# OSH Management –Way forward

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# Smart safety

**Responsible safety leadership**

- ❑ Inspire, motivate, built team and shape people

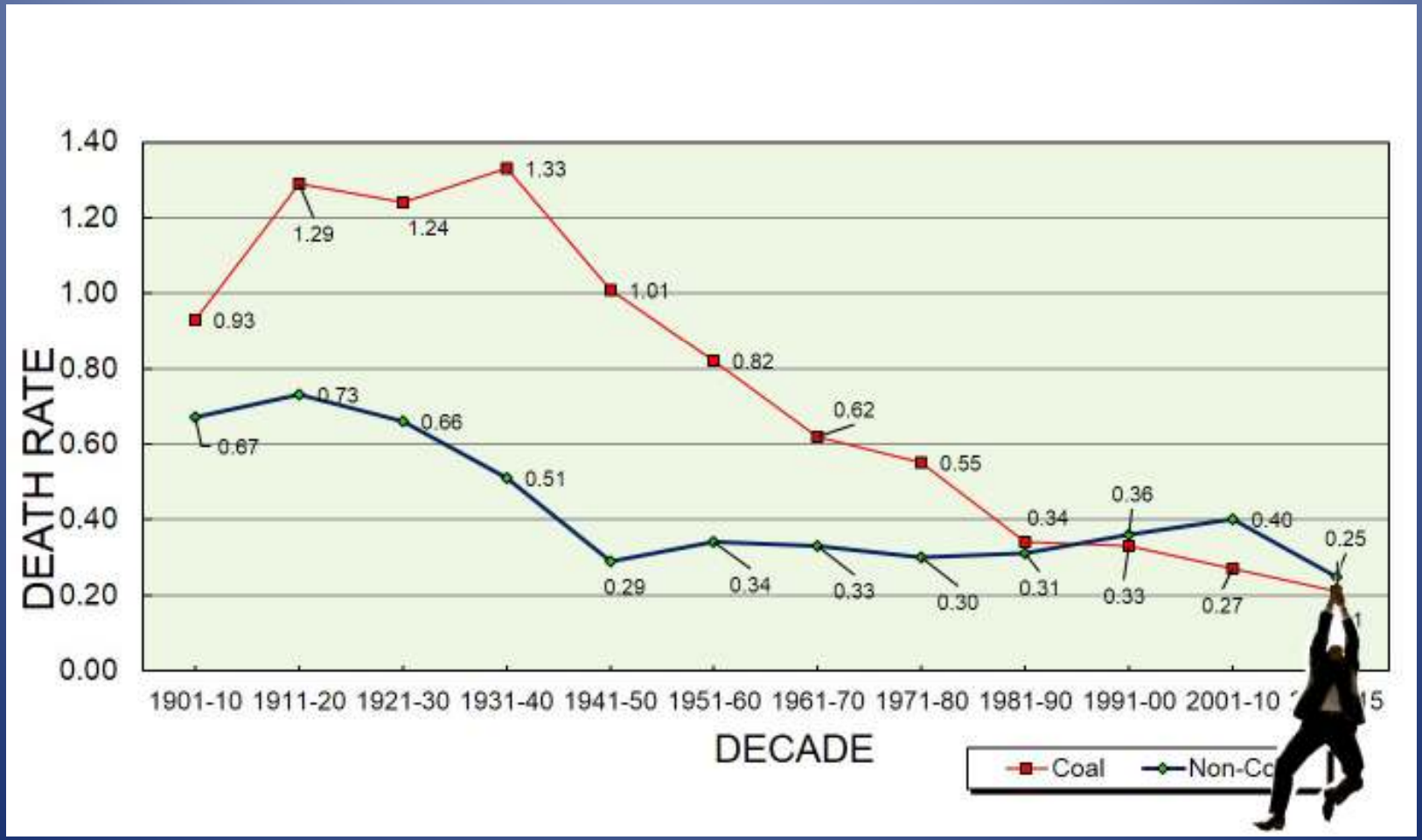
**Safety governance pathway**

- ❑ Transactional, compliant, focused, proactive, integrated and inspirational

→ also facilitate

Transparency & ease of business

# Fatality rate in coal and non-coal mines per 1000 persons employed



# Legislative intervention

## Prescriptive

- Based on the act
- Driven by legislators
- Adherence to rules & regulations
- Legislators frame the rules
- Proof is required that there
- was a non-conformance
- Exemptions granted

