

# Process Safety and the Front Line Simplification of Learning

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**PURDUE**  
UNIVERSITY™

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# Today's Roadmap

1. Reaching the Front Line
2. Better Practices
3. The Future of Learning
4. So What?

## Learning Imperatives

### Importance of the Front Line

- Closest to process safety.
- Eyes and ears for issues.
- In safety critical roles.
- Must be competent.
- Responsible for making the right decisions all the time.

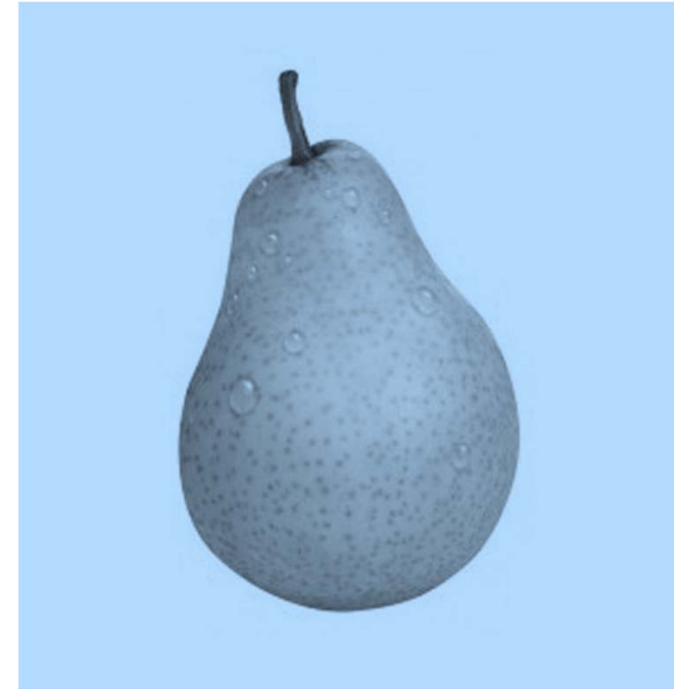


**Without the  
front line,  
you don't have  
a PSM program!**

## Safety Critical Equipment (SCE) Reaching the Front Line

- Really understand barrier thinking.
- Understand the “what” and the “why” of SCE.
- Defined SCE maintenance.
- Defined SCE competence.

If **everything** is SCE,  
then **nothing** is SCE.



Know the impact on:  
People  
Environment  
Asset  
Reputation

“Don’t teach me to work the machine, teach me how the machine works.”

# Principles for Reaching the Front Line

- **Engagement:** Provide a structured forum for discussion and involvement, utilizing group exercises and a minimum number of slides.
- **Adult learning theory:** Include a variety of topics presented in multiple formats (tell, show, and do) and media types (video, case studies, discussion, presentations, etc.) in order to address all learning styles.
- **Pacing and facilitation:** Participants' attention spans rarely exceed 30 minutes. Design the courses to be fast paced and actively facilitate to keep discussions meaningful.
- **Collaboration:** Sessions run best when leaders are actively involved in content discussions, making learning points real.

