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Step Change in Safety
Human Factors

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SAFETY MOMENT

People will put up with what they're given…

Disclaimer: this safety moment is designed to prevent similar incidents occurring. All guidance herein is provided in good faith and Step Change in Safety nor its member companies accept responsibility for any inaccuracies or omissions contained within this safety moment.

SAFETY MOMENT

What happened?

- A driller was operating a top drive drilling unit. The design of which required him to use all four limbs.
- There was a stand of drill pipe clamped in the slips, and the top drive was raised and held on the brake.
- The driller saw a roughneck step into a hazardous area of the rig floor and reached for the microphone to tell the roughneck to step back.

What could go wrong?

SAFETY MOMENT

What went wrong?

- As he reached for the microphone, he slightly released pressure on the brake
- The top drive descended, bending the drill pipe which fortunately did not spring out
- A 27kg pipe-guide fell 90 feet to the floor, narrowly avoiding the roughneck

SAFETY MOMENT

Why did things go wrong?

- To communicate, the driller had to lean towards the microphone, use his left knee to operate the talk-back system, use his right foot on the manual brake, whilst still trying to maintain control of the top-drive using both hands

- The brake system design was counter-intuitive and known to be difficult to operate
- Over time, more equipment was added and controls were placed wherever they could fit without considering how they would be operated

SAFETY MOMENT

Barriers which failed resulting in this incident

- **Equipment design**: inadequate initial design – unsafe/inefficient operations leading to creeping changes
- **Management of incremental change**: design, procedures, competence, unintended consequences. Were safety and human factors sufficiently considered during this change?
- **Recognising risk and raising concerns**: routine task although system was known to be difficult to operate. ‘Can do’ attitude - driller nor observers raised concerns

Everyone has the ability to manage at least one of these barriers

SAFETY MOMENT

What can we learn from this?

- Any change can have consequences. Consider if changes in your workplace have impacted safe working
- Speak up if equipment or processes are difficult to use. Identify workarounds and don't accept them
- Routine tasks can still be hazardous and people become normalised to risks. Challenge yourself and others

What will you discuss in your teams to address these issues?

What are Human and Organisational Factors

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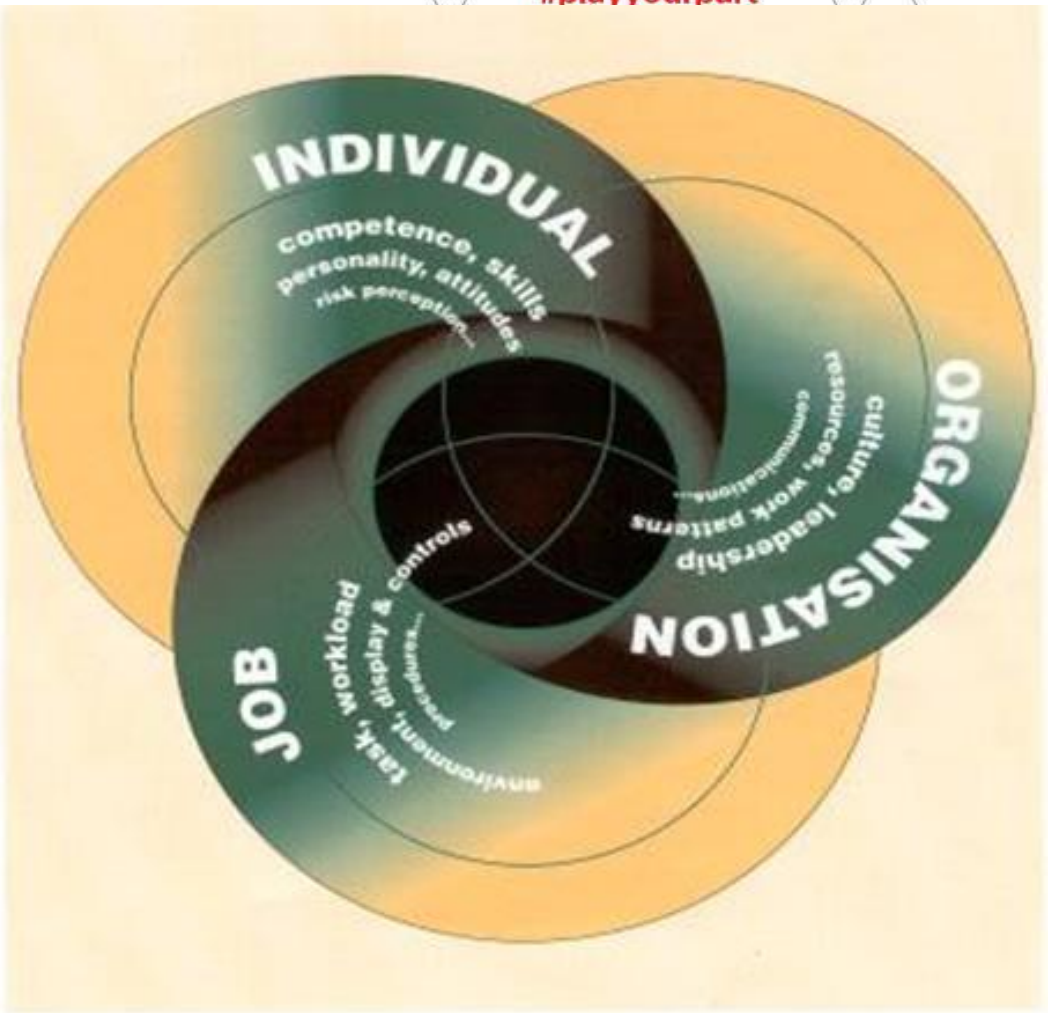
HSE
Health & Safety Executive

