



Applying “Life Saving Rules” to Process Safety

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Larry Pearlman

Expertise in safety, risk, organization culture, and change management.

Select clients include BP, Chick-Fil-A, Delta Air Lines, Direct Energy, Exxon, FedEx, Hess, Milliken, National Grid, Northrop Grumman, Pfizer, Shell, Suncor and Toyota.

In addition to Safety And, Larry has been employed by Amoco, BP, General Mills, Marsh McLennan, and Pfizer.

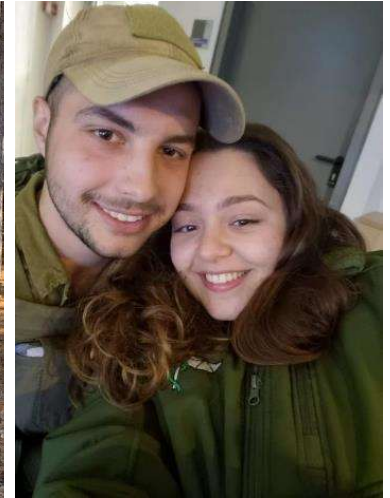
He is a lean Master Black Belt.

B.B.A. in Economics and Industrial Relations and Human Resources from the University of Iowa

M.A. in Labor and Industrial Relations from the University of Illinois at Urbana-Champaign.