## Making Process Safety Proximate



## People React Based on Proximity

## Strategies to Influence the Front Line

### Self-Assessment Criteria

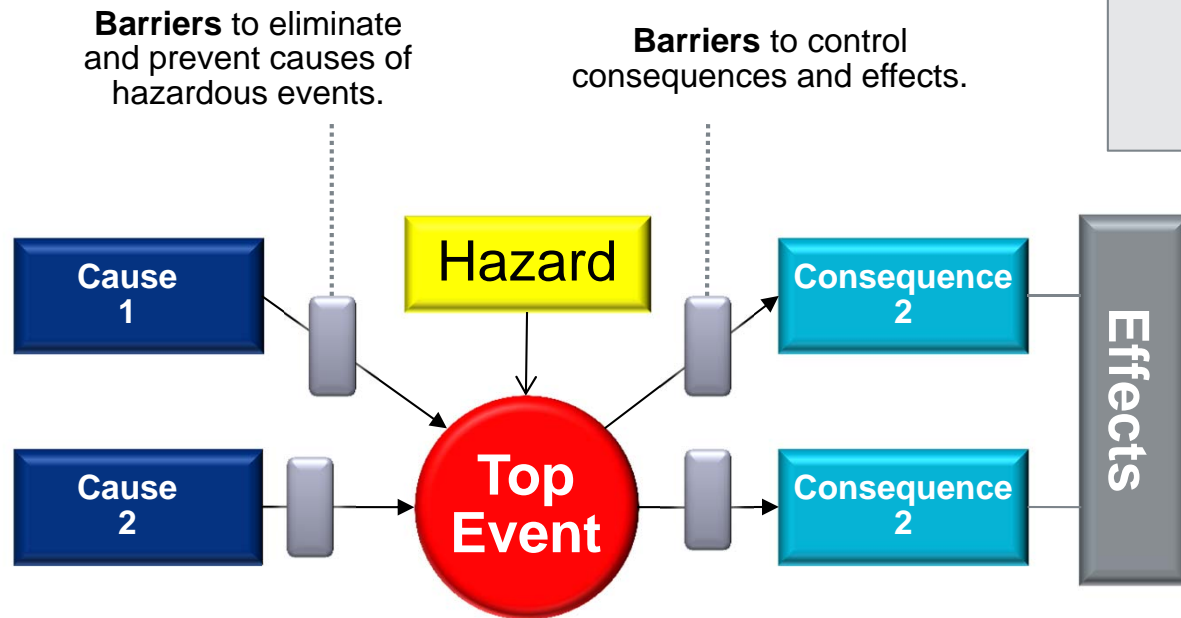
1. We use “straight talk” and not “engineering speak.”
2. We provide short, focused messages and avoid providing “too much” information.
3. We engage the front line through interactive leaning sessions (not just PowerPoint).
4. We use “tell-show-do” in our learning delivery to account for multiple learning styles.
5. We set clear behavioral expectations.
6. We have a set of clear process safety requirements.
7. Case studies are local and clearly apply to the work being done.
8. Leadership is engaged in the learning process.

Never				Always

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# Understanding Barriers, SCE, and Bow Ties



**You can make this fun!**  
Drew Brees injury  
Crawfish boil  
Thanksgiving dinner

**Loss of control**

**Build a bowtie!**



# Pocket Guides and SpinFos

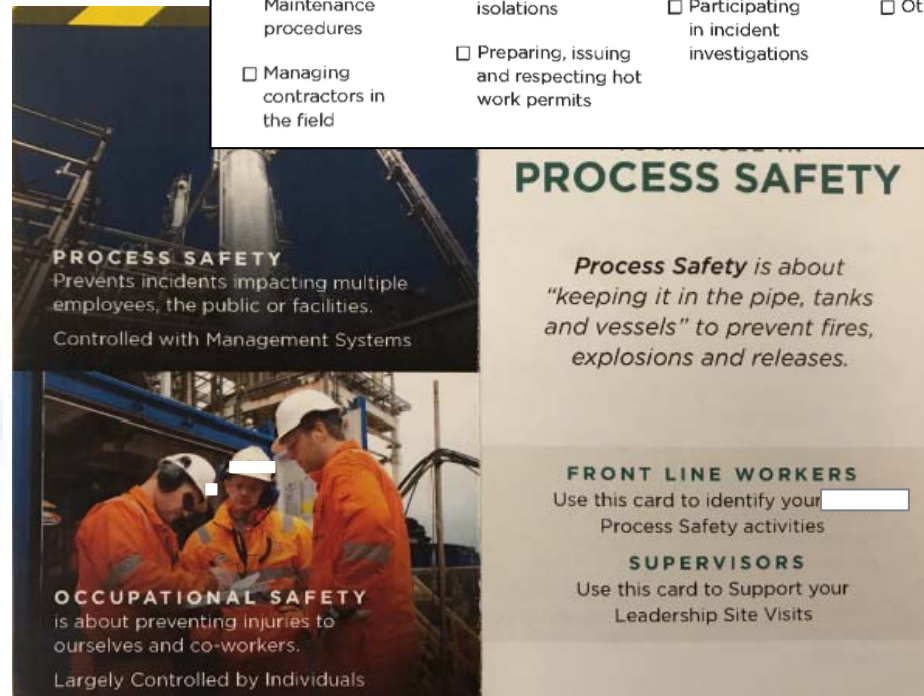
- Pocket-sized guides.
- Clear expectations.
- Simple wording.
- Keep them handy!