‘Human Factors refer to environmental, organisational and job factors and human and individual characteristics, which influence behaviour at work in a way which can affect health and safety.’



What are Human and Organisational Factors

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energy INSTITUTE

HF refers to all of those things that could affect human performance in a task. The word ergonomics is used to describe broadly the same subject.

"…environmental, organisational and job factors, and human and individual characteristics which influence behaviour at work. Careful consideration of human factors can improve health and safety by reducing the number of accidents and cases of ill-health at work."

What are Human and Organisational Factors

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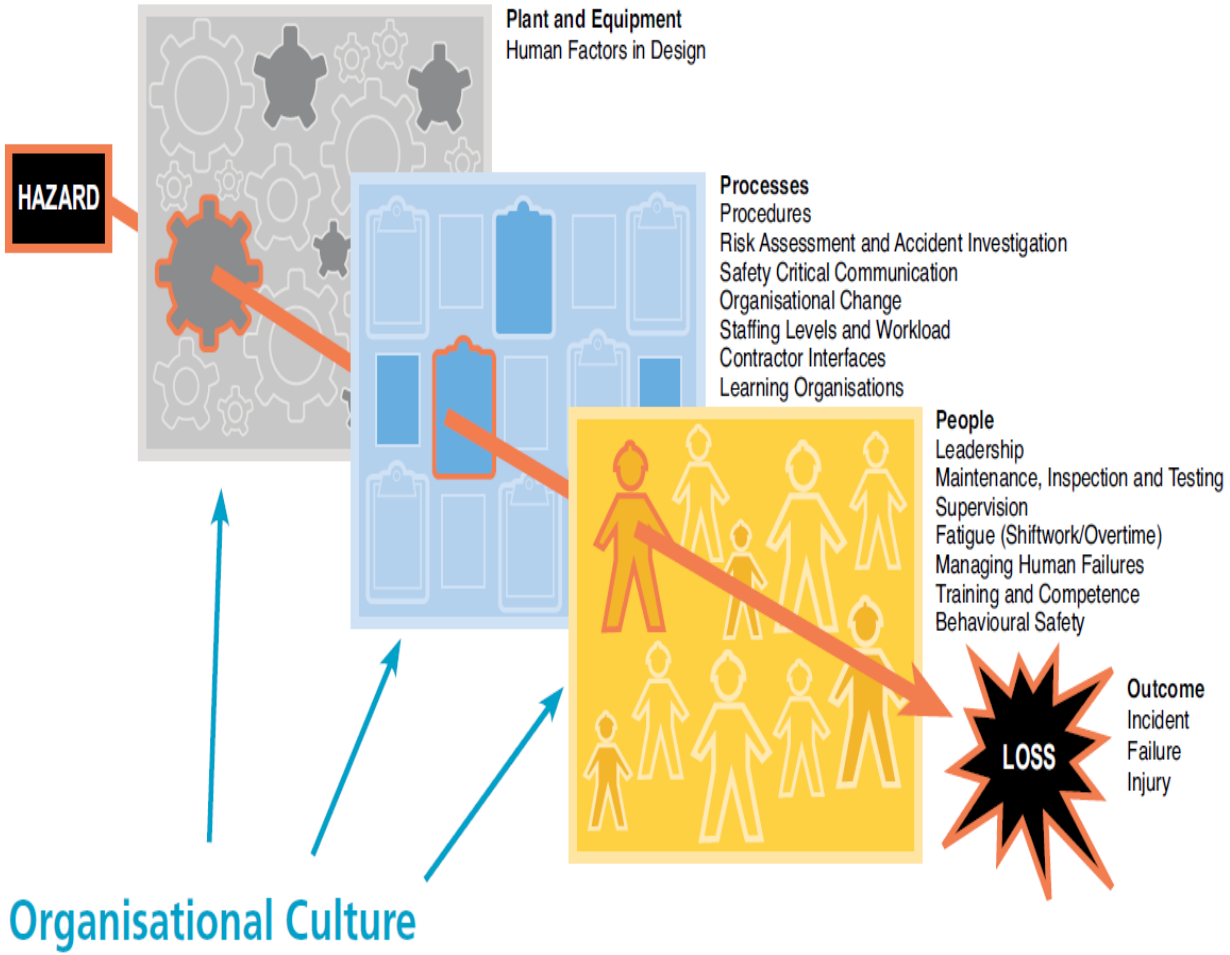
HF refers *"…environmental, organisational and job factors, and human and individual characteristics which influence behaviour at work in a way which can affect health and safety."*
Human factors covers a huge range of topics which can be grouped under three key headings:



