety Training Room – Confined Space



Figure 9.

Interactive Safety Training Room – Confined Space



Figure 10.

Interactive Safety Training Room – Lockout / Tagout

- 100% interactive
- Lockout tagout piping schematic can be energized using mill water.
- System allows for multiple means of isolation prior to performing work i.e.. valve removal, confined space entry, breaking into the process.
- Verification of zero energy state via see through clear plastic drain piping.
- Lockout includes, air, product (i.e. water) and electrical.



Figure 11.

Interactive Safety Training Room – Slip / Trip / Fall Simulator

- Slip simulator utilizes a modified ice cleat (furniture mover) combined with a high slip surface
- Employees are tied off to a fall restraint device attached to an overhead rolling beam mounted clamp
- Employees are trained to demonstrate proper techniques to walk on flat surfaces, with obstacles and even steps or an incline surface successfully
- Teaching employees to walk differently than what they knew previously to avoid slipping...this actually reinforces the correct behavior through failure i.e. safe slipping!



Figure 12.

Interactive Safety Training Room – FHA /Nip Point Awareness

- Simulation of pinch and nip point awareness.
- Reinforces the use of machine guarding
- Demonstration can be at a high or low speed re-enactment
- Safety e-stop and pull cord in place to immediately stop belt rotation
- Designed to incorporate the "what if" scenario...pencil, hot dog, hair, etc. being caught and pulled into the inward nip.

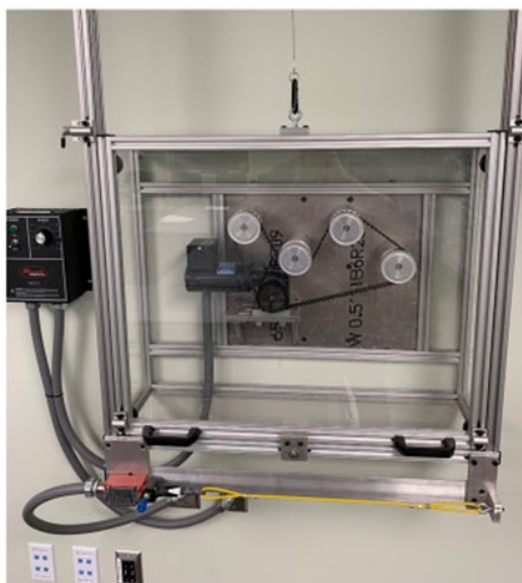


Figure 13.

Interactive Safety Training Room – Electrical Safety / LOTO

- Control power from the local disconnect to safety simulators
- NFPA 70E Arc Flash Training
- Voltage indicator lights
- Hands-on learning of e-stop use & reset
- Many options for performing lockouts – breakers, etc.
- Added visual indicators for effective training and reinforcing correct LO/TO principles



Figure 14.

Hands On Safety Training Audit and Verification Focus

The following slides depict corrective actions to an actual SIF event in which the company lost two employees involved in a confined space entry incident. It's important to recognize SIF potential when determining the type of training requirements to ensure a safe operation. Following the catastrophic event, the company completed an in-depth incident investigation, assessed gaps and exposures and implemented corrective actions both physical and training requirements that included elements of virtual, classroom and hands on training to ensure employees involved with confined space entry were knowledgeable and equipped to perform work in confined spaces.

Training – The Classroom

- Approaches to Training
 - Virtual Classroom
 - In Person Classroom – Important step to ensuring participants can get important information:
 - Policies/Procedures
 - Critical Path Steps
 - Opportunity to Discuss
 - Opportunity to Ask Questions and Clarify
 - Hands On
 - A time to practice what you've learned



26

26 First & Last name, Company Name - Title of Presentation - TAPPICon 2023 - Session 8, Paper #

Figure 15.

