L2-SFR-000

Understand SAFER – Hazards & Risks

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Purpose of this CPP

This CPP describes and defines:

- ***Hazards*** and ***Risks***
- The **SAFER** program, which is about understanding, identifying, analyzing and controlling the hazards and subsequent risks that we all face in the workplace.

All employees must be **CAN DO** in **SAFER**.

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About Hazards

What is a HAZARD?

A ***hazard*** is a situation or condition which has the potential to cause an accident and harm to people, equipment, plant or environment. So…

A POTENTIAL FOR HARM

AN ACCIDENT WAITING TO HAPPEN

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Cause of Hazard

A ***hazard*** is caused through a weakness or breakdown in management systems in the normal and usual workplace.

Weaknesses include:

- Poor work methods and scope
- Poor housekeeping
- Inadequate access and exit
- Inadequate lighting, ventilation
- Deficiency in training
- Inadequate and incomplete work procedures
- Work procedures not understood.

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Hazard Types

The ***weaknesses*** and ***breakdowns*** in the workplace lead to ***hazards*** which can be categorized under the following types:

HAZARD TYPE	HAZARD CATEGORY
Unsafe Situation	***Obvious*** (In your workplace environment)
Unsafe Condition	***Operational*** (In the work methods and procedures)
Bad Design	***Potential*** (In the equipment and plant layout)

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Hazard – Unsafe Situation

Unsafe Situation (In your workplace environment)

Category: OBVIOUS

HAZARD – UNSAFE SITUATION	EXAMPLE / WEAKNESS
Inadequate ventilation	• Strong smell of Hydrocarbon fumes in the workplace. • Fuel source in the workplace environment.
Inadequate access and exit	• Doorways are blocked with stored equipment/boxes etc. • Escape routes are blocked.
Inappropriate safety protection	• Fire alarms cannot be heard because of work place normal noise.

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Hazard – Unsafe Condition

Unsafe Condition (In the work methods and procedures)
Category: OPERATIONAL

HAZARD – UNSAFE CONDITION	EXAMPLE / WEAKNESS
Lock out & tag out (LOTO) procedure not followed	• Repair work on gantry meter, in progress but not tagged.
Routine asset maintenance check not done & reported	• Bond wire at gantry, broken and not reported.
MSDS not understood and not followed	• Operators not handling products with gloves during sump cleaning process.

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Hazard – Bad Design

Bad Design (In equipment and plant layout)

Category: POTENTIAL

HAZARD – BAD DESIGN	EXAMPLE / WEAKNESS
Workplace on split level floors	• Single step split floor is a source of tripping.
Forklift truck with no spark arrestor	• Forklift in use in storage area with no spark arrestor is a source of ignition.
Lighting with no flameproof rating	• Non-flame proof lighting is a source of ignition.

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Examples of Hazards

Hazard Type	Hazard Example Potential For Harm		Hazard Causes / Weaknesses
Unsafe Situation (unsafe workplace environment)	Presence of an ignition source in the road gantry		Poor work scheduling
	Potential harm	Fire breakout	**Obvious**
Unsafe Condition (unsafe work method/procedures)	Broken bond wire at the road gantry		Work Procedures not understood and reported
	Potential harm	Fire breakout	**Operational**
Unsafe Situation (unsafe workplace environment)	Work to be carried out in a valve pit		Trapped vapour
	Potential harm	Asphyxiation	**Obvious**
Bad Design (engineering errors)	Presence of an ignition source in the road gantry		Protection devices design inadequate
	Potential harm	Fall, injury	**Potential**

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Quiz – About Hazards

1. What is a ***hazard***?
2. What causes hazards? Provide an example.
3. What are the three common hazard types found in the terminal?
4. For each hazard type give an example of ***weakness*** in your workplace.

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About Risks & Hazards Relationship

What is a Risk?

A risk is a probability of harm becoming actual.

The harm usually happens when an ***unsafe act*** is performed in the workplace where either or all ***unsafe conditions, unsafe situations*** and ***bad design*** are present.

A ***unsafe act*** is also a ***weakness*** and ***breakdown*** in the work method and procedures at the workplace.

So—a ***risk*** is usually expressed through probability of occurrence of the ***unsafe act*** and severity of potential consequences.

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What is an Unsafe Act?

Unsafe Acts are weaknesses and breakdowns in the workplace management systems.

Examples of Unsafe Acts:

- Failure to follow procedures
- Failure to use personal protective equipment
- Failure to train
- Taking shortcuts
- Failure to warn or signal of potential danger
- Failure to secure cap, close valves, balance load, restrict movement, etc.

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Hazard & Unsafe Act Risk Relationship

HAZARD-BAD DESIGN

Weakness

Drum filling at gantry platform on truck tray.

HAZARD-UNSAFE CONDITIONS

Weakness

Drum filling with truck gates up.

HAZARD-UNSAFE SITUATIONS

Weakness

Poor ventilation

UNSAFE ACTS

Weakness

Operator not connecting bond wire during drum filling.

Truck engine *on*

Risk: High – Frequently Happen
Harm: Fire and Fatality
Consequence: Ignition source from static electricity spark causes large damage to building and one fatality.