He serves as an adjunct professor at the University of Illinois since 2012 and Columbia Southern University since 2024.

What's really important to me





**Bolton
Cruz
Herrera
Hogan
Hunnings
King
Linsenbardt
Ramos
Rodrigues
Rowe, J.
Rowe, L
Smith
Taylor
Thomas
White**

Introductory exercise

1 How well do your front-line employees understand their role in process safety?



2 How could your organization benefit from better understanding of process safety requirements?



Agenda

I. Where Did Life Saving Rules (LSR) Come From?

II. What Makes LSRs Effective?

III. How Can LSRs Be Adapted to Process Safety

IV. LSR's As A Process

V. Better Practices

VI. Summary

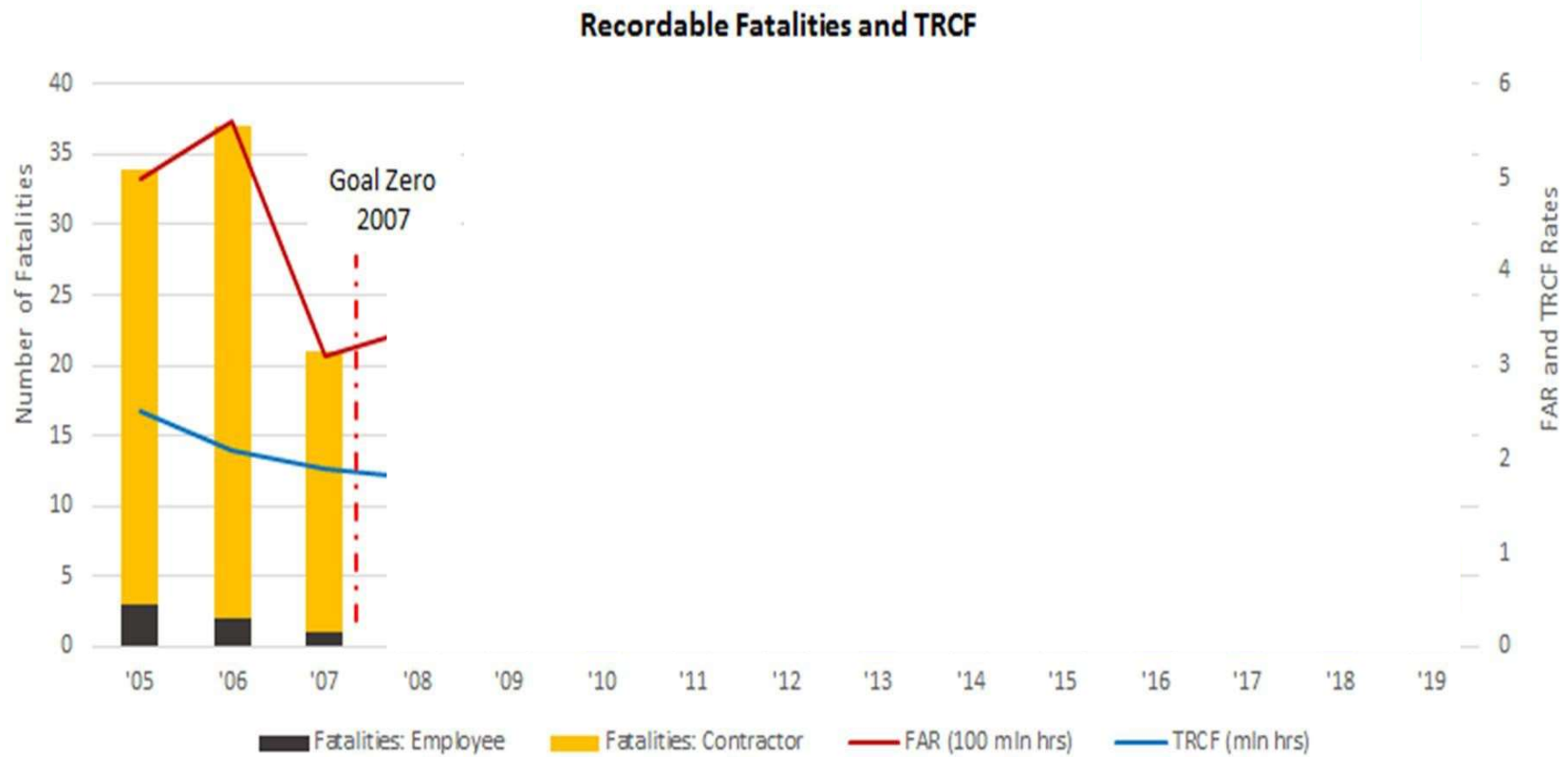
I. Where Did Life Saving Rules (LSR) Come From?

