

The Rio Tinto logo is a red rectangle with the text "RioTinto" in white, sans-serif font. The background of the slide is a blurred industrial scene with large, curved metal components.

RioTinto

Risk normalisation

2018 April release

Agenda



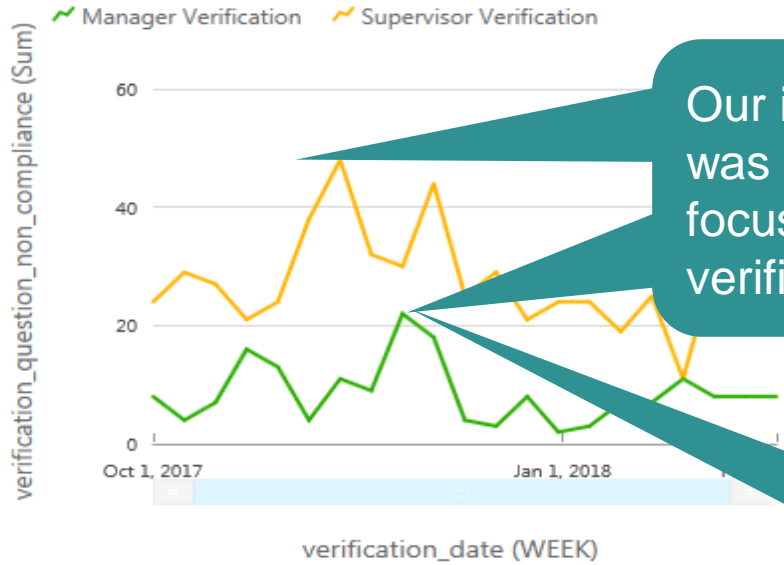
- Review of the falling objects theme
- ‘Why’ the risk normalisation theme
- concept of risk normalisation and the objectives of the theme
- Introduce the theme design, framework & materials available
- Timeframes and actions
- Questions

***Share
Learn
Do***

Falling objects theme – our response



Critical Control - Mechanical Integrity of Equipment at...

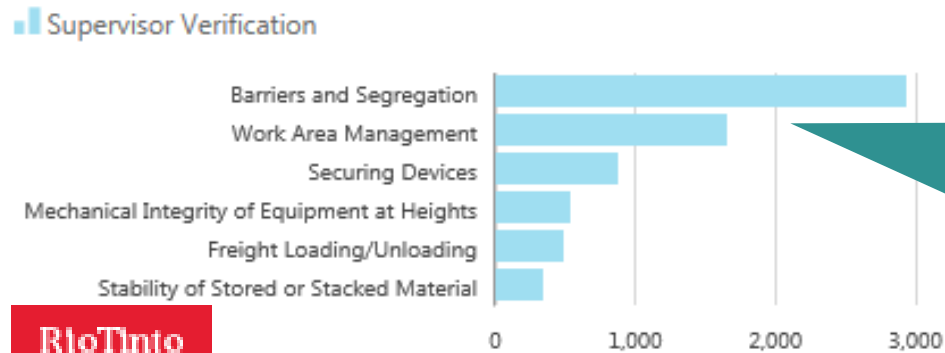


Our initial response was to increase the focus, more verifications

The peak was short lived.

Was the short peak related to the time of year the theme was released?

CCFV - Critical Control Non Compliance (Oct 17 - Feb 17)



Finding prevention and mitigation control opportunities

How can we lengthen the impact of the PFI stop?

Falling objects theme



Before PFI stop

- 1 in 6 PFIs related to a falling object
- Nearly half our falling object PFIs related to mechanical integrity
- Falling objects had the highest percentage of non-compliance of any risk type
- Falling object PFIs are occurring in every region in every product group

Unrestrained objects

Sling broke, lug failed, load fell outside berths
2nd crib (not secured) used 1st crane in un-designated area
Tools fell 21m almost contacting 2nd crib, inside ring hole

Loading / unloading

While unloading, cathode bars into the forklifts did a rear lift, hit from the forks and struck the forklift window
Water tank rolled off the truck when being unloaded
Elevator bucket landed within 1.5m of the operator, while unloading from a low loader