[www.spinfos.com](http://www.spinfos.com)

**Which activities are you involved with to "keep it in the pipes"?**  
Check all activities in which you are involved.

<input type="checkbox"/> Hazard hunts to find leaks	<input type="checkbox"/> Performing PMs and inspections on safety critical equipment	<input type="checkbox"/> Participating in MOC activities and Pre-Startup Reviews	<input type="checkbox"/> Checking periodically to verify safe operations and compliance with regulations and our procedures
<input type="checkbox"/> When you see or smell something unusual you report it	<input type="checkbox"/> Writing SAP notifications to get safety critical equipment repaired	<input type="checkbox"/> Knowing what to do in case of an emergency such as a hydrocarbon release	<input type="checkbox"/> Participate in a "What If", HazOp or HazId study
<input type="checkbox"/> Using JSA to identify potential hazards such as ignition sources	<input type="checkbox"/> Preparing, verifying, and respecting equipment isolations	<input type="checkbox"/> Reporting all incidents and near misses	<input type="checkbox"/> Use your Stop Work Authority
<input type="checkbox"/> Following Operating and Maintenance procedures	<input type="checkbox"/> Preparing, issuing and respecting hot work permits	<input type="checkbox"/> Participating in incident investigations	<input type="checkbox"/> Other:
<input type="checkbox"/> Managing contractors in the field			



# Simple Language, Clear Mantra

“Plug the Holes” in the Swiss cheese.

## Great Leadership!

- Lead PS as part of daily leadership
- Provide PS guidance and leadership
- Focus on PS elements
- Lead the PS culture development

## Equipment Specs

- Follow Sinclair, industry, and licenser specs
- Follow Sinclair, industry, and codes and standards
- Follow EQ, considering Sinclair and industry codes and standards

## Workforce Involvement

- Involve everyone!

## Hazard Recognition and Prevention

- Use Hazard Recognition to recognize PS Hazards
- Recognize and prevent PS Hazards

## Safety Systems Never Bypassed

The Hazard	The Hole in the Cheese	The Plug
1. gas	1. <del>gas</del>	1. testing
2. unblocked line	2. <del>unblocked line</del>	2. not ass
3. gas gathered in tank	3. <del>gas gathered in tank</del>	3. <del>no</del> block
4. _____	4. _____	4. _____



Stars International, Inc.,  
[brenda@stars-int.com](mailto:brenda@stars-int.com)

# Interactive Discussions Learning Maps

## Deepwater HSSE Case

### Activity A:

Depicted on the map are a series of hazards and risk scenarios.  
Review each incident and discuss the cause  
Identify what safety critical tasks should have been done to prevent this occurrence.



### Activity B:

Identify which Safety Critical tasks you are responsible for in your daily role. Capture these on your "Critical Task Form"

## Safety Case Summary



- Taking process safety concepts (Major Accident Hazards) and turning them into an interactive "learning map."