RELENTLESS FOCUS ON




**GOAL
ZERO.
NO HARM.
NO LEAKS.**



Shell's journey of safety improvement was improved by 'Goal Zero'

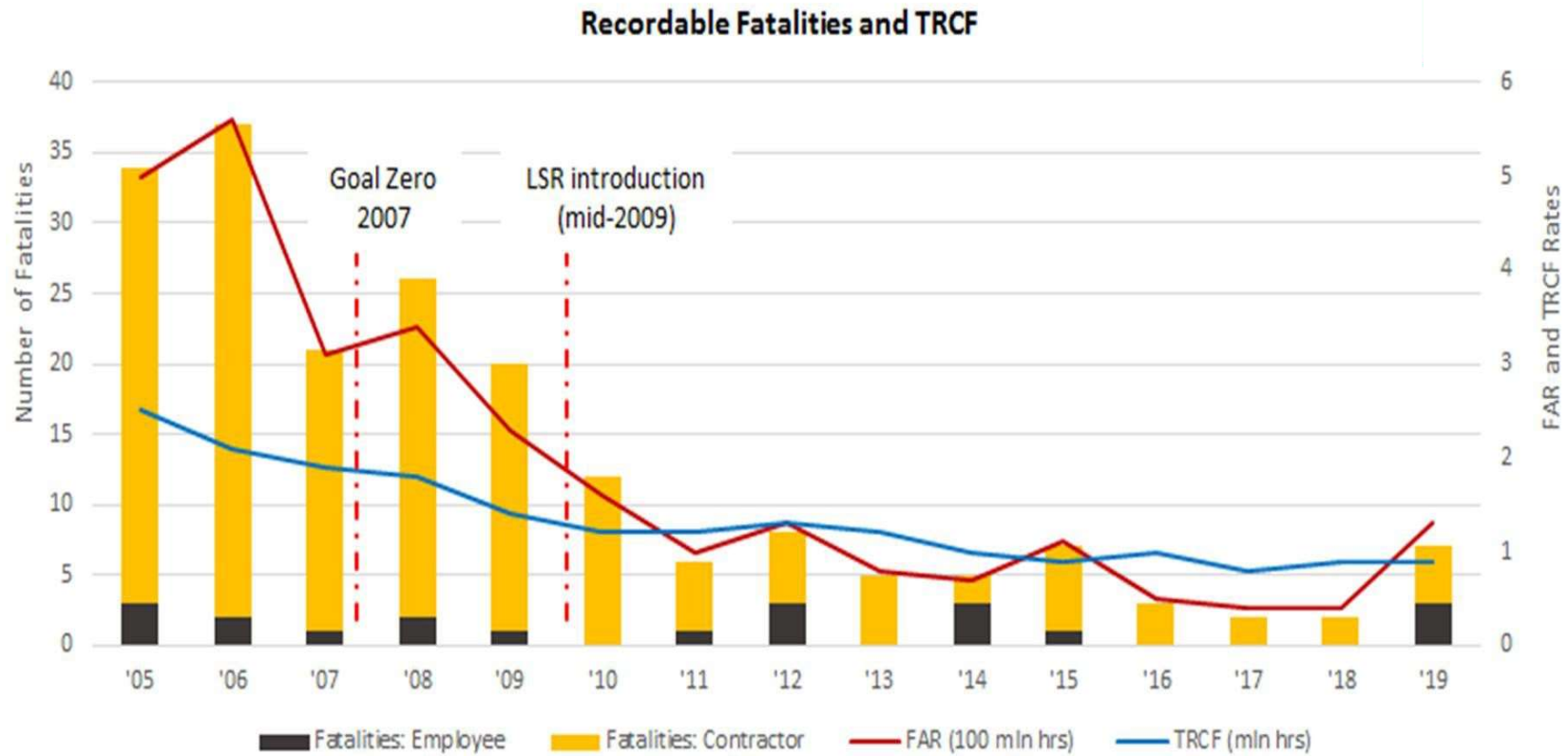


LIFE SAVING RULES

 BYPASSING SAFETY CONTROLS	 CONFINED SPACE	 DRIVING
 ENERGY ISOLATION	 HOT WORK	 LINE OF FIRE
 SAFE MECHANICAL LIFTING	 WORK AUTHORISATION	 WORKING AT HEIGHT



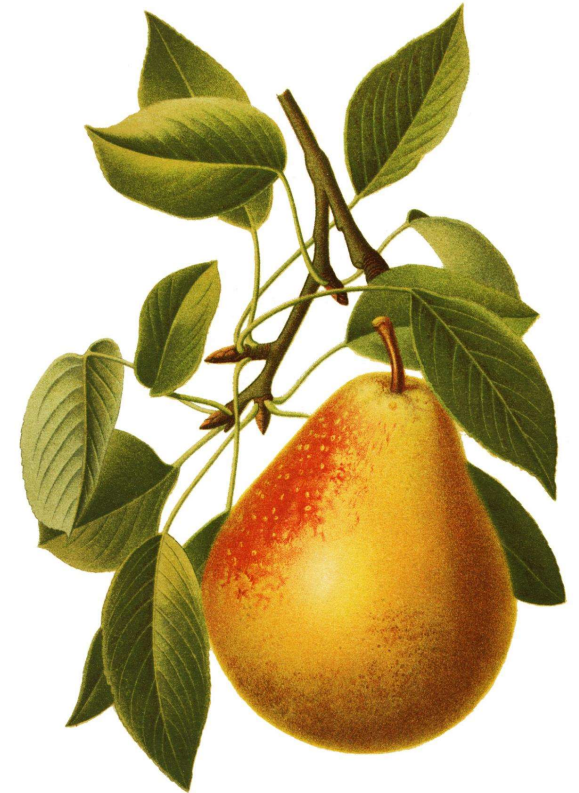
Shell's journey of safety improvement was boosted by LSRs



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2. What makes life saving rules effective?