Human and Organisational Factors

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Piper Alpha Disaster

"It was caused by a massive fire, which was not the result of an unpredictable 'act of God' but of an accumulation of errors and questionable decisions. Most of them were rooted in the organisation, its structure, procedures, and culture."

Learning from the Piper Alpha Accident: A Postmortem Analysis of Technical and Organisational Factors, M Elisabeth Paté-Cornell, Risk Analysis Vol.13, Issue 2, April 1993.

July 6th 1988
Hydrocarbon vapour cloud exploded after the overfilling and overheating of Raffinate Splitter Tower
167 dead
61 survivors

Human and Organisational Factors

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Longford Gas Plant Explosion

"A combination of ineffective management procedures, staffing oversights, communication problems, inadequate hazard assessment and training shortfalls combined to result in a major plant upset with consequential tragic loss of life."

Have Australia's Major Hazard Industries Learnt from the Longford Disaster? , J Nicol, Institute of Engineers Australia, October 2001.

September 25th 1998

Hydrocarbon vapour cloud exploded after a rupture in a heat exchanger caused by pumping hot fuel into a cold vessel.

2 dead

8 injured

Human and Organisational Factors

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Texas City Refinery Explosion

"The Panel found instances of a lack of operating discipline, tolerance of serious deviations from safe operating practices, and apparent complacency toward serious process safety risks."

The Report of the BP U.S. Refineries Safety Review Panel, January 2007.

March 23rd 2005

Hydrocarbon vapour cloud exploded after the overfilling and overheating of Raffinate Splitter Tower

15 dead

170 injured

The Human Contribution

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'Rather than being the main instigators of an accident, ***operators tend to be the inheritors of system defects*** *created by poor design, incorrect installation, faulty maintenance and* ***bad management decisions.***




Welcome to the *Human Factors* online assessment tool

Get Started »

Why

We are all human. Human factors is about how people interact with their working environment. Their working environment can involve people, process and plant. There are many factors which can influence their ability to perform well within this environment. To improve performance it is important to understand and manage these factors.

What

This online assessment tool is designed to build on **The First Steps to Human Factors**. This allows users to identify the opportunities for improvement within their own working environment for themselves and their organisation. This is done by the completion of assessment questions categorised as People, Process, Plant & Equipment and Incident Investigation. Each question set will take no longer than 10 minutes to complete. Upon completion of the assessment you will then get instant feedback on each of the categories assessed. This feedback will help you and your company to make improvements in these areas.