Hands On – Specific to Confined Space

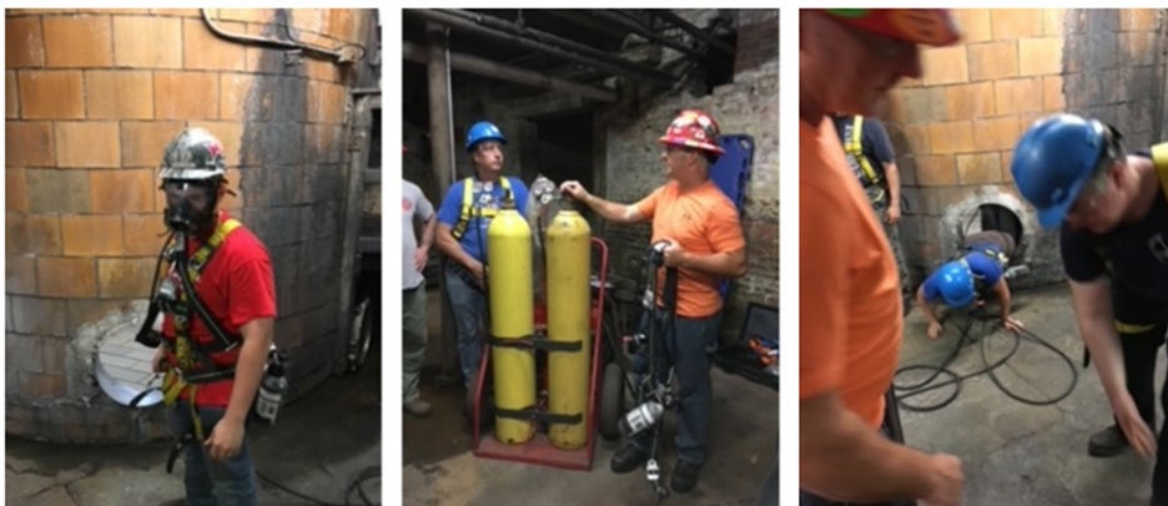


27

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Figure 16.

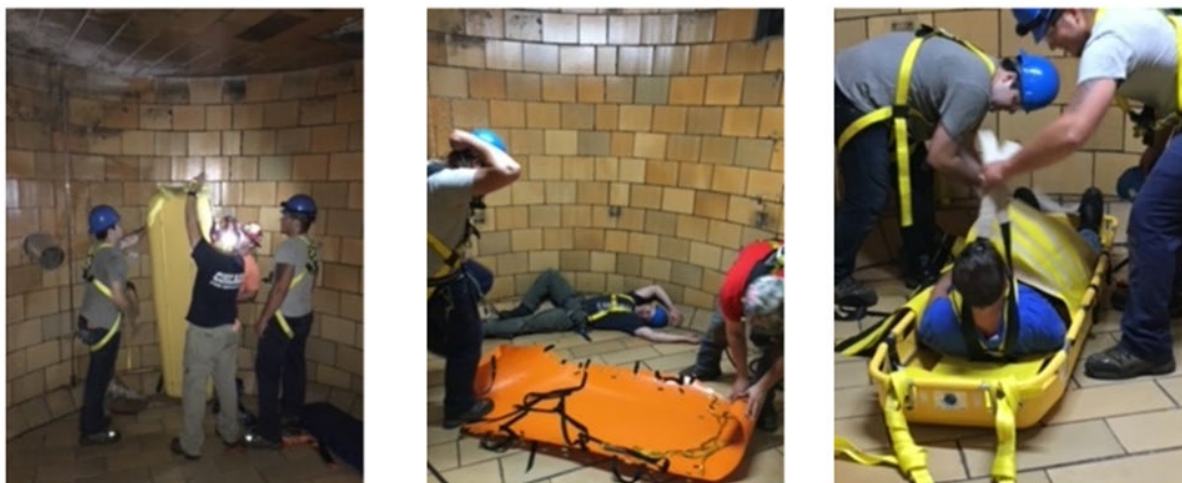
Hands On – Specific to Confined Space



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Figure 17.

Hands On – Specific to Confined Space



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Figure 18.

Hands On Training

- There are aspects of our operations that are critical paths that require Hands On Training
- We need to determine what training needs require Hands On
- Develop and Execute a Plan
- Audit/Verify
 - Ensure the training meets the expectation needs
 - Participants are acquiring the necessary skills
- Solicit Feedback

Figure 19.

Keywords

Simulator, Lockout Tagout, Confined Space, National Fire Protection Association, Slip, Trip, Fall, Electrical, Fall Protection, Line Break, Guarding, Personnel Training, Safety, Safety Measures, Safety Devices, Safety Engineering, Training, Training Devices, Training Equipment, Training Manuals, Locking, Interlock, Test Methods, Test Instruments, Test Machines, Servicing, Maintenance, and Enclosure

Additional Information

Effective date of issue: July 31, 2024

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