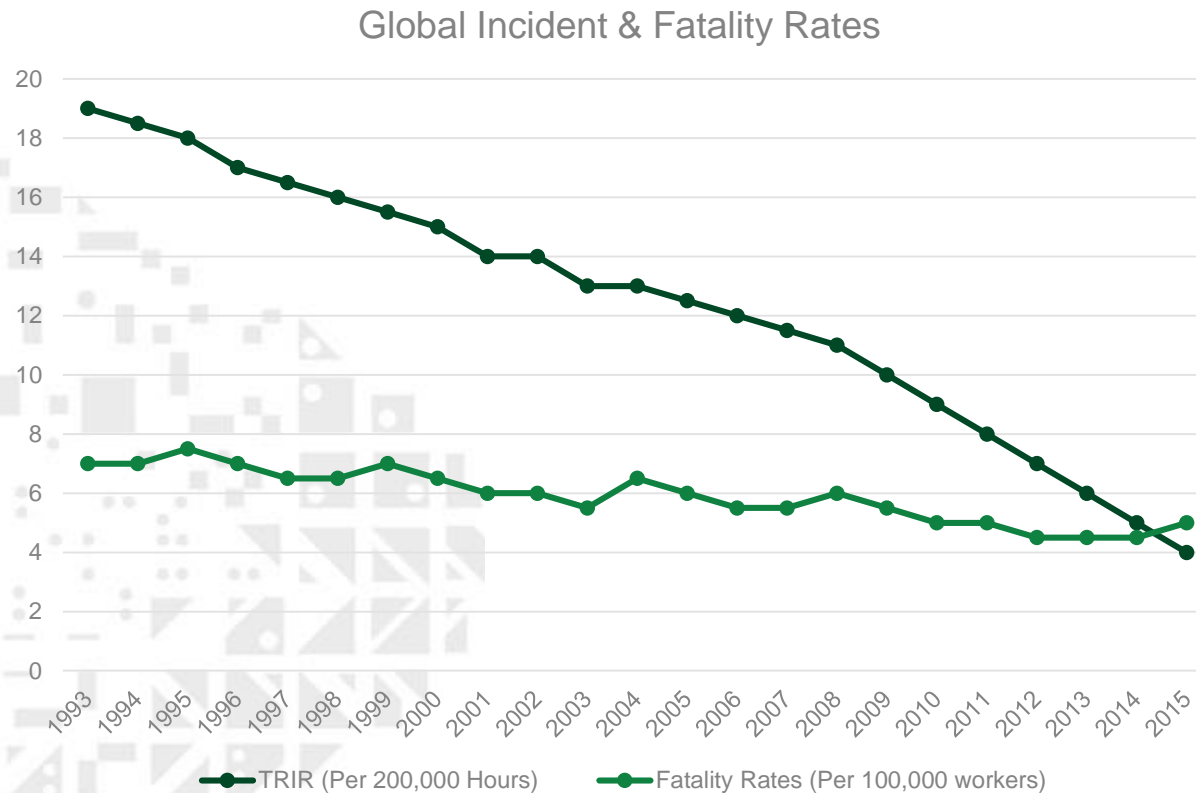




Leading Indicators for Monitoring Serious Injury & Fatality (SIF) Exposure Risk

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What does this tell you?



We Accept that Serious and fatal injuries have different causes and characteristics than less serious injuries...
...Precursors of SIFs can be identified.