Who

This tool is designed to be relevant to everyone in the Oil & Gas industry, at all levels offshore and onshore. All data collected is anonymous. At the end of each self-assessment you will be asked to state your location and job level to allow the data collected to be analysed by your organisation to identify opportunities for improvement.

Wherever

Access to this tool is available anywhere, anytime. It is easy to use on desktops, mobiles or tablets.

You can contact your company Human Factors or healthy and safety focal point for more information or **Step Change In Safety**.

Assessments

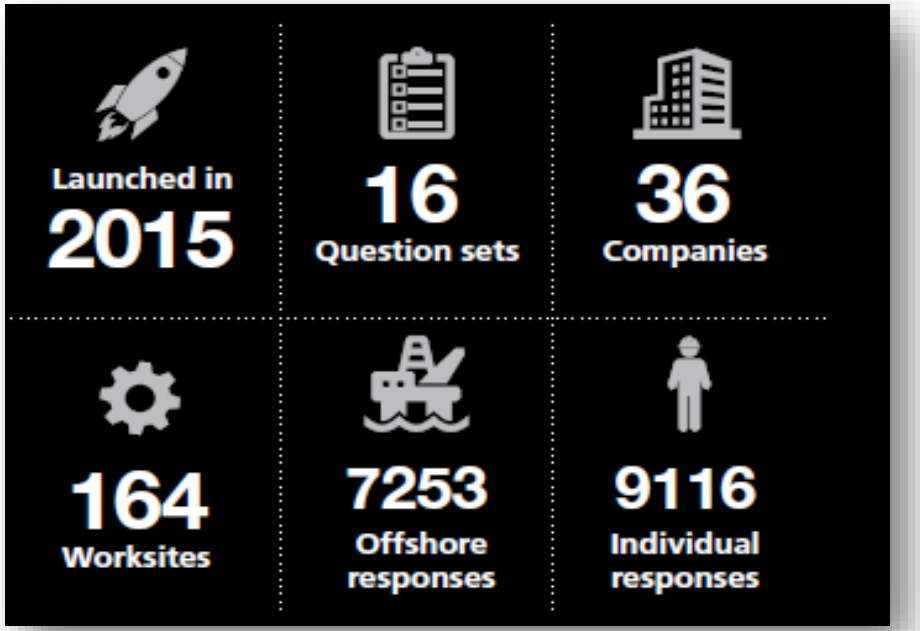
- Improving Human Performance
- People
- Process
- Plant & Equipment
- Incident Investigation

« Select an Area to begin

Welcome to the *Human Factors* online assessment tool

Get Started »

- Fatigue
- Training & Competence
- Behavioural Safety
- Supervision
- Risk Assessment
- Procedures
- Maintenance, Inspection, Testing
- Managing Human Failures
- Safety Critical Communications
- HF In Design
- Staffing Levels and Workload
- Organisational Change
- Incident Investigation
- Contractor Interfaces
- Learning Organisation
- Leadership



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Email: info@stepchangeinsafety.net
Web: stepchangeinsafety

STEP CHANGE IN SAFETY

Fatigue

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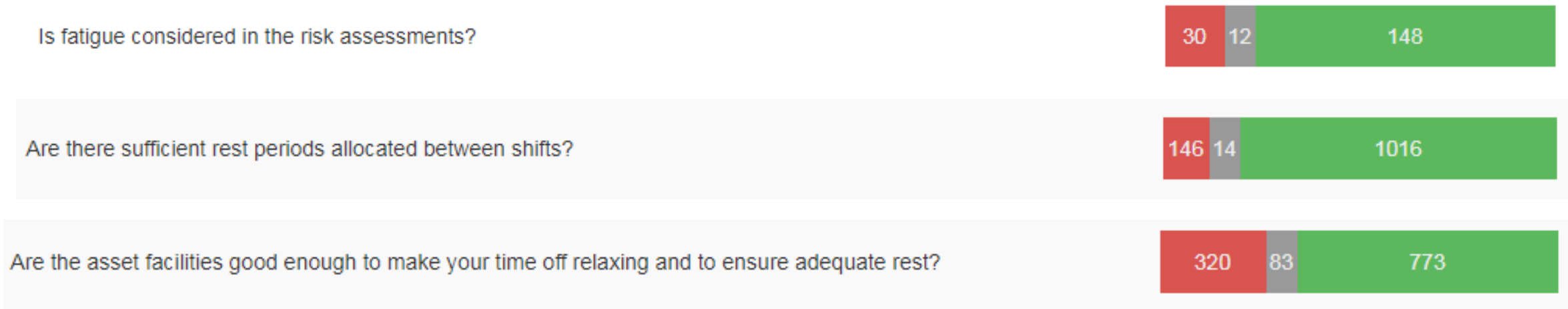