Mechanical items failing

Mechanical failure caused the electrical junction box to break and pieces to fall into the reactor below
A dig electrical box, the trolley and control wiring fell 6m and landed 2.5m from the operator
36 bolts from the curtain joint worked free resulting in the crane adapter assembly falling 6m onto the curtain

Structural items failing

Metal wheel of ring loader boom cant fell 70ft to the unit below
A 10kg 1.5m long steel plate fell 10m to the walkway below
A 7kg light fell 12 meters from the roof to a foot below after the securing assembly failed to hold the light

Bulk material falling

A large quantity of material dislodged when a team attempted to enter the bin to conduct an inspection
7000kg of material fell to the pit floor when a section of highway failed
A 5000 truck tray was released for maintenance purposes, 1 tonne of material (hang up) fell into the pit

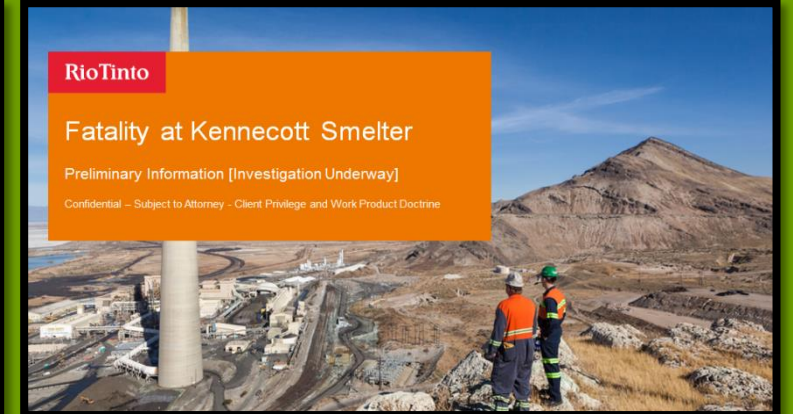
After PFI stop

- ❖ 1 in 5 PFIs related to a falling object
- ❖ Less than 1/3 of our falling object PFIs related to mechanical integrity (same number for structural integrity)
- ✓ Falling objects is the third highest percentage of non-compliance of any risk type (excluding underground risks)
- ❖ Falling object PFIs are occurring in most product groups

Why we decided on the risk normalisation theme



- Common thread from recent fatality, PFI and permanent disabling injury investigations
- Previous learning critical lessons prescribed the hazard, whereas this one allows sites / teams to determine the critical risk most relevant to them
- Aligned with human performance principles
- Builds a common language & concept across the Group



What is risk normalisation?



What is it?

When does it happen?

What is the result?