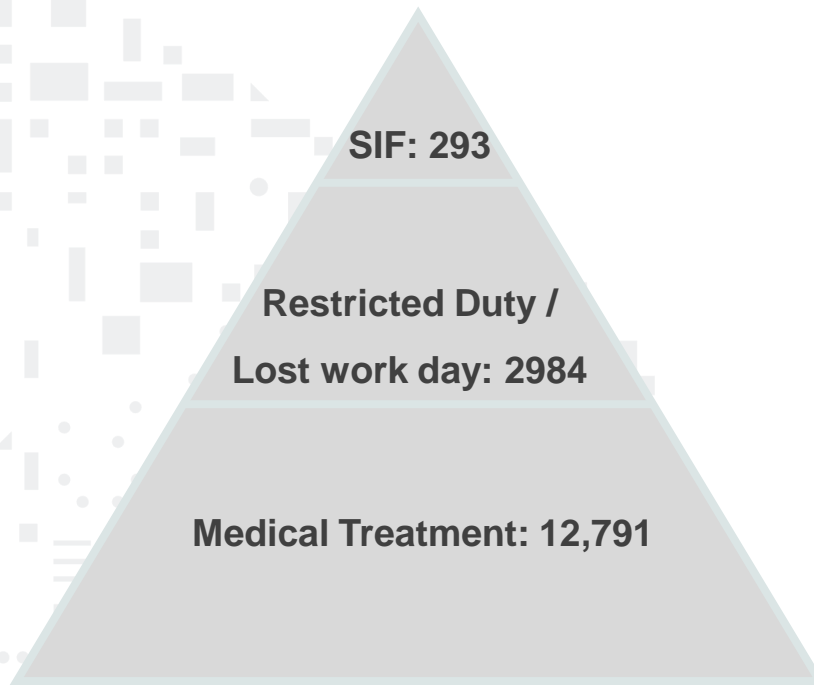
SIF Prevention Research Study Partners



The Old Paradigm: Is it accurate descriptively?

Typical Issues

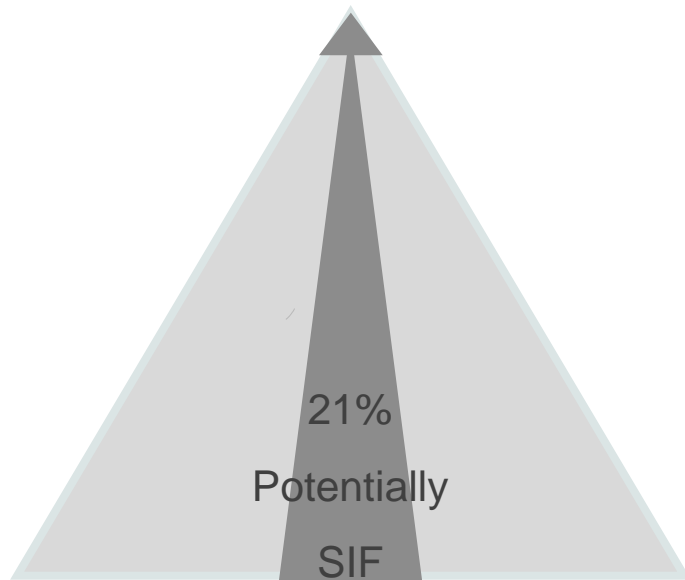
- Measurement systems create blind spots, not giving visibility to the events necessary to see, in order to prevent SIF's
- Compounded by organisational ability to conduct effective root cause analysis...
- ...& Leadership's Fixation on statistics.
- A high percentage (42%) of SIFs were related to safety absolutes



Yes!

Data from client organisations 2008 / 2009

The Old Paradigm: Is it predictive?



Fractured Foot

Case A – Employee suffered a fractured foot when they climbed out of a truck cab, missed the bottom rung of the ladder, and fell 30 cms to the ground. Their foot rolled off a small rock, resulting in a fracture.

Case B – Employee suffered a fractured foot when backed over by a forklift truck. The Operator backed up without looking, and the backup alarm was not functioning.