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Examples of Hazards & risks

Hazard Example Potential for Harm	Risks
Presence of an ignition source in the road gantry for a non-routine work. ***Potential:*** Fire breakout	The risk can range from very low to very high, depending upon the supervision of the non-routine work.
Broken bond wire at the road gantry. ***Potential:*** Fire breakout	The risk is very high because static electricity can occur and spark formed in ignition of fuel/air mixture commonly found in gantry.
Work to be carried out in a valve pit. ***Potential:*** Asphyxiation	The risk is very high because the probability of vapour in the pit is high and if entered without breathing apparatus, asphyxiation is likely.
Absence of guide rails on tank steps. ***Potential:*** Fall, injury	The risk is high because the use of steps is high for operational purposes, and a fall could result in serious injury or fatality.
Work at elevated height. ***Potential:*** Fall, injury	The risk is high because the probability of falling off is significant and a fall could result in serious injury or death.

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Quiz – About Risks & Hazards Relationship

1. What is a ***risk***?
2. What is an ***unsafe act***?
3. How would you express a ***risk***?
4. Give an example to illustrate the relationship: The ***weakness***, the ***hazard***, the ***unsafe act***, the ***risk consequences***

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About Risks & Hazards Identification

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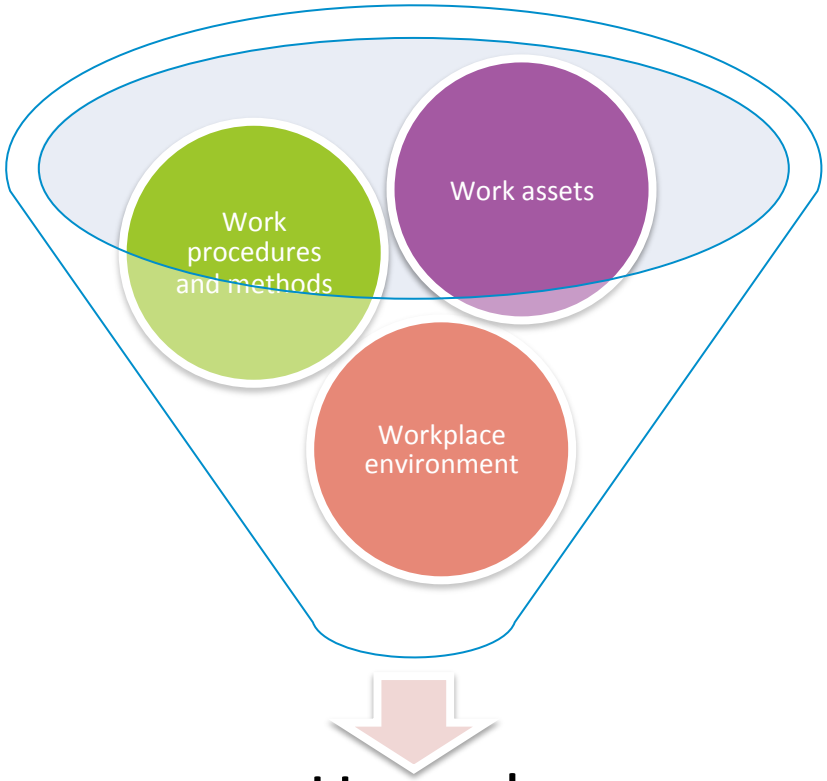
Hazards Identification

Hazard identification is a process of inspecting and reviewing the quality of:

- Work assets
- Work procedures and methods
- Workplace environment



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Hazards Identification

- The inspection and review must ***identify*** the weaknesses contributing to the hazards present.
- The weaknesses make up the list of hazards present in the system.
- The ***Safety Audit Program*** is a tool for conducting a formal inspection.

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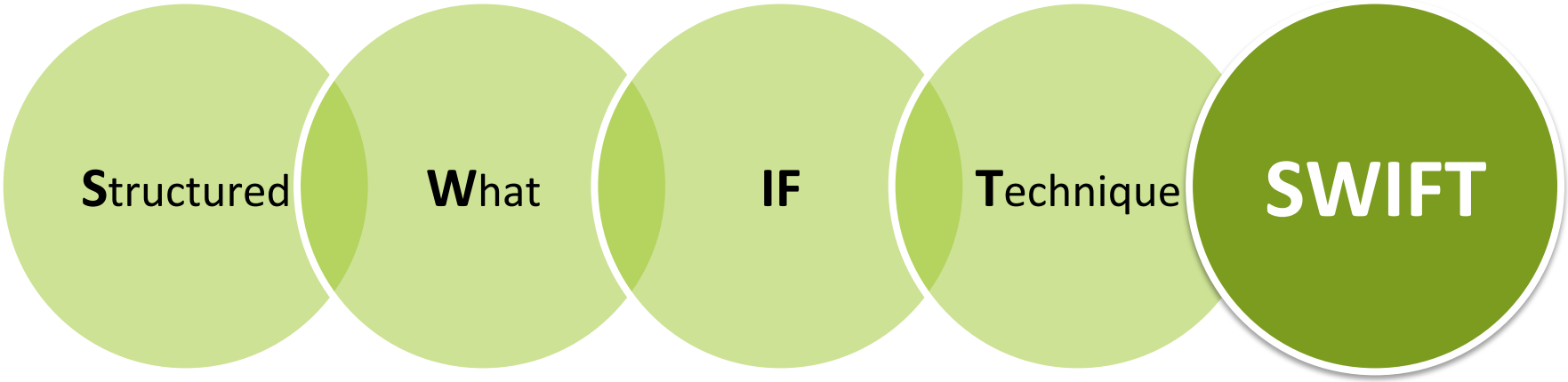
Risks and Unsafe Acts Identification