- Provide a set of absolutes to protect People, Environment, Assets & Reputation
- Establish organization expectations
- Provide focus to manage operational risks
- Determined based upon consequence and considers likelihood
- Integrated into operations, training, audit, and on-boarding



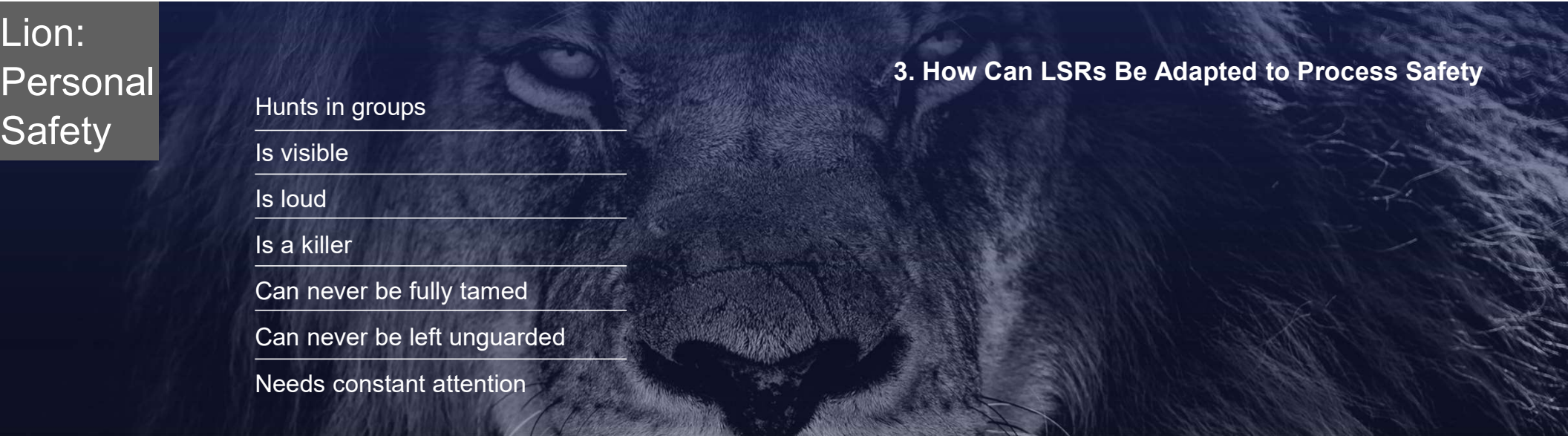
Life saving rules as a call to action

“When studying our incidents last year, it was interesting to see that many process safety and environmental incidents could have been prevented if we had followed the new Life Saving Rules.”

“Our research shows that the Life Saving Rules address the root causes of serious incidents in our business.”



Mike Ferrow
Vice President of Health,
Safety & Environment
ConocoPhillips



Lion: Personal Safety

Hunts in groups

Is visible

Is loud

Is a killer

Can never be fully tamed

Can never be left unguarded

Needs constant attention

3. How Can LSRs Be Adapted to Process Safety



Tiger: Process Safety

Hunts individually

Is invisible

Is silent

Is a killer

Can never be fully tamed

Can never be left unguarded

Needs constant attention

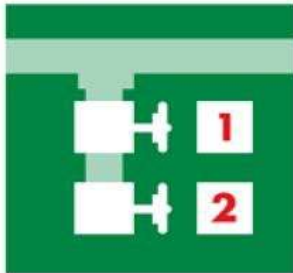
Five steps to designing process safety life saving rules

1. Analyze data
2. Select rules
3. Communicate rules
4. Act Upon rules
5. Review & improve



Sample process safety life saving rules

Always use two barriers for hydrocarbon and chemical drains and vents



Do not leave an open drain or critical transfer unattended



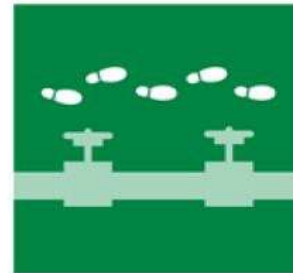
Take interim mitigating measures in case of failure of Safety Critical Equipment



For all defined high risk activities, follow the procedures and sign off after each step



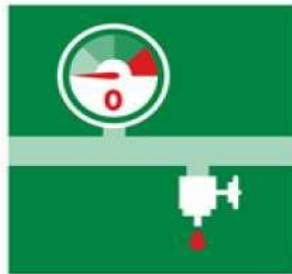
Walk the Line – Verify and validate any line up change