## Self-regulatory

# Based on the act

# Driven by the mines

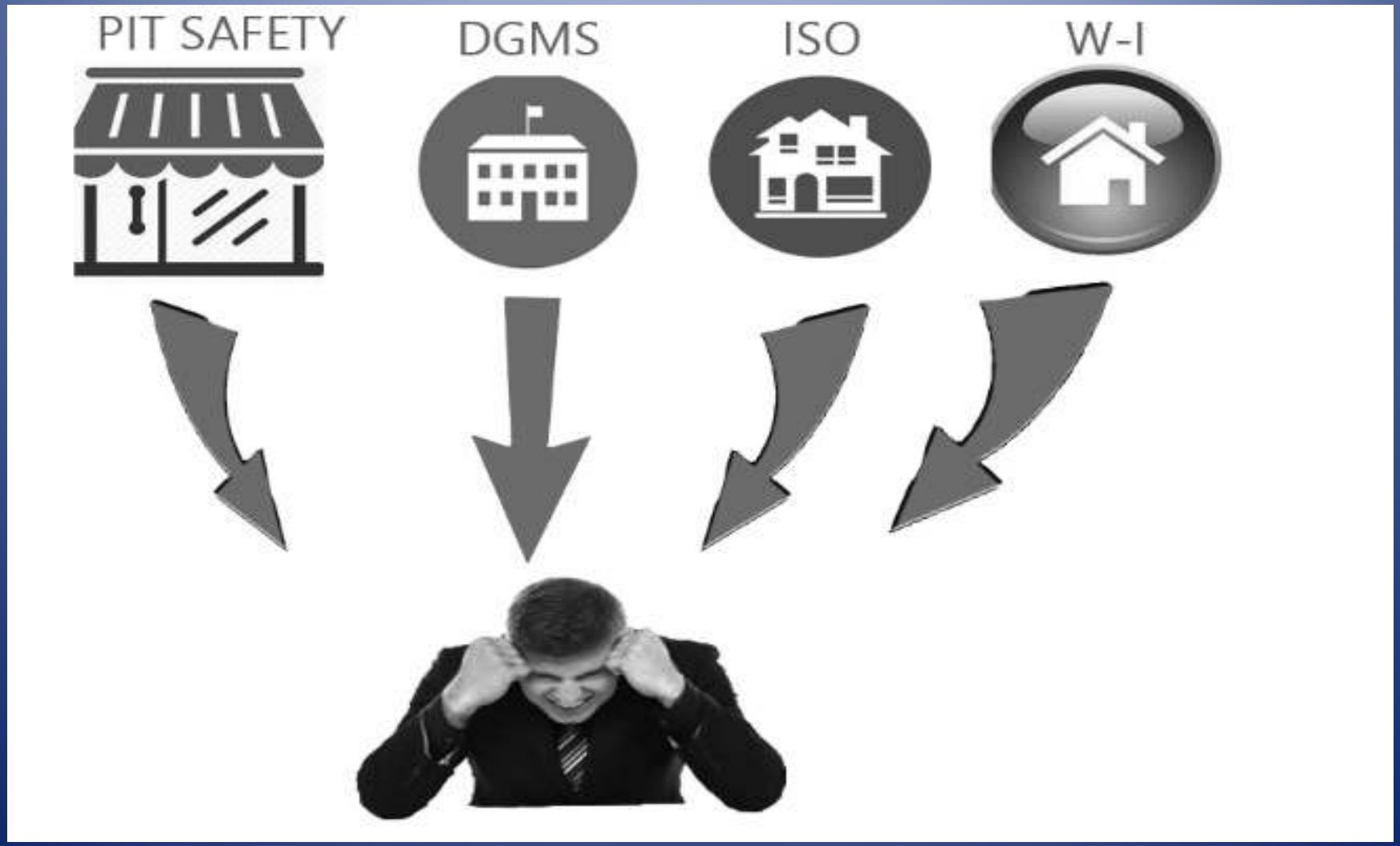
# Duty of care

# Mines come up with most of the rules

# Proof is required that where own routes taken that adequate diligence was shown

# Legislation enable self-regulation

# Prescriptive legislation

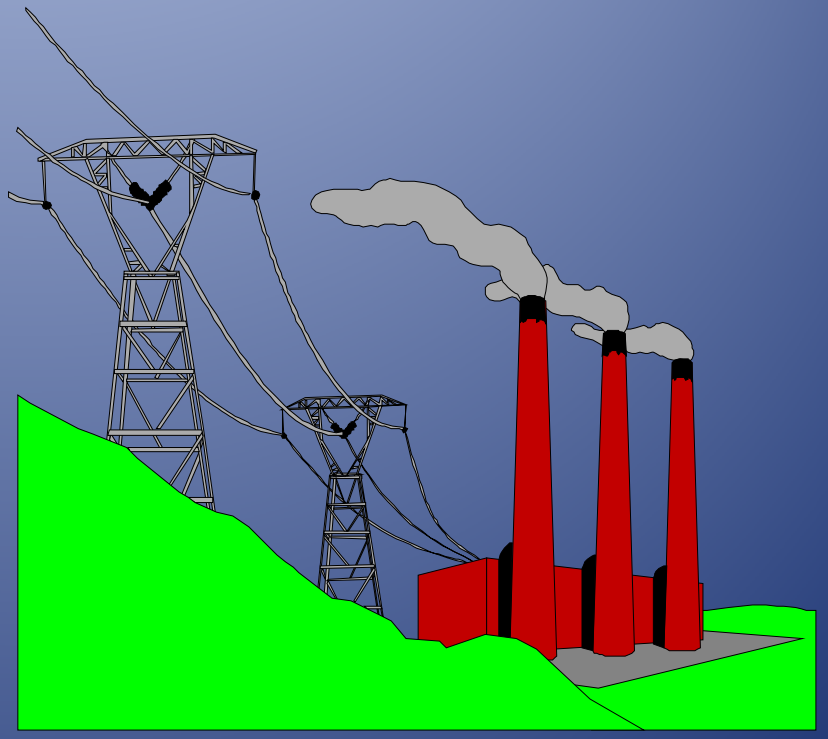


# Self regulatory approach

# Hazards must be identified and assessed to find out :

- How and to what extent people could be injured or harmed.

- How and to what extent property and the environment could be damaged or harmed.



# It is important that these hazards are highlighted (risk ranked) to:

- ⇨ Identify those which require immediate attention.