A tool commonly used in the Petrochemical Industry for the identification of ***risks*** is called:

The **SWIFT** Technique:



- **SWIFT** is relatively precise, practical and quick to apply.
- **SWIFT** is systematic and team-based.

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How to Apply SWIFT

1. Select Team

- 3-4 people from different levels in the workforce (not necessarily from the selected activity to be inspected, e.g. drum filling platform operation).

2. Select Team Leader

- Someone who can frame a precise scope of work and has a **CAN DO** competency in the selected activity.

3. Gather past data

- The Team put together a pre-work database from past data:
  - Known risks & hazards associated with drum filling
  - Previous experience and incidents
  - Known controls and safeguards
  - Regulatory requirements.

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How to Apply SWIFT

4. Schedule inspection

- The Team Leader schedules the inspection of the drum filling platform armed with the known data already collected.

5. Discuss leading questions

- At the site (preferably during drum filling operation) the Team Leader addresses the team with the following leading questions for team discussion on site:
  - *What if* ...followed by a suggestion like... *the drum leaked halfway through the filling process. Would the Operator know what to do?*
  - *What would happen if* ...followed by... *the bond wire was found broken from the clamp before filling?*
  - *Could someone* ...followed by... *fall from the back of the truck while filling is in operation?*
  - *Has anyone* ...followed by... *been splashed with fuel in the past while filling drums?*

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How to Apply SWIFT

6. Reach consensus

- The Team Leader uses the leading questions repeatedly and tries and reach consensus within the team to report on potential scenarios:
  - Causes and weaknesses
  - Consequences
  - Impacts
  - Controls (Remedial actions).

7. Rank weaknesses

- The Team Leader can use a ***Standard Ranking Matrix*** to rank the weaknesses and risks and also arrive at a ***Remedial Action Plan***.

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How to Apply SWIFT

8. Recording

- The Team Leader records the weaknesses and Remedial Action Plan in Petrox.

9. Obtain authorization

- The Team Leader obtains the proper authorization for the treatment of serious (high) risks immediately.

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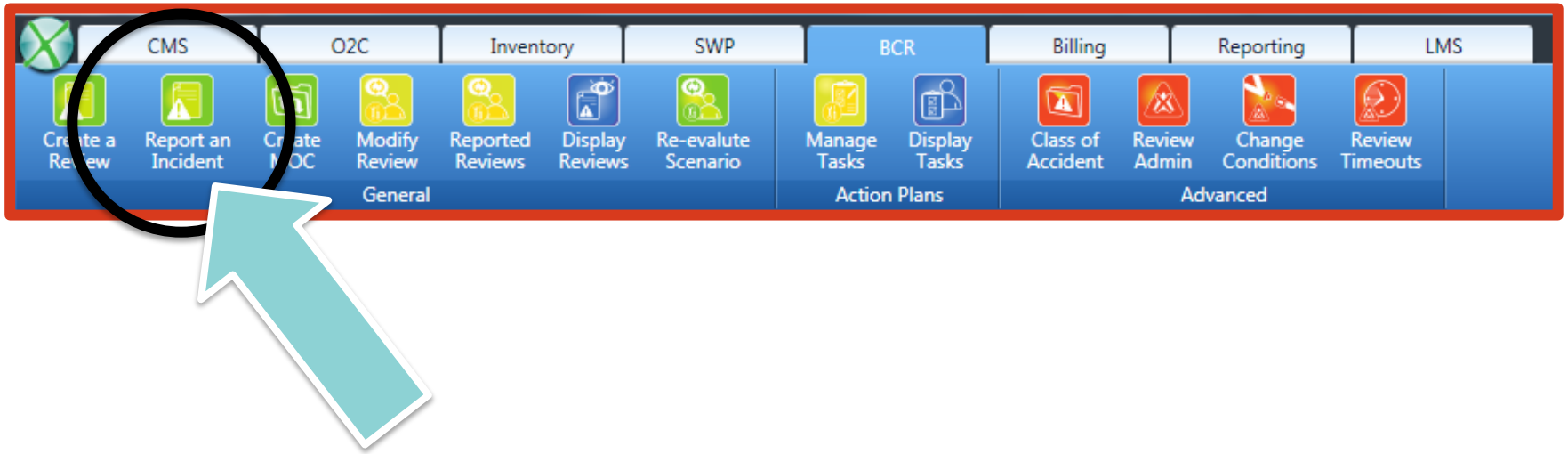
Recording in Petrox

BCR Ribbon (Report Incident 2nd Button)