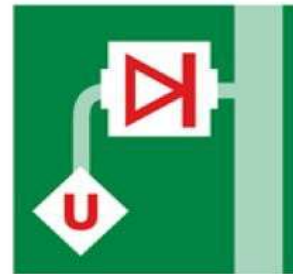
Do not make a change without a proper Management of Change



Verify for complete tightness after maintenance work



Always check that equipment is pressure free and drained, and provides safe isolation before starting maintenance work



Perform Management of Change and install backflow protection when connecting utilities to process



Respond to critical alarms

Process safety life saving rules in five steps

4. LSR's As A Process



- Define governance
- Review historical data
- Review major accident hazards



- Pick a manageable number
- Simplify
- Select symbols
- Select languages
- Define metrics



- Engaging media
- Leader led
- Integrated into employee & contractor on-boarding



- Leader observations
- Toolbox talks
- Audits
- Consequences & recognition



- Review data
- Check for overall effectiveness
- Improve
- Plan to evolve

Better practice: IOGP

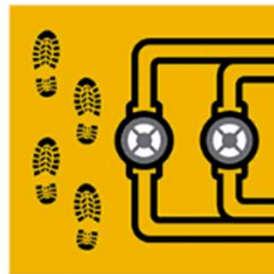
5. Better Practices



PROCESS SAFETY FUNDAMENTALS



Maintain safe isolation



Walk the line



Apply procedures



Sustain barriers



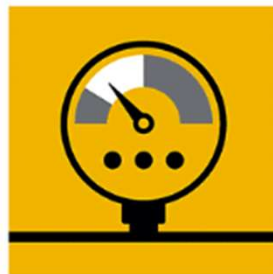
Control ignition sources



Recognize change



Respect hazards



Stay within operating limits



Stop if the unexpected occurs

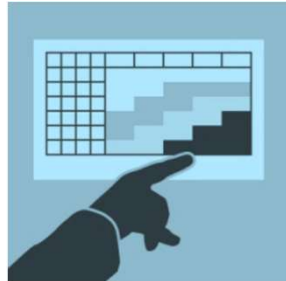


Watch for weak signals

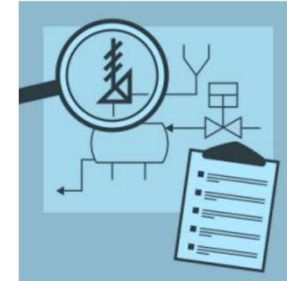
Better practice: Cenovus



PROCESS SAFETY FELT LEADERSHIP
Be a visible Process Safety Leader and demonstrate care



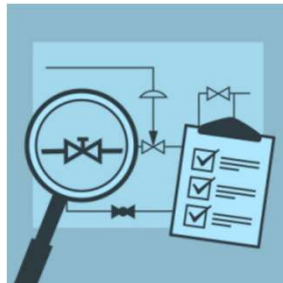
IDENTIFY & ASSESS RISKS
Know and understand the major risks



BARRIER HEALTH
Identify and specify the integrity of barriers and assure their ongoing health



APPLY PROCEDURES
Implement standards and follow procedures; get approval to deviate



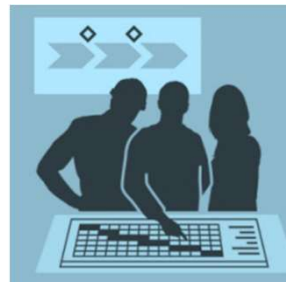
QUALITY
Assure it is designed, built, maintained and operated right



RIGHT PEOPLE RIGHT PLACE
Competent people with the capacity to properly perform and assure the work



RECOGNIZE CHANGE
Identify, review and communicate changes



REVIEWS & ASSURANCE
Conduct robust reviews to verify the health of systems & processes



