Optimising Health and Safety management by job task to risk behaviour profile matching

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SAFTEK
Introduction
The electrical engineering H&S environment

- Electrical engineering and H&S
- Current tendency of Engineers and Service personal to distance themselves from H&S
- Competence of advisors on H&S related to Electrical Engineering
- Health and Safety legislation
Managing H&S

- The South Africa Council for Project and Construction management

- what we are doing in the electrical engineering environment

- The electrical engineering environment requires high competency of staff
Risk-taking behaviour impact on H&S

- **Influence risk-taking behaviour**
  What influence a person to take certain actions that could compromise not only his own H&S, but also the H&S of others

- **Human error**
  Cannot be completely eliminated, it should be identified and correctly managed according to each individual’s risk-taking profile.

- **Incidents related to work environments**
  Are not inherently due to fixed assets behaviour but rather the result of human intervention and failures in design, construction, maintenance or operation of such structures and facilities.
Risk

- The concept of risk
  1. Probability of an incident occurring
  2. Severity of harm

- Risk is a part of life

  An inter-grained concept in the subconscious mind. Every action humans take has a subconscious calculation on the risk involved and the possibility for gain or loss.
Mankind, and the development of people, exists due to risk-taking behaviour. It is not that humans should not take risks, but rather that they have the ability to identify the magnitude of risk exposure in order that their actions would be so selected as to mitigate exposed risk factors, that no harm should befall them.

Willem du Toit
Risk mitigation

- The core of risk management
  1. Hazard identification
  2. Analysis
  3. Evaluation of the treatment of risk
  4. Risk communication

- Importance of understanding what hazards are
  1. Where possible risks are likely to come from
  2. Who are more vulnerable to these hazards and risks
  3. How the hazards should be mitigated, eliminated, controlled or managed
Human Behaviour

- Influence of personal traits on behaviour
  Personal traits of individuals such as attitude, motivation, perceptions and personality. Human risk behaviour is dependent on various parameters, for instance, the differences in the behaviour of genders and the view of risk to oneself and to others.

- Impact of gain versus loss
  When individuals are faced with making decisions they are more willing to take risks to avoid losses, and less willing to forgo gains.
Risk-taking behaviour

- Risk-taking behaviour is the manner of “treating a situation or environment in a manner that has no consideration for the damaging consequences”

- Intentional risk-taking
  
  Organisations are not only exposed to risks that are due to negligence of employees, but are also exposed to intentional risk-taking behaviour that exists due to risk-taking behaviour from incorrect decisions made
Perception of risk

- **State of mind and emotional condition**

  The state of mind and emotional condition affected the individual’s risk-taking behaviour. This is supported by the evidence that happier decision makers tend to be less risk seeking in situations where a meaningful loss may diminish their positive emotional state.

- **Past experience of hazards**

  The biggest factor affecting risk perception is past experience of hazards. However, misleading personal experience can lead to risks being misjudged, so past experience can have either a positive or negative impact on risk perception. Hung, Shaw and Kobayashi (2007).
Cultural Influence on risk-taking behaviour

- **Subconscious cognitive process**
  The effect and influence that culture has on the individual’s decisions is of such significance that no decision is made without a subconscious cognitive process that involves individual’s cultural paradigm.

- **Cultural values**
  The study of culture is helpful for understanding when and why people behave in a safe manner at work. Cultural values affect the way that people think and behave when faced with a safety-related issue.
“More than 100 years ago it was said that people have nothing to lose but their chains. Now the chains are, of course, not of their hands, but the chains of their brains.”

(Mahadevan)
The cause of accidents due to human error

- Impact of risk-taking behaviour
  1. Intentional acts
  2. Negligence
  3. Socio-technical failures

Accidents are caused by a dynamic interaction of factors in social and physical environments, that is, the characteristics of the individual and the organisation, as well as technical forces that have an influence in such environments.
Individual and organisational response to work hazards

HAZARD: Work related hazard exposure

ACTION BY INDIVIDUAL
- Individual decision-making process
- Knowledge related to work hazard, fully to partially available

Individual decision - based on:
- Training
- Experience
- Perception of risk

Right decision
Wrong decision

Intervention required - behaviour analysis

HUMAN ERROR
Without Intent
With Intent

ACTION BY MANAGEMENT
- Admin & management procedures
- H&S legislation compliance
- Engineering control methods
- Manage environmental factors
- Personal protective equipment
- Job task risk rating

Avoid, refer to management
Incorrect management practices
Correct management practices

Intervention required - management practises
How do we address incorrect behaviour

Improve Individual Competence

Competence = Experience + knowledge

- Improve knowledge by training programs

or

- Job task to Individual – profile matching
The optimal scenario

Have the right tools for the right task
or the right person for a specific task

By matching an individual’s risk-taking profile
to high risk job tasks
Stages in the individual to job task matching

INDIVIDUAL

A. Evaluate Individual risk profile
   (Section 6.4.1.2)
   - Competency, knowledge & experience
   - Historic profile of risk behaviour
   - Psychometric tests and evaluations
   - Create individual risk profile
   - Rate individual risk profile: Scale 1 to 5

JOB TASK

B. Evaluate job task Risk profile
   (Section 6.4.1.1)
   - Parameter of the job task
   - Staff requirements
   - Job task history
   - Decision-making required
   - Create Job task risk profile
   - Rate job task risk profile: Scale 1 to 5

Process

Job task to individual profile matching
Application of job task to individual profile matching

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<tr>
<th>Individual risk Behaviour profile</th>
<th>Job task Risk profile</th>
<th>Acceptability</th>
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<td>Low</td>
<td>High</td>
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Individual risk-taking profile evaluation

1. Competence, knowledge and experience
   - Experience related to job task
   - Knowledge and formal qualification
   - How often job tasks have been successfully completed
   - Ability to control and manage job task
Individual risk-taking profile evaluation

2. History of risk-taking behaviour
   - Involvement in incidents related to job tasks
   - Seriousness of past incidents
   - Repetitive involvement in other related incidents
   - Record of disciplinary action due to non-compliance with H&S standards
Individual risk-taking profile evaluation

3. Psychometric testing
   - View on risk-taking behaviour
   - Need for organisation policies and procedures
   - View of individual decision-making related to hazards
   - View of management input
Job task risk profiling

1. Parameters of job task
   - How often does task need to be performed
   - Engineering equipment required
   - PPE required
   - Environment in which performed
2. Staff requirements

- Physical capabilities required of workers (vision, hearing, strength)
- Quality
- Type
- Amount of staff required
Job task risk profiling

3. History of job task performance
   • Incidents
   • Seriousness level of incidents
   • Recurrence
   • Mitigating procedures
Job task risk profiling

4. Decision-making required
   - Decisions to be made by the individual
   - Management decisions
   - Engineering systems automatic control
   - Decisions by supervisors and others
Rating index for job task

- Parameters and training required for job task
- Staff requirements and physical capability for job task
- Experience required for decision-making for job task
- History of job task performance
- Weight allocation
Rating index for individual risk-taking behaviour

- History of individual incidents related to job task
- Psychometric testing of individual
- Competency of individual
- Weight allocation
Conclusion

- The impact of H&S legislation
- The differences in cultural perception of risk
- Variability in risk that human behaviour poses
- The capacity for influencing statistics
- The model provides an ideal opportunity for organisation to reduce incidents.
Thank You