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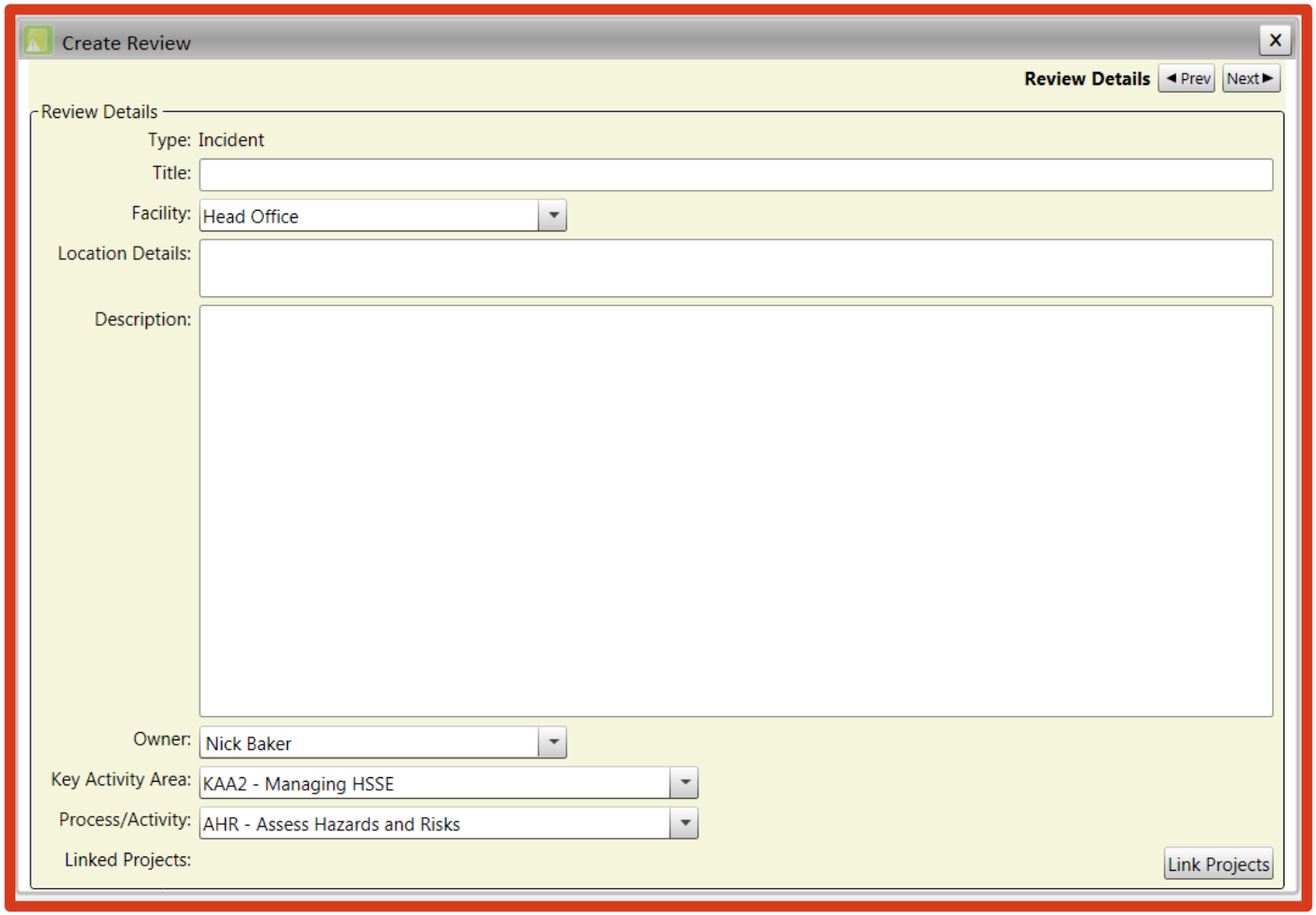
Recording in Petrox