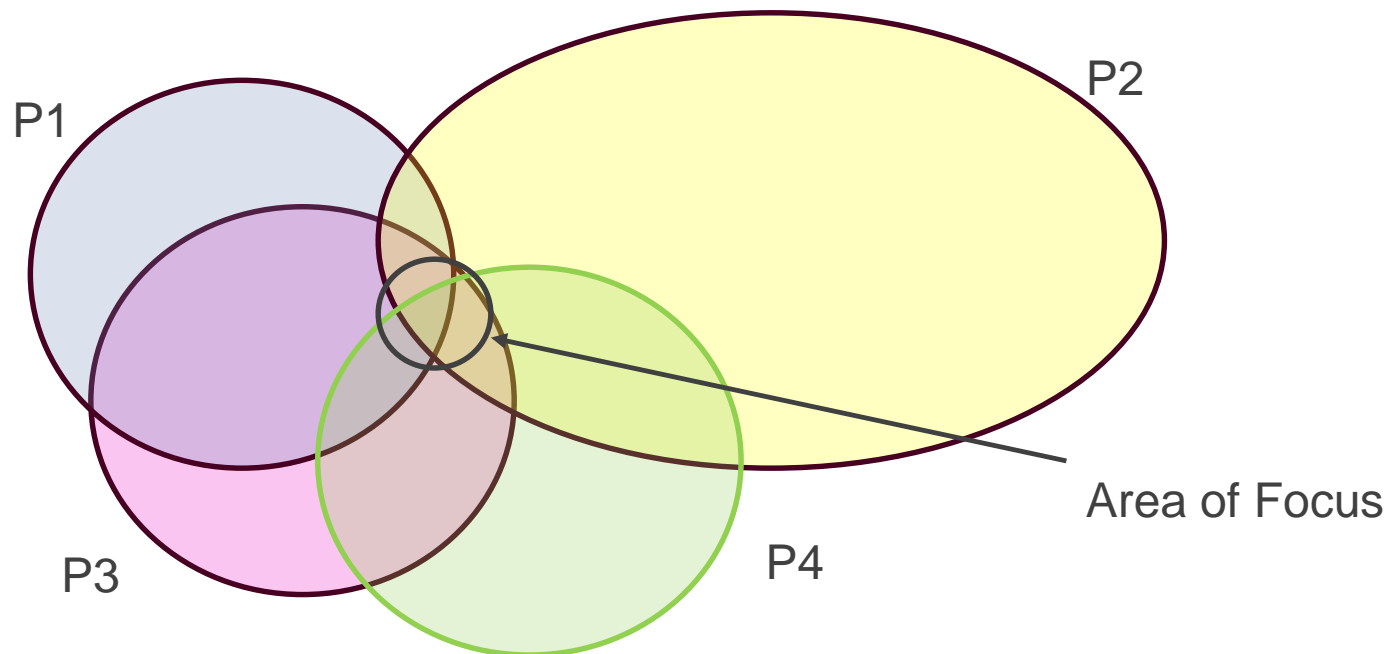
The Critical Importance of Precursors

A high-risk situation in which management controls are either absent, ineffective, or not complied with, and which will result in a serious or fatal injury if allowed to continue.