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## Micro-Learning

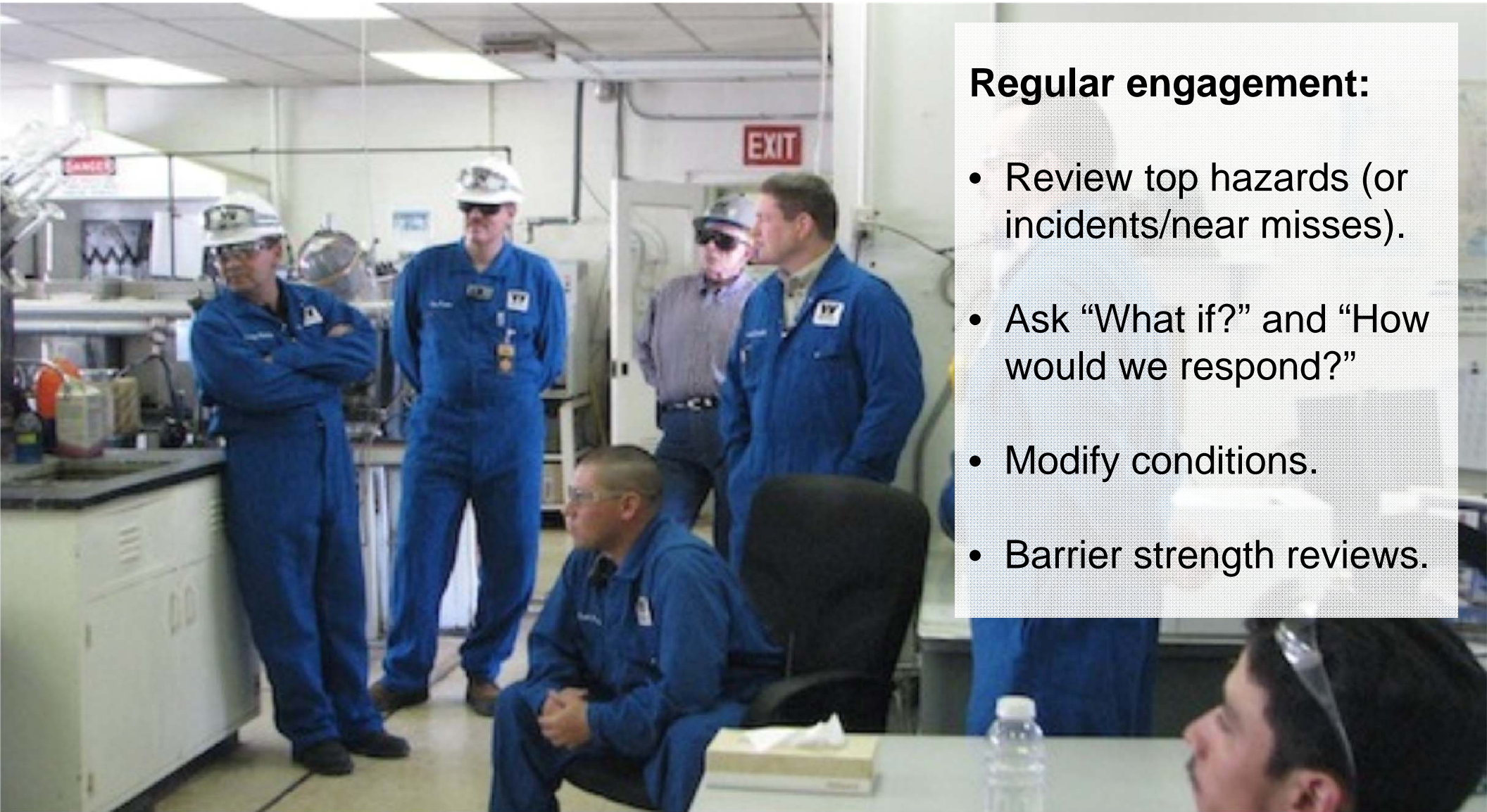


Short, focused, and readily available training:

- **Four-minute or less** modules.
- Delivered via phone or other **smart device**.
- Cover a **single aspect** of training.
- Delivered and tracked via Learning Management Systems (**LMS**).



## Better Practices Tabletop Drills



### Regular engagement:

- Review top hazards (or incidents/near misses).
- Ask “What if?” and “How would we respond?”
- Modify conditions.
- Barrier strength reviews.

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# Future of Learning Virtual Reality



## Interactive Animation

<https://youtu.be/XMQ2luCXqi0>



**STRIVR**



[www.strivr.com](http://www.strivr.com)

## Future of Learning Games, Geofence, and iBeacons



- **93% of millennials** say their smartphone is “very” important in their life, more than a toothbrush.
- **27 times per hour** is how often an average smartphone user aged 18-24 looks at his or her phone.

Source: <http://fuel.tech/gamification/>

### THE MODERN STORYTELLING FORM OF OUR CULTURE



- The current generation spends an average of **10,000 hours** playing video games by the time they go to college.
- Using games and competitions has proven to be a highly-effective training tool for these employees.



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# SO WHAT?

- Be clear what you want from the front line.
- It has to be simple.
- It has to matter.
- Engage in a meaningful way.
- The world of learning is changing.
- Think about today's demographics.



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Make It Fun  
Team Collaboration – Process Safety Music Video



<https://vimeo.com/73918800>

## Keeping Process Safety Conversations Simple: Your Role in Keeping Barriers Healthy

### Equipment

Do you **know** the barriers in your area?

### Tasks

Are they being **done properly** by **competent** people?

### Roles

Do people maintaining the barriers **understand the importance** of their roles?

### Verification

How do you know? Are you certain?

# Preventing Holes in the Swiss Cheese

## Your Role in Keeping Barriers Healthy

### Equipment

- Do you know the barriers in your area?

### Tasks

- Are they being **done properly** by **competent** people?

### Roles

- Do people maintaining the barriers **understand the importance** of their roles?

### Verification

- How do you know? Are you certain?