Create Review Page



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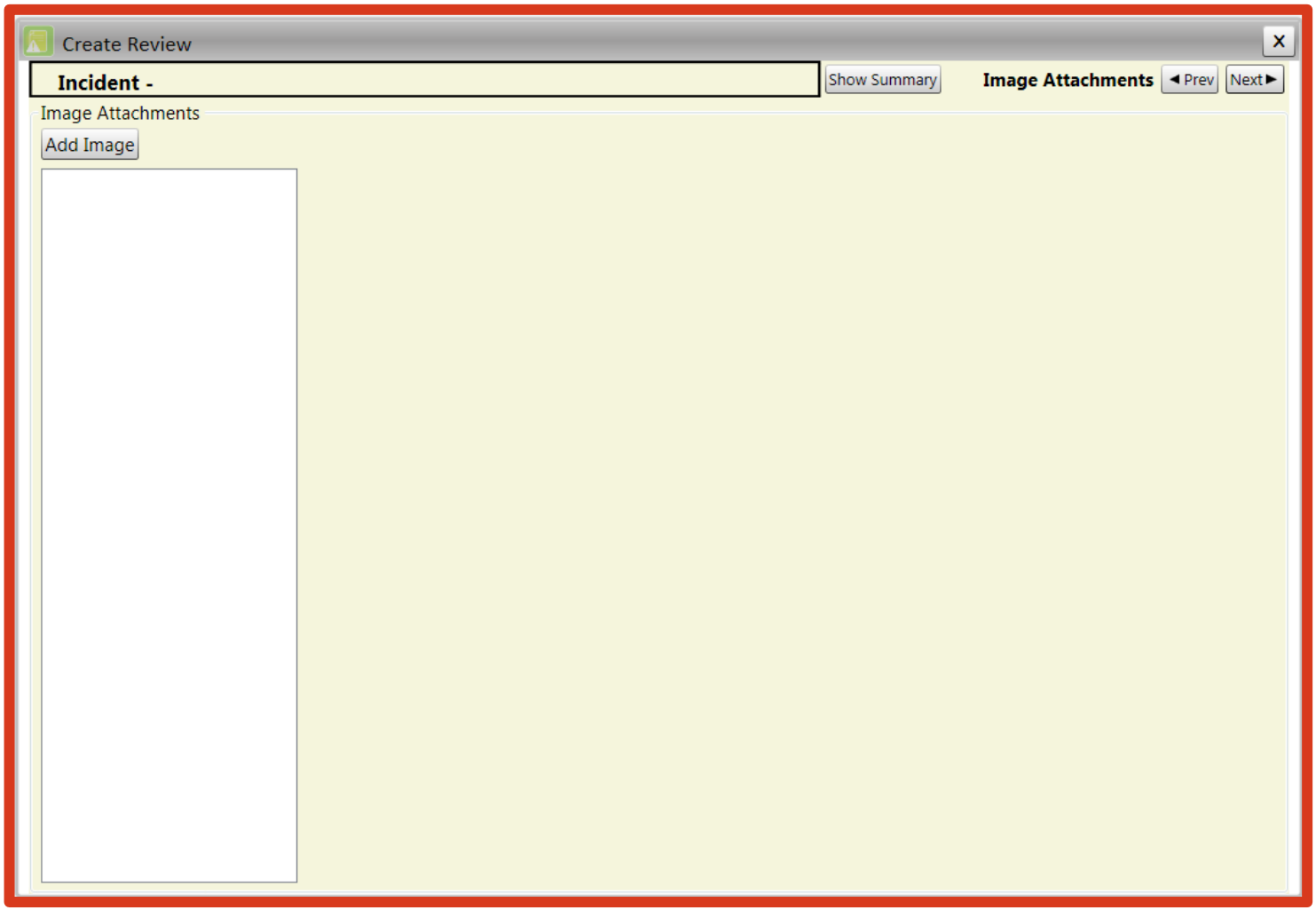
Recording in Petrox

Upload Image Page



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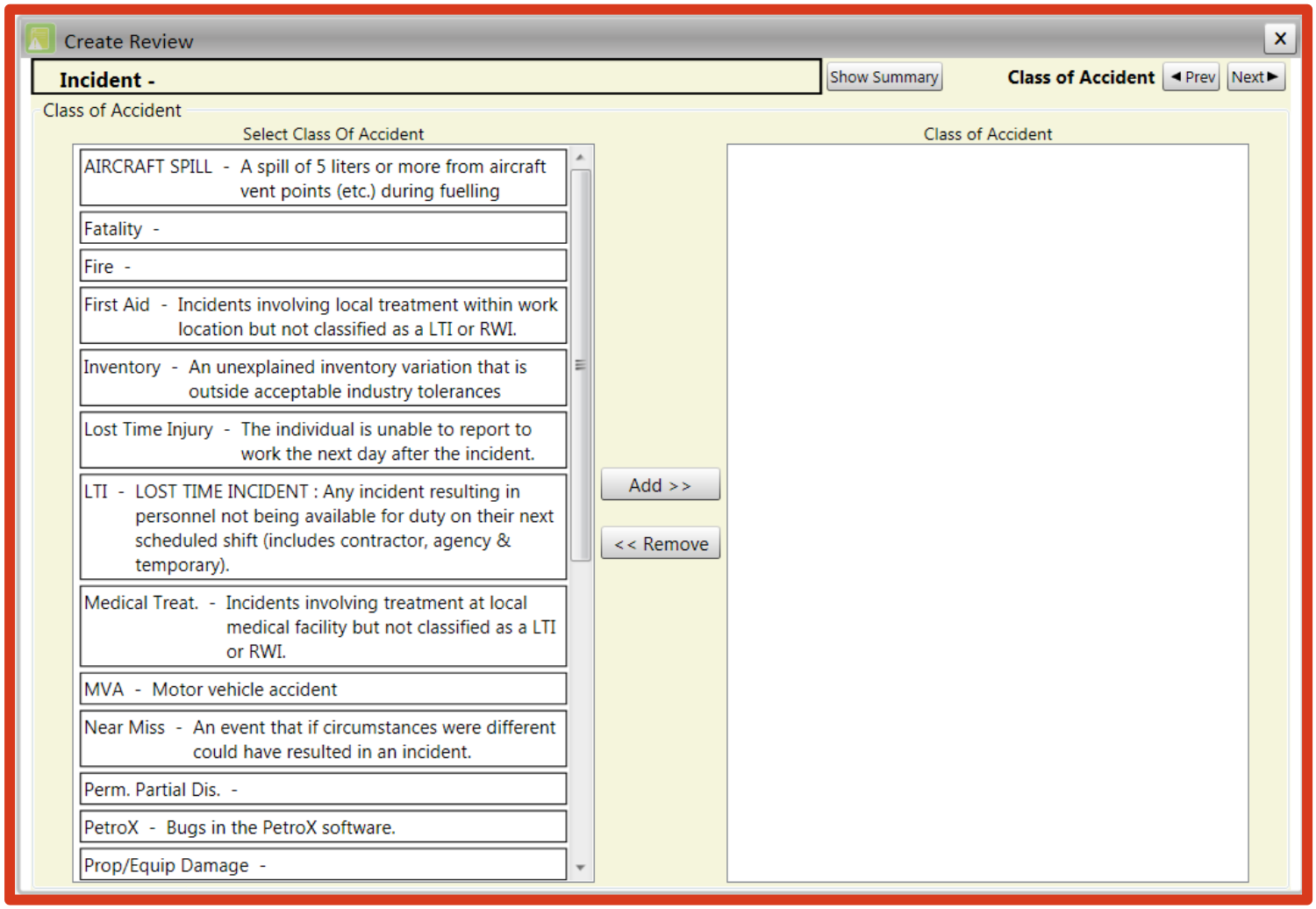
Recording in Petrox