Improvement Areas

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Have you been provided with training/education on the dangers of fatigue and how to recognise fatigue in yourself and others?	606 / 70 / 500
Are you encouraged to report tiredness or overload?	464 / 52 / 660
Is the execution of safety critical tasks planned to take place during periods where the impact of fatigue is minimised (eg when you are most alert?)	349 / 135 / 692

Comments

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‘Normally fatigue is not an issue within the company, but during heavy workload periods such as rig moves this does become a factor and is not readily addressed.’

‘I have never been made aware of any fatigue policy offshore ever!! I have never had any training on the effects of tiredness’

‘Although there is not a specific Fatigue policy document, fatigue is recognised as a hazard and therefore captured in our risk assessment process. Offshore are guided by the Shift pattern guidance from step change. Onshore has HR policies on working hours etc but not specifically fatigue’

Training and Competence

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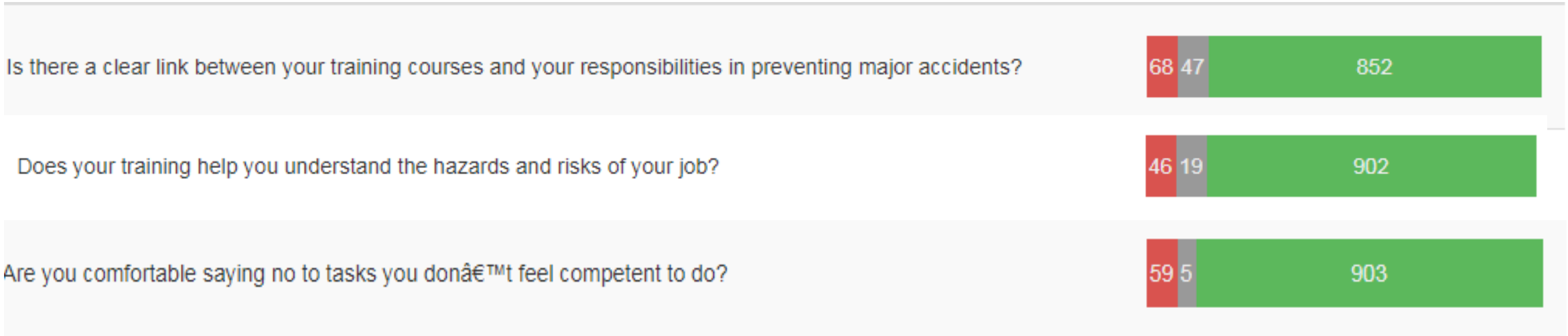

Improvement areas

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Does your training cover upset/abnormal conditions, infrequently-performed tasks such as start-up, shutdowns and emergencies?	291 / 122 / 554
Have you ever been asked to do something you do not feel competent enough to do?	577 / 19 / 371
Have you received training in basic human factor issues such as the difference between violations and human error?	396 / 66 / 505

Comments

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‘Training and competency checks are largely focused at the offshore workforce and not the onshore support staff.’

‘We are not confident in answering no to a job that we do not feel competent in doing as we are made to feel like we have to do the job and get it done’

‘The majority of training courses that I have attended have not been that useful, its from my initial training before joining the company that I use. The computer based training I feel is not effective.’