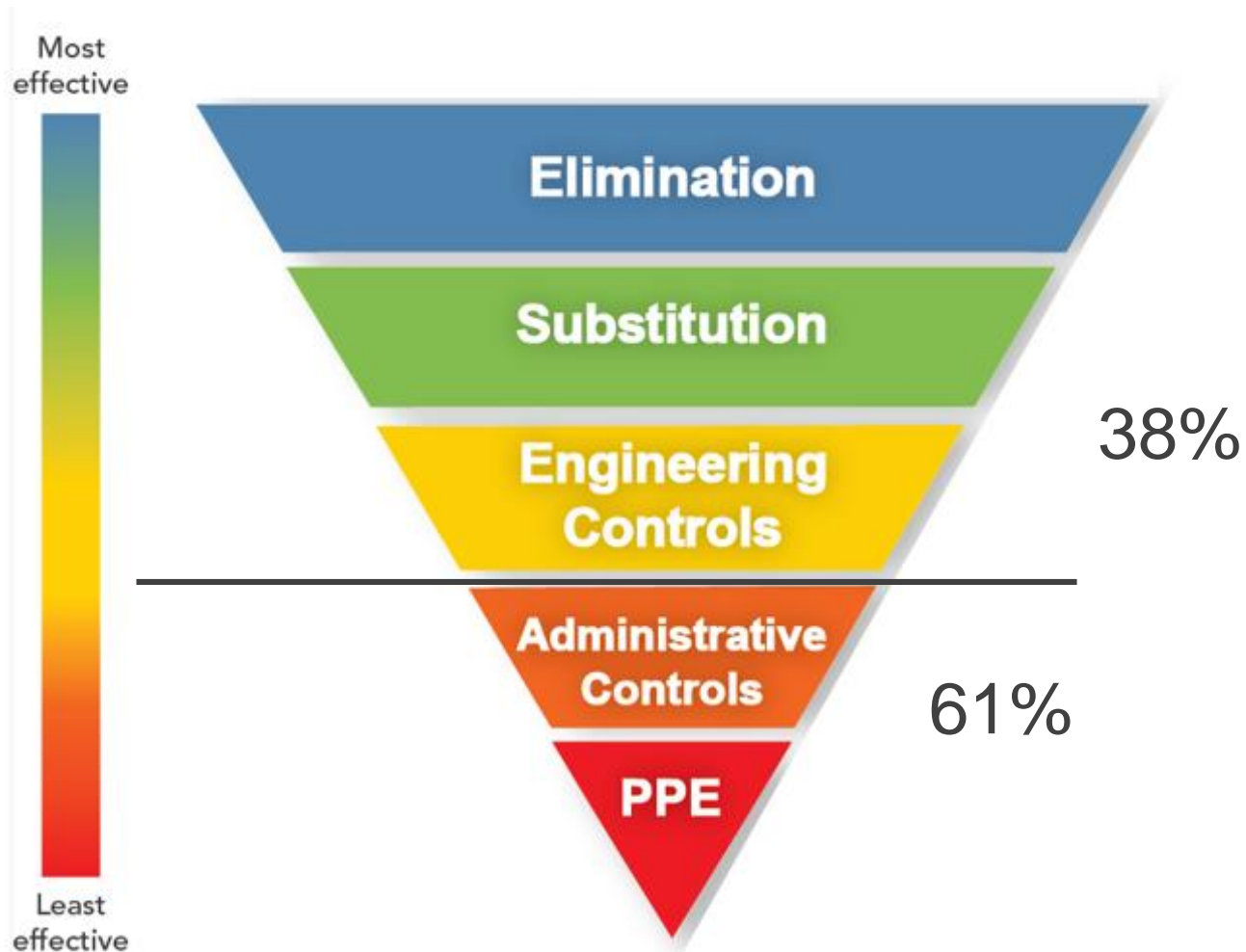
Air Heater activity
ATW activity
Cable/tension/winch operations
Chlorine gas handling
Contractor (Labour Hire)
Contractor Management (Main)
Contractor Management (Small)
Cramped workspace
Disconnecting hoses/coupling
End of contract work
Guarded equipment operations
Heavy load positioning in awkward location
Heavy Rigging/Lifting activity
Infrequent maintenance task
Mobile plant - hired (temporary)
Planned outage
Purge operations
Re-energising equipment
Scaffolding or Rigging activity
Temporary or Portable installation
Water proximity/deluge/ingress in and around electrical equipment
Work scope changes
Working around/under high-vibration equipment
Working at heights - dropped objects potential
Working interface with rotating equipment
Working near open edges
Working of Ladder
Working on slopes
Working with chemicals
Working with gas (H2)