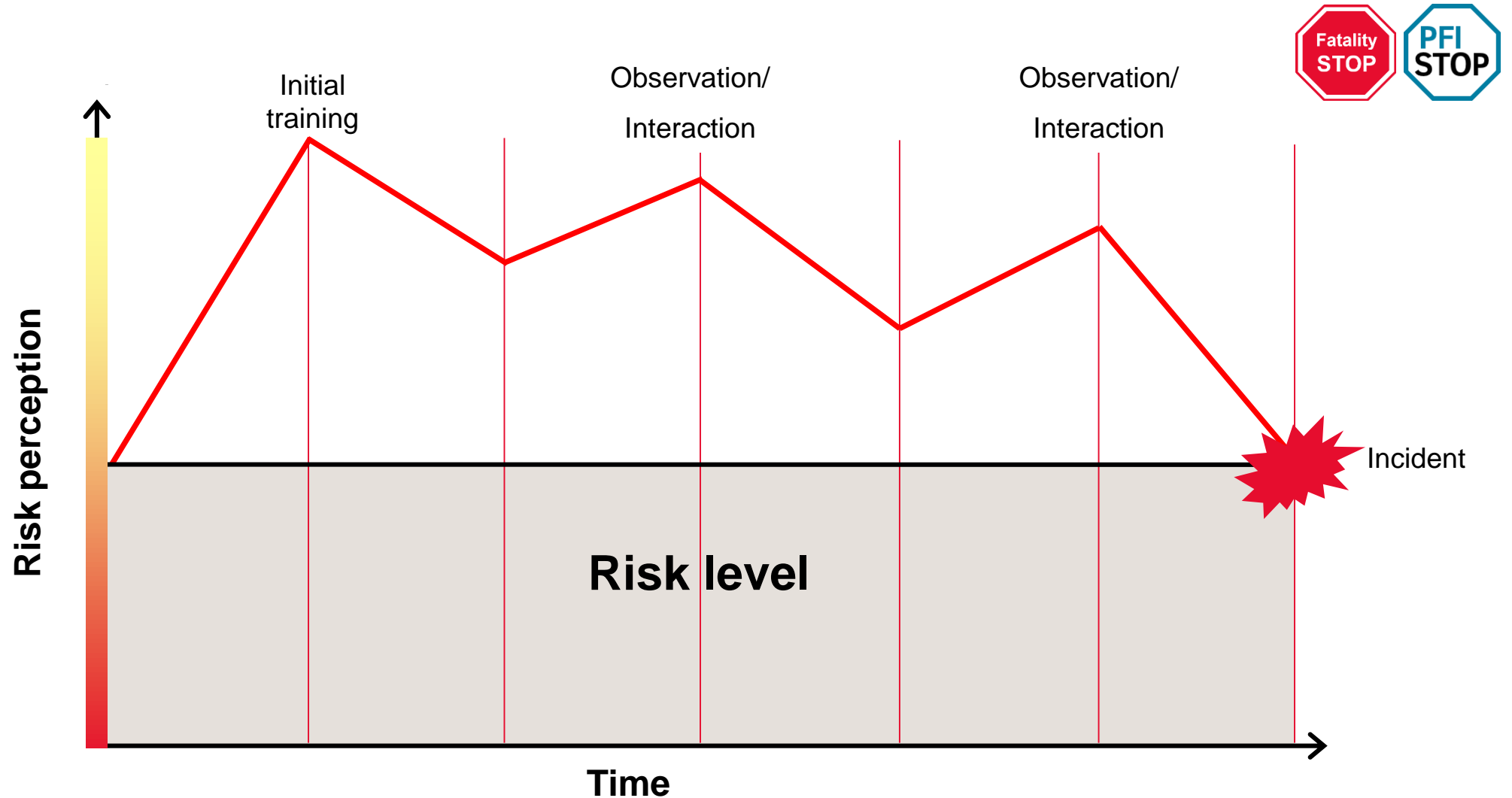
How can I influence the outcome?

Risk normalisation:

- is a **psychological process**;
- is a **natural human reaction** which happens to **everyone**;
- happens when we are very **familiar** with something;
- results in us **reducing** our **sense of unease** with a risk;
- may lead to a **drift** in the way we do things over time; and
- leaves **clues** for us when it is happening.

Relationship between time and risk normalisation

(the level of risk does not change but our perception of the risk reduces over time)



Risk normalisation Fatality / PFI stop - design



Introduction & relevance

- Leader makes it relevant to the team by using their own words to describe a local example

Theory (video)

- What is it
- Why does it happen
- What is the result
- Relatable examples
- How can I influence the outcome
- (video provided)

Incident example (video)

Choose 1 of 3

- Kennecott
- Bell Bay
- Sorel

Reflection

- Look through fresh eyes (if you brought a family member to work)
- Risk normalisation scenario's
- Identify clues

Action

- Site to cascade up actions
- Entered into system
- Encourage sharing of good practice via Yammer



Bell Bay – Serious burns from collision between forklift and bath pot



Date: 25th May 2017 Actual Consequence: Serious Injury: LTI / PDI

Brief Description

Bath Transfer work was being conducted in the potlines at Bell Bay. A process controller was driving a forklift carrying a launder, the launder struck a bath pot that was suspended on the hook of a general purpose crane. The crucible contained over 2 tonnes of molten bath material, around 400 kilograms of the material was spilled from the crucible, some of the bath material contacted the forklift driver. This resulted in extensive burns to the neck, shoulders, back, chest, arms, hands and legs.