Class of Incident



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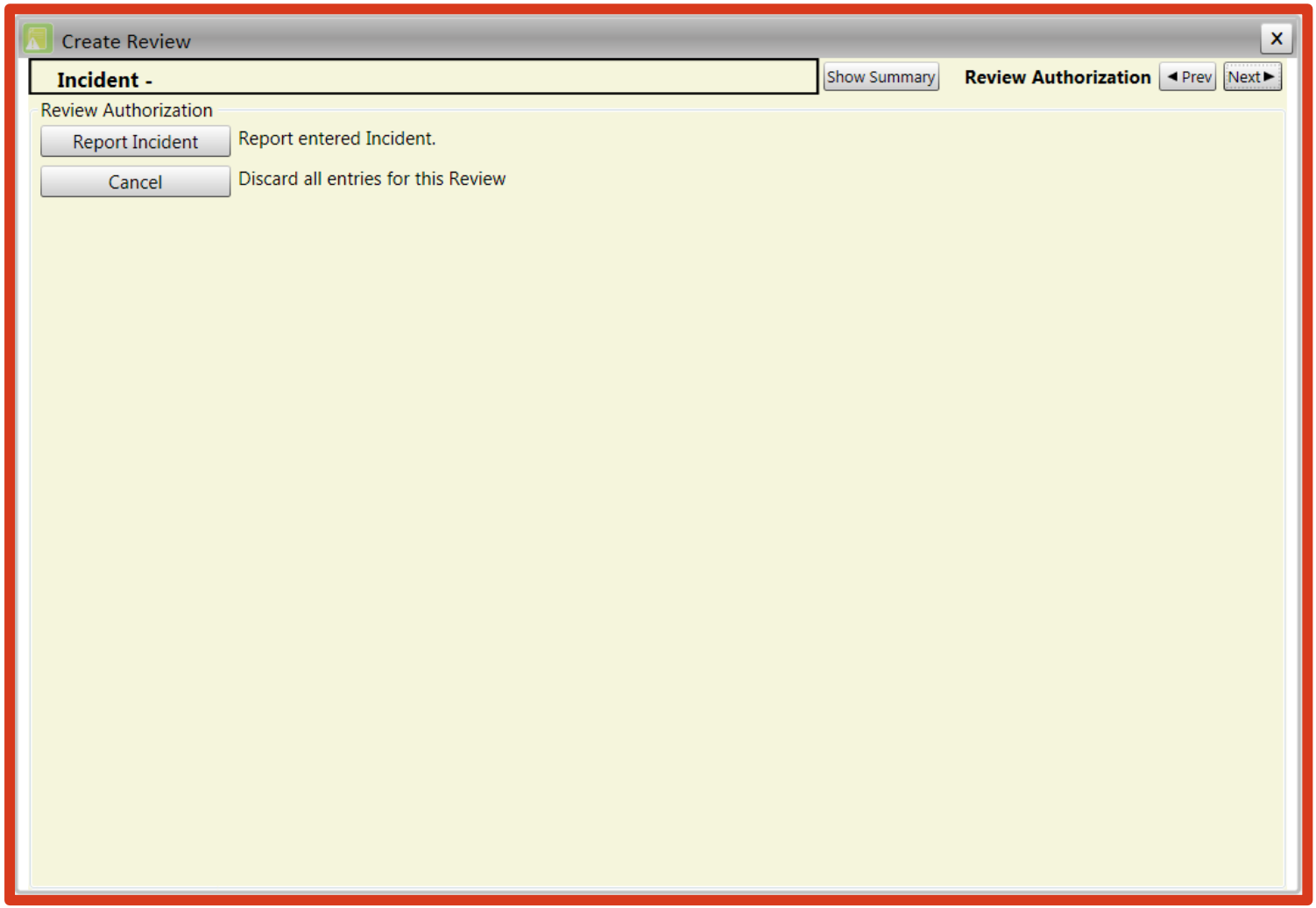
Recording in Petrox

Submit Incident



Quiz – About Hazards & Risks Identification

1. What tool would you use to ***identify hazards*** in a terminal?
2. In identifying hazards, what are the three main areas that are usually reviewed?
3. What tool would you use to ***identify risks***?
4. What is SWIFT? Give three leading questions in SWIFT that you would use during risk identification exercises.