Behavioural Safety

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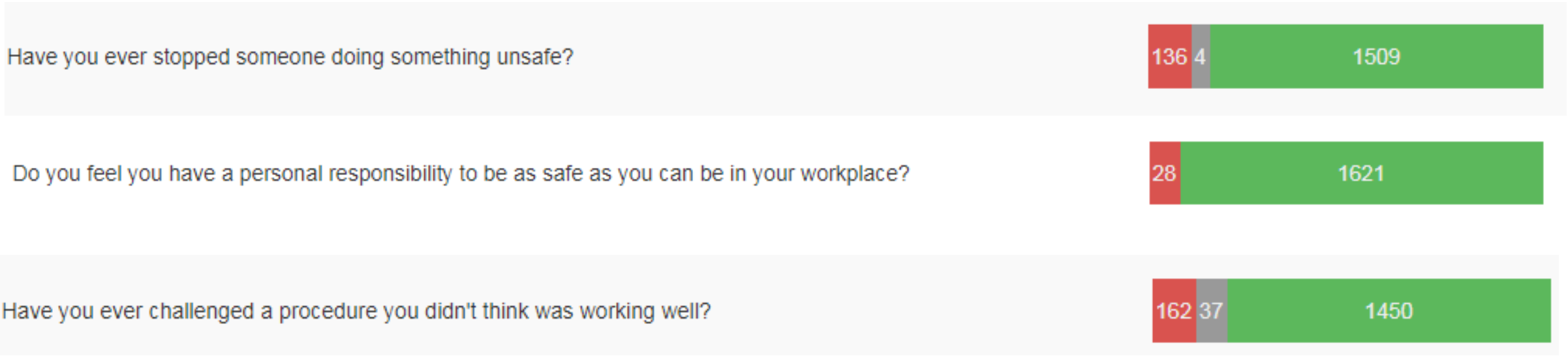

Improvement areas

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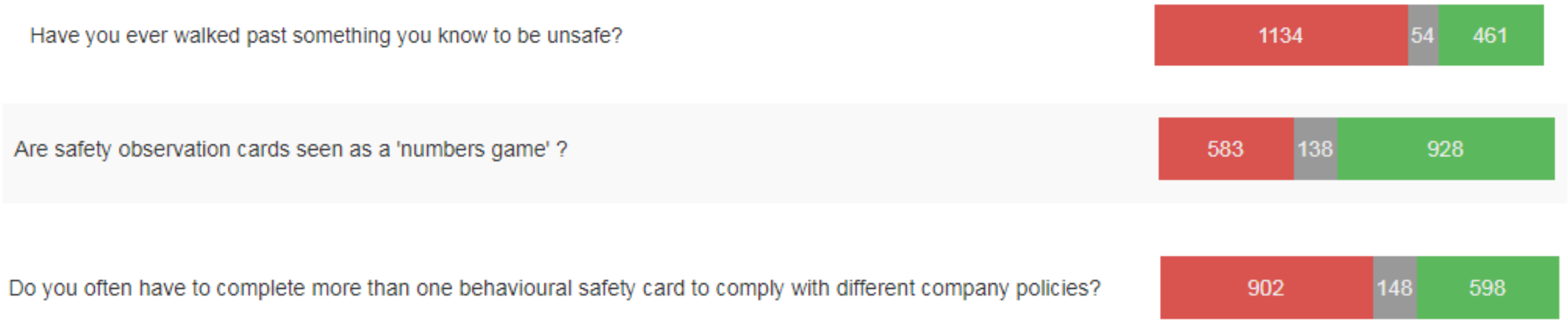

Comments

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‘Safety issues are resolved faster when they affect production. Other issues that do not are not seen as priority’

‘No formal training given about stopping the job. I take previous experience and common sense to be able to work safely. Management tell us to stop the job if needed.....but kick up a stink and start an investigation if you do. Big feeling amongst the crew that we're being told what we have to be told as a front from above, with the assumption that we just get on with it as best we can if anything happens. Huge sense of "just deal with it". No motivation to complete safety cards....just occasional messages from the office to get us to keep up the statistics because it looks good to the client.’