Summary of findings

- There was a reliance on a social process - non-verbal communication.
- Molten material controls were not adopted as contact was not considered possible in this area.
- The design of the bath crucible meant the lid had to be off to allow bath to be discharged.



Rio Tinto Fer et Titane inc., Sorel-Tracy: explosions



Two incidents, technically unrelated:

- South CO Gas Room Explosion (30/03/17)
- An explosion in a furnace due to the presence of water (02/02/18)

Lessons for others:

- Maintain operational knowledge
- Ensure critical systems have reliable and effective warning processes
- Risk normalisation

Reflection questions



“ If a new starter joined our team tomorrow, what might they see that you have stopped seeing”?



1. What are our normalised risks?
What have we stopped seeing?
2. How can we get better at noticing the clues?

Risk normalisation materials

Element > Our safety > Learning critical lessons > Risk normalisation

➤ Fatality / PFI stop contents

- Introduction to risk normalisation (video)
- Three incident lesson videos (site / team to choose 1)
- Reflection questions
- Actions poster

➤ How to conduct a fatality / PFI stop

- Risk normalisation facilitator steps
- Facilitator guide
- GM / Manager guide
- Guidance note


➤ Additional resources

Element > Our safety > Learning critical lessons > Risk normalisation

Risk normalisation

Critical risk management
Learning critical lessons
Vehicles and Driving (V&D)
Fall from height
Falling objects
Risk normalisation
Healthful minds
Chief Executive Safety Awards
Safety strategy
Sharing great safety

How do we see the things we have stopped seeing?



Fatality STOP PFI STOP

Fatality/ PFI stop contents

- Introduction to normalisation of risk
- Select 1 video for your site:
 - Serious incident critical learnings - Bell Bay Aluminium
 - Fatality critical learnings - Kennecott (coming soon)
 - Sorel explosions lessons learned (coming soon)
- Reflection questions
- Actions poster (coming soon)

Risk normalisation is a psychological process

It is a natural human reaction to develop automatic routines when we are very familiar with a place, thing or way of doing something. These automatic routines help our brain become more efficient but they can also lower our perception of risk, over time.

It happens to everyone

Rio Tinto has had a number of very serious incidents where:

- We have become so familiar with a task that we accept and normalise the risk; or
- We have drifted from our agreed work practices over time.

Our fatalities are happening to good people, with good intentions, doing everyday jobs, in familiar work environments.


How to conduct a Fatality/ PFI stop

- Risk normalisation facilitator steps
- Fatality / PFI stop facilitator guide
- Fatality / PFI stop GM / manager guide
- Guidance note

Additional resources


- Blue line / black line drift
- Shift: Chronic unease
- Normalisation of deviance and group think
- Time and risk relationship

An introduction to risk normalisation (theory)




Risk normalization is a psychological process that happens to everyone. These automatic routines help our brain become more efficient but can lower our perception of risk.

Bell Bay serious incident – critical learnings




In May 2017, a team was performing routine work in the reduction line where aluminium metal is produced. On this occasion, one of our work colleagues came into direct contact with molten bath material.

Fatality/ critical learnings - Kennecott (coming soon)



In October 2017, a team member was working in the Kennecott Smelter when he was exposed to sulphur dioxide (SO₂). He sadly passed away two days later from his injuries.

Sorel explosions – lessons learned (coming soon)



Sorel Tracy experienced two explosions in March, 2017 and February, 2018. The incidents were technically unrelated but both investigations found risk normalisation to be a common factor.

Roles in this process



Risk normalisation, the challenge...



How do we see the things we have stopped seeing?

Effective delivery, the challenge...

Natural human reaction
Happens to everyone
We need open and honest reflection
Reinforce, this is not about blame



Roll out timeframes & actions



Risk normalisation theme

- Release April 2018
- Sites to hold facilitated discussions with teams by end June
- Top few actions per site to be in system by end July
- Please share best practice examples on Yammer safety share page
- Tracking and reporting
- Consider facilitator support
 - Is a process and delivery refresher required?
 - Who can help with this?