- ⇨ Develop a programme to deal with all hazards, in a defensible order.

# Risk consists of 2 dimensions:

Consequence


Frequency

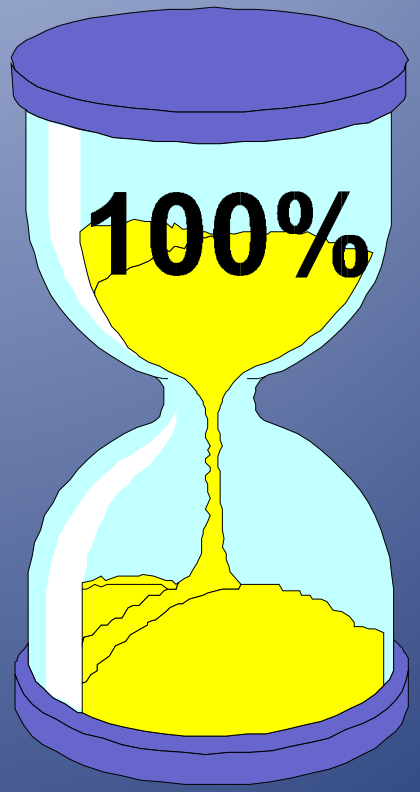
Or Consequence x frequency where frequency consists of probability and exposure.

# What is consequence in terms of this formula?

- Consequence is the outcome of an event or situation. In terms of health and safety, it is the degree of harm that could be caused to people exposed to the hazard, the potential severity of injuries or ill health and / or the number of people who could be potentially affected.