Combinations of Precursors increasing SIF Potential

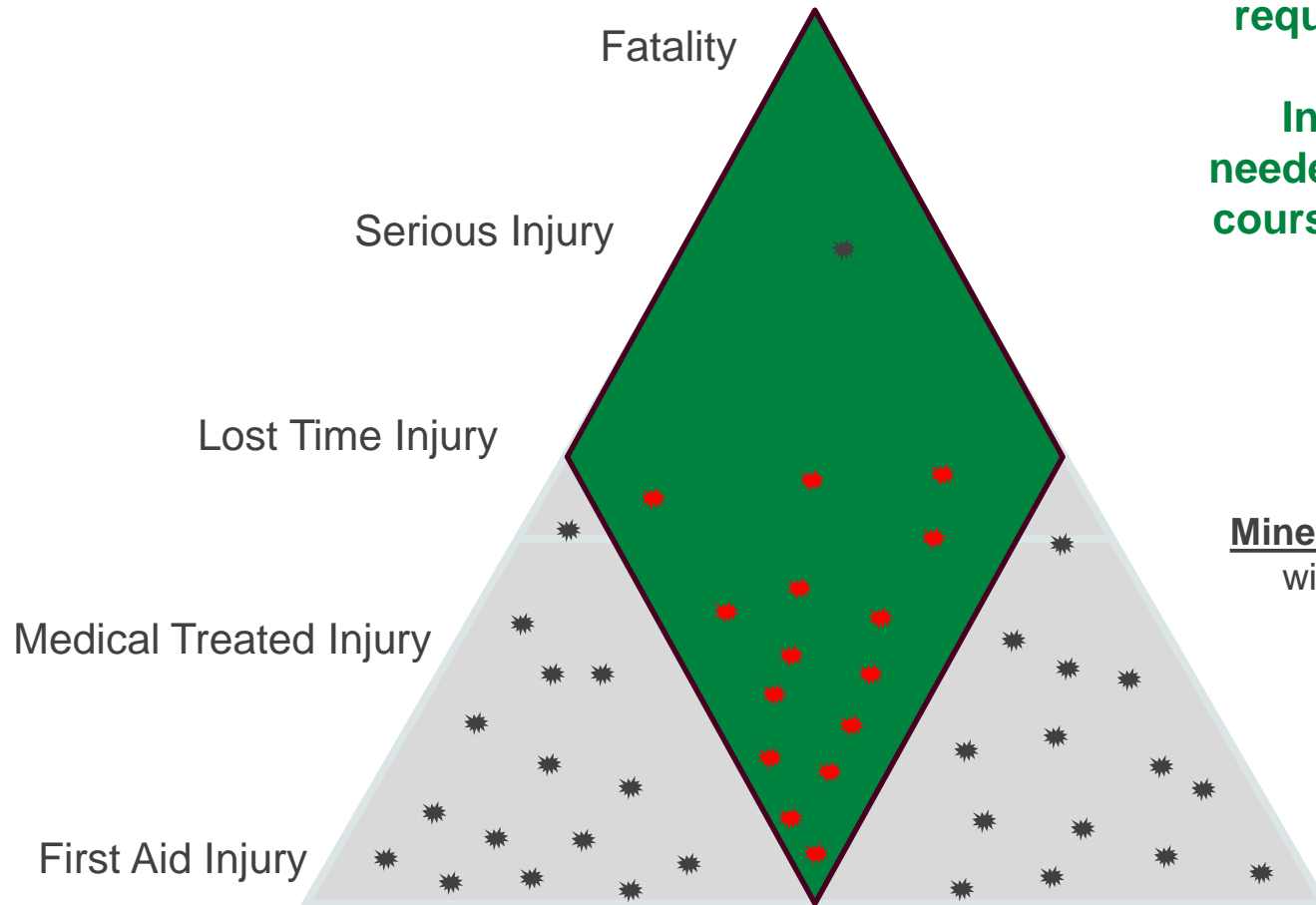
- Within 4 different large companies common precursors >85% SIF events:
 - P1 - Working at heights
 - P2 - During unplanned maintenance
 - P3 - No / insufficient pre-job planning
 - P4 - Employees have less than 3 years experience



Interesting?



A Better Way to View Pyramid



The new paradigm recognises that a different strategy is required to prevent SIFs.

Intervention is needed to change the course and direction.

Mine the Diamond: Identify events with Serious Injury or Fatality Potential

IF NOT FOR LUCK – Impact could have been Severe

Managing SIF Exposure – what you can do

- Define SIF for your organisation
- Define what are common precursors to SIF
- Determine what your SIF exposure is
- Construct a SIF decision tree
- Review enabling systems for alignment, conformance
- Calculate SIF% and SIF Exposure rates (Recordable and Total)
- Ensure Sustainability of process

SIF Frequency Rate

- Number of SIF events or potential SIF events in the period x 1 000 000 / Number of hours worked in the period