ACTION CLOSE OUT
Close actions in a robust & timely manner

Better practice: learning from incidents


Near Miss: Unit was tripped upon switching pump xyz

<p>1</p> <p>Always use two barriers for hydrocarbon and chemical drains and vents</p>	<p>2</p> <p>Do not leave an open drain or critical transfer unattended</p>	<p>3</p> <p>Take interim mitigating measures in case of failure of Safety Critical Equipment</p>	<p>4</p> <p>For all defined high risk activities, follow the procedures and sign off after each step</p>	<p>5</p> <p>Walk the Line – Verify and validate any line up change</p>
<p>6</p> <p>Do not make a change without a proper Management of Change</p>	<p>7</p> <p>Verify for complete tightness after maintenance work</p>	<p>8</p> <p>Always check that equipment is pressure free and drained, and provides safe isolation before starting maintenance work</p>	<p>9</p> <p>Perform Management of Change and install backflow protection when connecting utilities to process</p>	<p>10</p> <p>Respond to critical alarms</p>

1. Two barriers
2. Tend to drains and critical transfers
3. Address failures of SCE
4. Follow procedures & sign off for high risk activities
5. Walk the line
6. MoC
7. Verify for 'tight completeness'
8. Safe isolation
9. Backflow protection
10. Respond to critical alarms

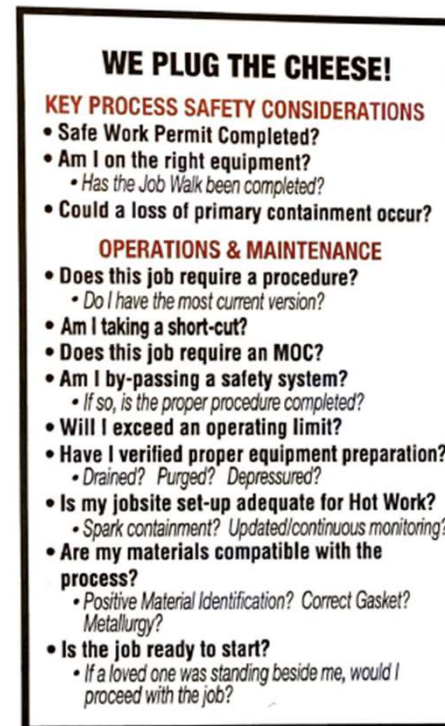
Better practice: learning from incidents

Near Miss: Leak observed at drain of heat exchanger xyz

<p>1</p> <p>Always use two barriers for hydrocarbon and chemical drains and vents</p> 	<p>2</p> <p>Do not leave an open drain or critical transfer unattended</p> 	<p>3</p> <p>Take interim mitigating measures in case of failure of Safety Critical Equipment</p> 	<p>4</p> <p>For all defined high risk activities, follow the procedures and sign off after each step</p> 	<p>5</p> <p>Walk the Line – Verify and validate any line up change</p> 
<p>6</p> <p>Do not make a change without a proper Management of Change</p> 	<p>7</p> <p>Verify for complete tightness after maintenance work</p> 	<p>8</p> <p>Always check that equipment is pressure free and drained, and provides safe isolation before starting maintenance work</p> 	<p>9</p> <p>Perform Management of Change and install backflow protection when connecting utilities to process</p> 	<p>10</p> <p>Respond to critical alarms</p> 

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Better practice: HF Sinclair 'we plug the cheese'



Clear mantra, simple language!

SO WHAT?

- Life saving rules have been successful in personal safety
- The same methodology can be applied to process safety
- To be effective, the rules have to be more than graphics
- Once established, life saving rules can be used to creatively engage workers
- Management review keeps the process fresh and effective
- Metrics allow you to measure effectiveness

Applying “Life Saving Rules” to Process Safety

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Life Saving Rules Self-Evaluation

When it comes to LSRs, our leaders are visible and felt advocates



Our LSRs are integrated into on-boarding activities for new hires and contractors



We use our LSRs to provide focus for safety conversations and safety walks



Our leaders use LSRs to help them with safety observations



Life Saving Rules Self-Evaluation - 2

We review safety performance data against our LSRs



We have performed at least one “Check in” to gauge the overall effectiveness of our LSRs



We are using LSRs as the basis of auditing barriersm, behaviors and conditions



When providing employee feedback, we use LSRs as part of our conversations (both positive and corrective)