Supervision

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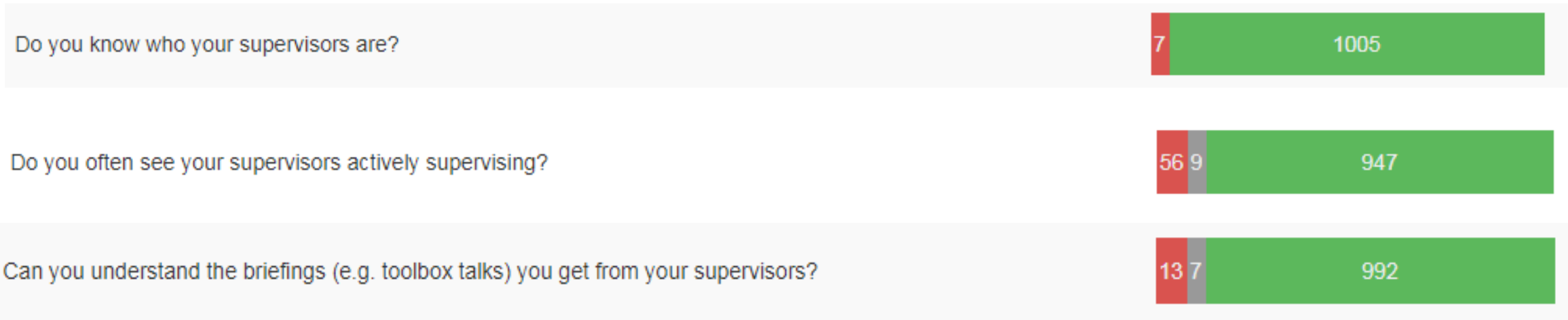

Improvement Areas

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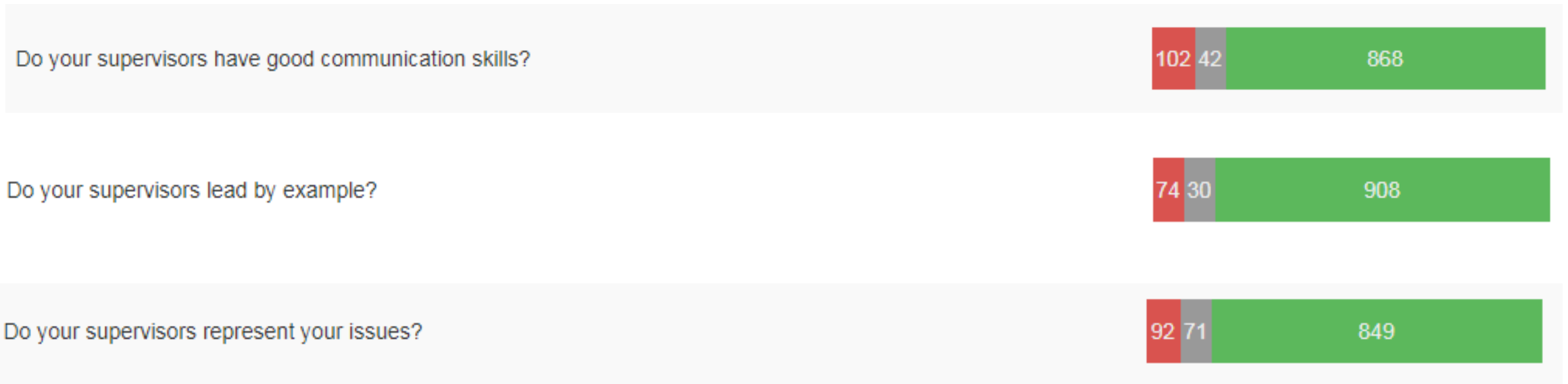

Comments

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‘I understand if I try to telephone my immediate supervision team, they will endeavour to try to deal with any issue raised. However, I find they are not always contactable. Also, I do not feel there is an atmosphere of 'open door' policy regarding field crew when visiting the office.’

‘Many supervisors are approachable and helpful. However some are poor man mangers with terrible attitudes towards the workforce. Some prevent myself getting the job done in time.’

‘Poor communication and inter personal skills are the biggest failings in all of X’s leadership - the 'them' and 'us' divide is huge and morale has suffered as a result. Promotion of the ambitious and rewarding failure rather than promoting those based on competence and ability is the model most people see.’

Recent inspections findings

- Relatively small number of inspections to draw upon
- Some companies making significant progress in safety critical task identification
- Some companies have, or are developing their own HF technical competence

However……

Inspection Findings: Human Factors in Risk Assessment

- Overreliance on external expertise – Intelligent customer capability
- One off, poorly integrated in MAH risk assessment – resource intensive, not revisited, think about the process
- Tasks not sufficiently broken down or guidewords not systematically applied
- HRA on “high” criticality operational task only – Review medium criticality tasks, and a range of tasks (e.g. maintenance, drilling, marine, emergency response)
- Hierarchy of control not applied – Do not restrict recommendations to more/better procedures, training and competence