# How do we rate consequence?

- ⇨ Catastrophe = 100
- ⇨ Disaster = 40
- ⇨ Very Serious = 15
- ⇨ Serious = 5
- ⇨ Minor = 2
- ⇨ Insignificant = 1



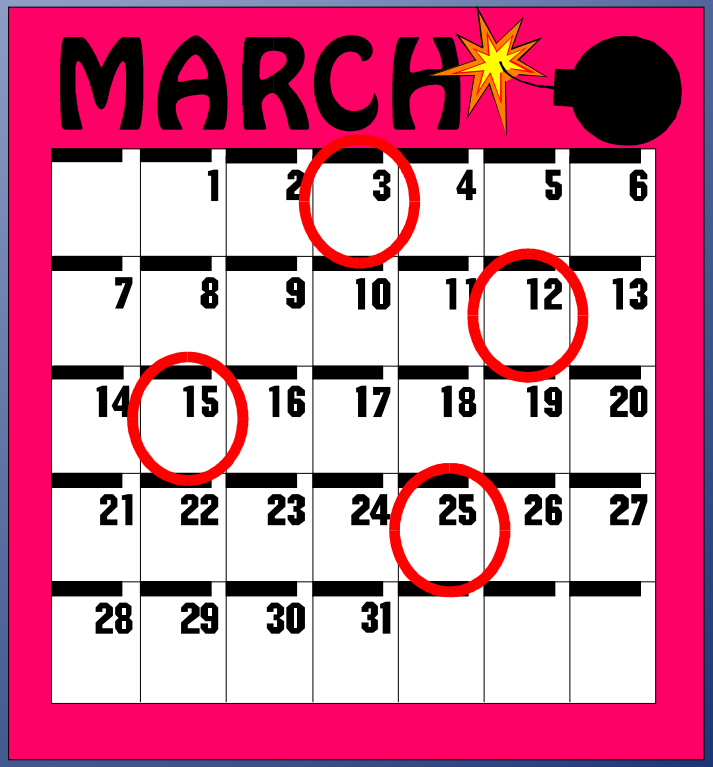
# What is exposure?

Exposure consists of two factors:

- **How often people are exposed to the hazard**
- **How long are they exposed to the hazard.**

# How do we rate exposure?

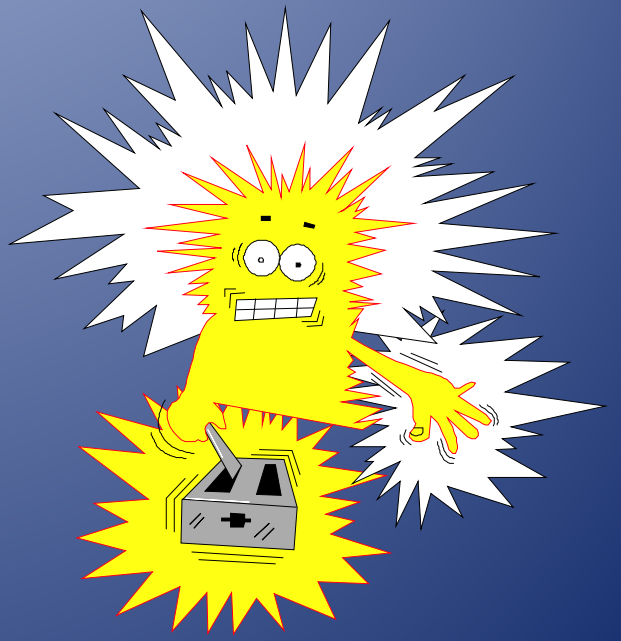
- ⇨ Continuous = 10
- ⇨ Frequent (daily) = 5
- ⇨ Seldom (Weekly) = 3
- ⇨ Unusual ( Monthly) = 2.5
- ⇨ Occasional (Yearly) = 2
- ⇨ Once in 5 years = 1.5
- ⇨ Once in 10 years = 0.5
- ⇨ Once in 100 years = 0.02



# Probability

This is the chance that a person will be harmed when they are exposed. We use the following probability ratings:

- ⇨ May well be expected = 10.0
- ⇨ Quite possible = 7.0
- ⇨ Unusual but possible = 3.0
- ⇨ Only remotely possible = 2.0
- ⇨ Conceivable but unlikely = 1.0
- ⇨ Practically impossible = 0.5
- ⇨ Virtually impossible = 0.1



History is always a good guide

# Calculating Risk

⇨ Having achieved a risk value, that is to say:

⇨ Consequence x Exposure x Probability = (X)

Consequence x Exposure x Probability = (X)

It is important that this is converted to risk rating.