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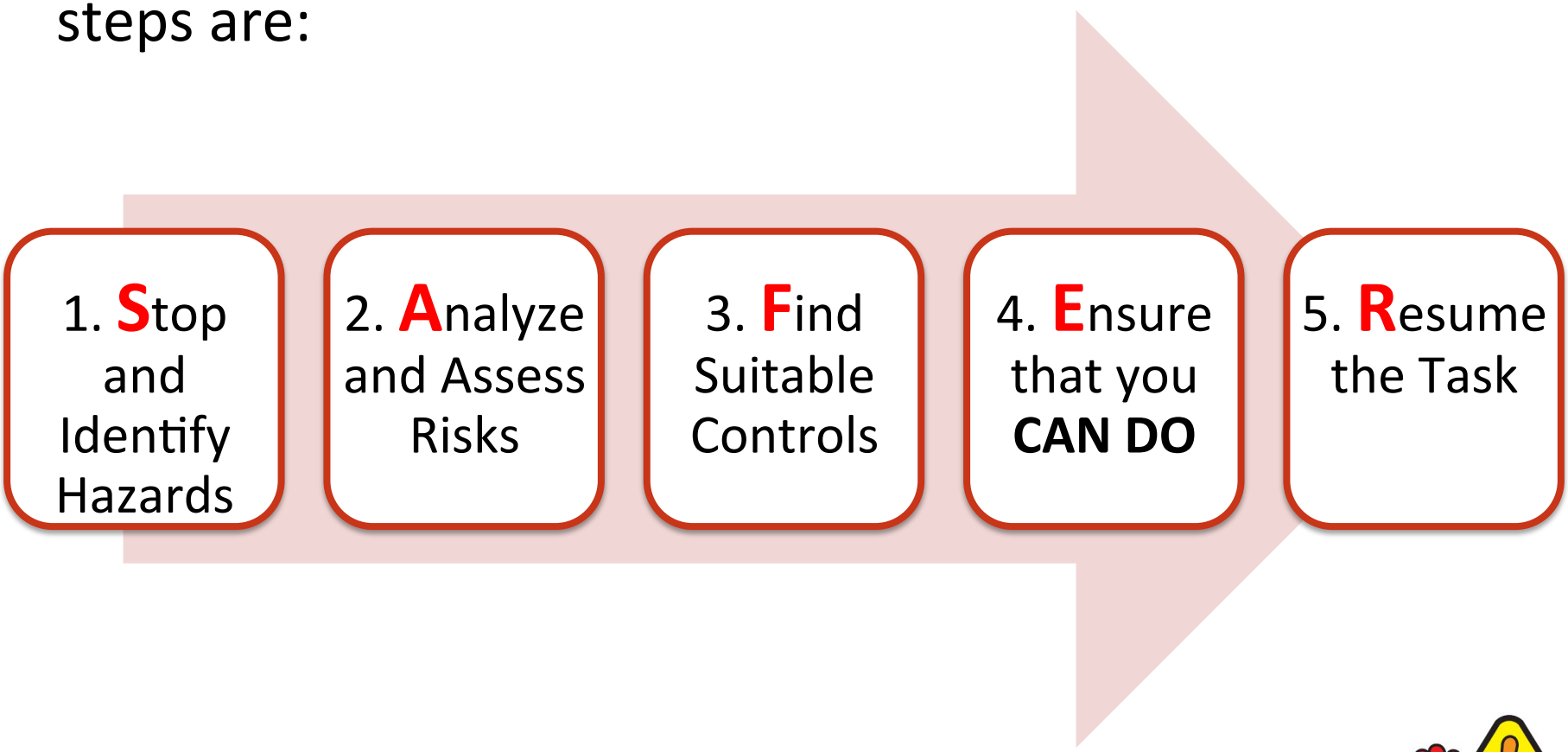
About SAFER

What is SAFER?

SAFER is a 5-step hazard & risk assessment process that you should apply whenever you do a task. The SAFER steps are:



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1. Stop and Identify Hazards

Before you start the task,
stop and have a look around
for hazards (weaknesses).

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2. Assess and Analyze Risks

Use SWIFT to assess and analyze the risks.

Ask:

- What are the weaknesses?
  1. Work environment
  2. Work equipment
  3. Work procedure
- What could go wrong if…?
- What would happen if…?
- Could someone or something… ?
- Has anyone…?