SIF Repeat Frequency Rate

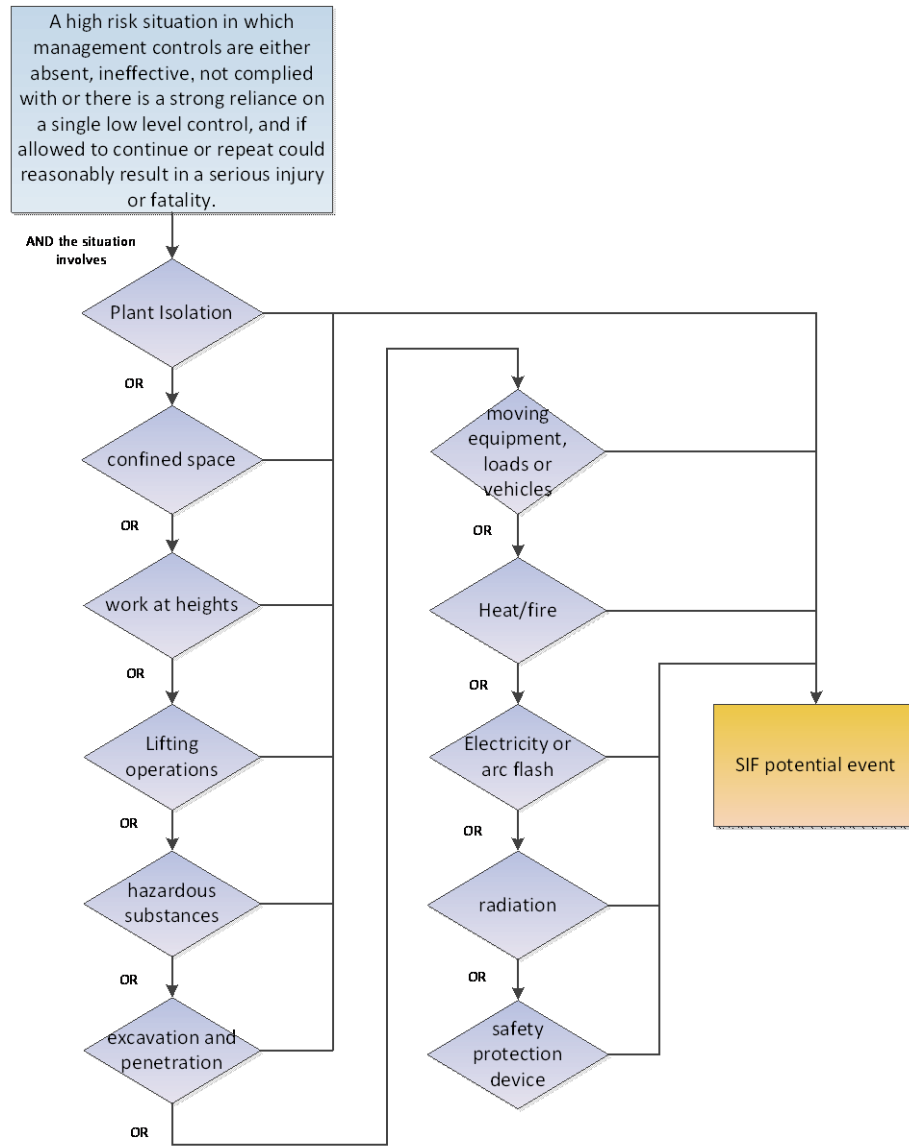
- Number of repeat SIF events or potential SIF events in the period / Number of SIF events or potential SIF events in the period x 100

SIF Definition (example)

A SIF event is any event that results in a:

- **Fatality.**
- **Life-threatening injury:** One that, if not immediately addressed, is likely to lead to the death of the affected individual, and will usually require the intervention of internal and/or external emergency response personnel to provide life-sustaining support. Examples include, but are not limited to:
 - Laceration or crushing injuries that result in significant blood loss
 - An event that requires the application of cardiopulmonary resuscitation or an external defibrillator
 - Chest, head or abdominal trauma affecting vital organs
 - Serious burns
 - Poisoning caused by exposure to hazardous chemicals
- **Life-altering injury:** One that results in permanent or long-term impairment or loss of use of an internal organ, body function, or body part. Examples include, but are not limited to:
 - Significant head injuries
 - Spinal cord injuries
 - Paralysis
 - Amputations
 - Broken or fractured bones
 - Serious burns

SIF Exposure Decision Tree (example)



Reflections & Considerations:

What do we need to think about?

- What is our SIF potential percentage? What are we measuring and how are we measuring it?
- Do we know what our precursors are and the combinations that increase our potential? How good is our data integrity?
- How well do we recognise exposure to SIF? When do we have an opportunity to influence change?
- How do we respond to SIF potential and actual events?
- What are the barriers that are allowing our precursors to continue?
- Do we know when LSRs are in practice in the field? How do we check?
- What are my opportunities to engage the organisation in SIF potential understanding and exposure reduction?

Working side by side with clients in over 72 countries, we unearth truths about current behaviours, processes, and systems and empower new, safer ones that are sustainable over time.

**SAFETY
STRATEGY**

**CULTURE &
LEADERSHIP**

**ORGANISATIONAL
RELIABILITY**

**GOVERNANCE &
CAPABILITY**

**SAFETY RESOURCE
OPTIMISATION**

**MANAGEMENT
SYSTEMS**

**DATA ANALYTICS &
METRICS**

**PROCESS SAFETY
LAB TESTING**

**PROCESS SAFETY
ENGINEERING**

WHO IS DEKRA?

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