# Development of Safety Management Plan

***Recommended Format***

1. Objective
2. Purpose
3. Known potential dangers.
4. Controls
5. Step by step task descriptions
6. Audit

**Rule - Involve all knowledgeable concerned parties.**

# Identification of Hazard

- Are all hazards identified
- who was involved in risk assessment
- was a cross section of employees involved
- was there a good balance of skills in risk assessment process
- did risk assessment team undergo risk assessment training
- was a formal process used in the risk assessment

# Control procedures

- are there adequate controls in place to deal with the identified risks
- are the controls realistic
- are there controls for all the risks
- are responsible people identified in relation to the hazard

# Roles and Responsibilities

- For each control is there an identified person responsible
- are the responsibilities clearly defined
- are there any overlaps in responsibilities
- are there any gaps in the responsibilities
- are responsibilities in writing/through e-communication
- are responsible persons have the relevant competencies
- are any external providers identified
  - ❖manufactures
  - ❖trainers
  - ❖suppliers
  - ❖maintainers
  - ❖contractors

# Resources required

- where controls require resources are they clearly identified
- are there procedures for checking resource quantities
- are there procedures for checking resource quality

# Action response plans

- are there response plans for all critical events
- have the critical events been identified
- do the response plans deal effectively with the critical event
- have accountabilities been assigned to each trigger event

# Communications

- are procedures in place for communicating across all levels
- are procedures in place for communicating hazards
- are procedures in place for investigating significant events.
- are significant matters communicated to all levels across the organisation
- have supervisors procedures or protocols for disseminating knowledge about events

# Training

- **has the mine identified training needs to deal with the hazard**
- **are employees aware of the importance of adhering to the SMP**
- **are employees aware of the safety impacts of their personal performance**
- **have employees been given training on their roles and responsibilities**
- **are employees been made aware of the potential consequences of departure from the plans**

# Corrective actions

- are there procedures in place for identifying non compliance
- are non compliances recorded
- are non compliances investigated
- have preventive actions been implemented to deal with repeated non compliances
- are preventive and corrective actions documented

# Reviews

- how are reviews carried out
  - time
  - specific events
  - specific localities
    - new seam
    - different side of mine
    - updip workings -down dip workings
  - specific changes
    - change in gas regime
    - change in seam depth
- does review incorporate continual improvement
- does review include senior company personnel
- does review incorporate audit findings

# Audits

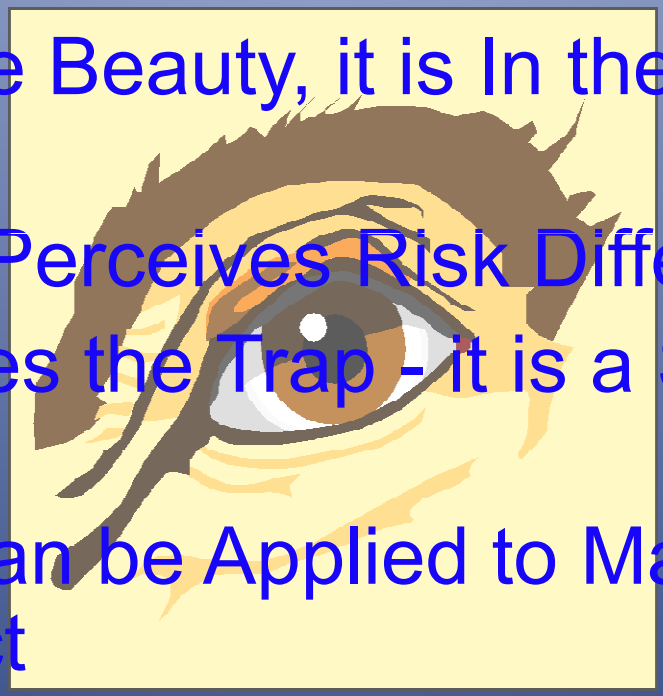
- are the audits carried out in accordance with established audit methods
- are external personnel involved
- are independent audits carried out
- are the results of audits conveyed to all employees
- are the results of audits passed upwards in the company ie to company boards etc

# Extent of Risk Reduction Required

- ALARA - As Low As Reasonably Achievable or Practical
- What Would the Reasonable Man Do?
- Cost / Benefit Analysis!