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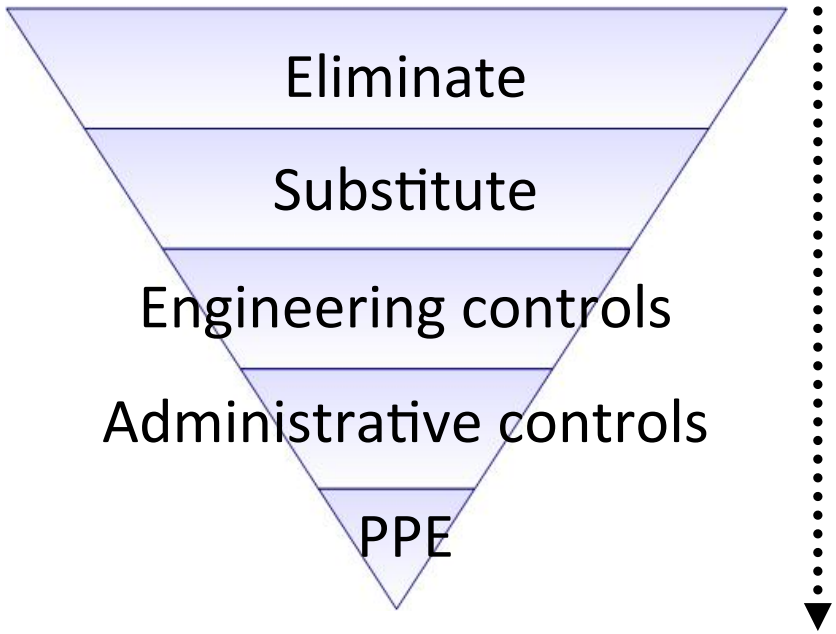
3. Find Suitable Controls

- Start at the top of the hierarchy of controls and move downwards.
- How can you:
  - Eliminate the hazard?
  - Substitute the hazard with something less hazardous?
  - Use engineering controls?
  - Use administrative controls?

and, if none of those work:

  - Use PPE?



Hierarchy of Controls

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4. Ensure that you **CAN DO**

Ensure that you are **CAN DO**:

- Do you have the skills to do the task?
- Do you have the authority to do the task?

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5. Resume the Task

If safe to do so, resume the task.

Quiz – About SAFER

1. What is SAFER?

2. What are the five SAFER steps:

S ..... **A** ..... **F** ..... **E** ..... **R** .....

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Apply SAFER and SWIFT

Apply SAFER and SWIFT

Unsafe situation: Drum filling

Apply SAFER and SWIFT to answer:

- What would happen if the tail gate remains closed during filling?
- Can the operator fall while boarding the truck?
- What would happen if the drum leaks while filling?
- What would happen if the bond wire was not connected?

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Apply SAFER and SWIFT

Unsafe situation: Work at height

Apply SAFER and SWIFT to answer:

- What if the concrete blocks collapse? Can it happen?
- What would happen if it was raining and the pipe was slippery?
- Has anyone fallen before?
- How often does he have to do this task?
- What could happen if he falls?

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Apply SAFER and SWIFT

Unsafe situation: Drum Storage

Apply SAFER and SWIFT to answer:

- What if the bottom drums' wedge became loose and moved?
- What could go wrong?
- What are the likely consequences?
- Can anyone trip while walking through this clutter?

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About the SAFER program

What is the SAFER program?

At Vital

- The SAFER program will run for a total of 3 months (planned max).
- There are 13 CPPs, each with a quiz.
- There will be a holistic assessment of SAFER knowledge at the end of the SAFER program. (Part 1: Desk Top exercise, Part 2: Practical audit).
- All new recruits will be enrolled in the SAFER program.
- The SAFER program will also run for retraining of current staff.

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What is the SAFER Program?

The SAFER Program consists of 13 CPPs covering:

- SFR-000 Understand SAFER-Hazards & Risks
- SFR-010 Understand Manual Handling Hazards & Risks
- SFR-020 Understand Ignition Hazards & Risks
- SFR-030 Understand Stored Energy Hazards & Risks
- SFR-040 Understand Work at Heights Hazards & Risks
- SFR-050 Understand Vapor Hazards & Risks
- SFR-060 Understand Atmospheric Hazards & Risks
- SFR-070 Understand Compressed Gas Hazards & Risks
- SFR-080 Understand Chemicals Hazards & Risks
- SFR-090 Understand Electrical Hazards & Risks
- SFR-100 Understand Confined Space Hazards & Risks
- SFR-110 Understand Drums Hazards & Risks
- SFR-999 Assessment Holistic Assessment Hazards & Risks

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SAFER AWARDS

Three sleeve colors	Personal Safety Award	Terminal Safety Award
• **Black** – Employees • **Orange** – Visitors • **Gold** – Safety Awards	• US$100 Gift Voucher (Gold Sleeve) • Award 1 employee per Quarter for best BCR report.	• US$50 Gift Voucher per employee • Award 1 Terminal per Quarter for best Safety / Operational Performance.

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Quiz – About SAFER Program

1. How long will the SAFER Program run?
2. How many CPPs are covered in the SAFER Program?
3. How will assessment of SAFER knowledge be done at the end of the program?
4. What is the SAFER AWARD system?

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Learning Pathway

When do I Enroll in the SAFER Program?

Your Line Supervisor will advise you of the Program schedule during the year and discuss your enrolment.

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Always be SAFER!

Any questions?

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