# We must be careful about risk assessment because

- Risk is Like Beauty, it is In the Eye of the Beholder
- Everyone Perceives Risk Differently
- Therein Lies the Trap - it is a Subjective Process
- Science Can be Applied to Make Process More Exact



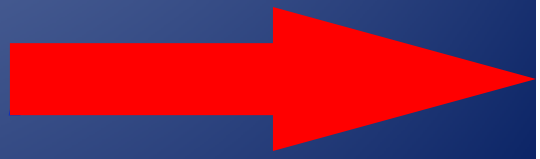
# What is Achievable!


***Culture at Our Mines will determine our goals***

*Fait Accompli*

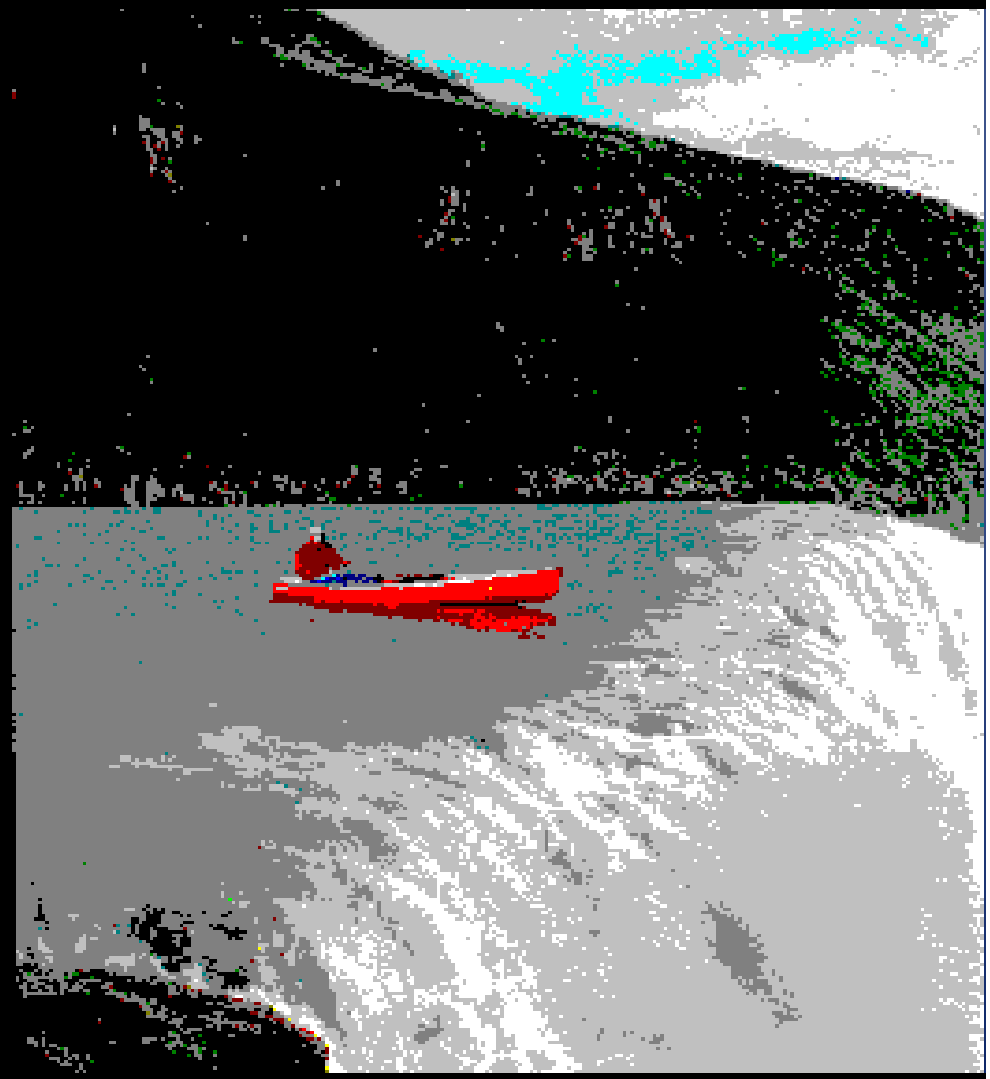
If We Don't Identify All Hazards, Assess Risks, Implement Controls & Monitor/Review Residual Risk Then -

***We Make a Gross Assertion.....***



***Everything is Fine!***

***Or So It Seems!***



# P l e a s e  C o n s i d e r !

**It cannot happen here!**

It is unlikely to happen here!

It happened Here Today!

It could easily happen here!

# SMP-Overseas Experience

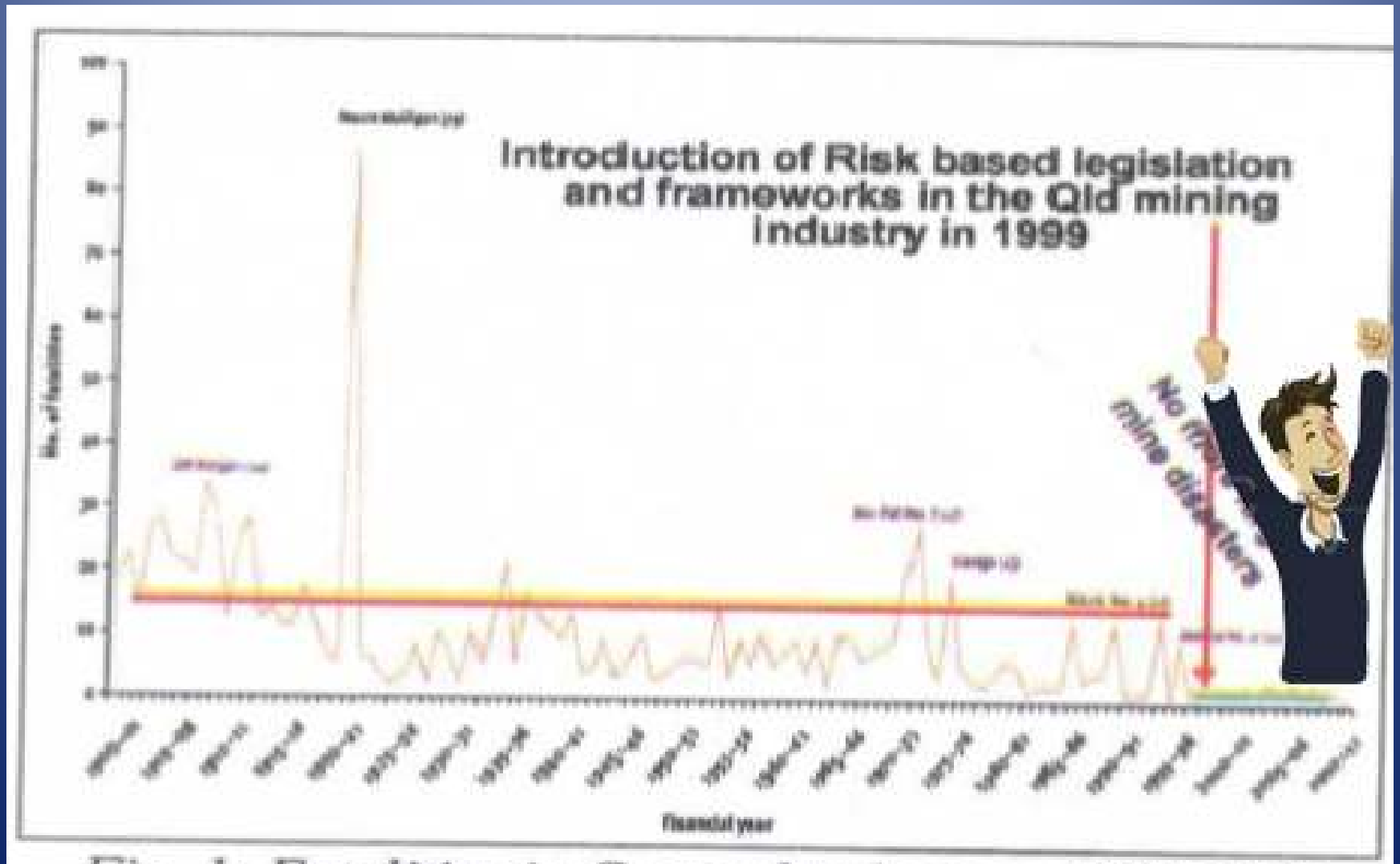



*Fig. 1: Fatalities in Queensland mines 1900-2012*

# QUESTIONS?

# Start Doing SMP-Best Of Luck