More effective post-incident learning

Ronny Lardner, AFIChemE
Founder, Registered Psychologist
The Keil Centre Ltd
ronny@keilcentre.com.au
Agenda

• What are “human factors” in safety?

• Discussion at last DrillSafe forum in Perth

• Improving how lessons are learned
  o How much do people actually learn?
  o How can this be improved?
  o Some industry examples…
Human factors

Reducing error and influencing behaviour
What do we mean by ‘human factors’ in hazardous industries?

10 Key UK HSE human & organisational factors issues

- Managing human failure
- Procedures
- Training and competence
- Staffing, including supervision
- Organisational change
- Safety-critical communication
- Human factors in design
- Fatigue & shiftwork
- Organisational (safety) culture
- Maintenance, inspection and testing
What do we mean by ‘human factors’ in hazardous industries?

10 Key UK HSE human & organisational factors issues

- Managing human failure
- Procedures
- Training and competence
- Staffing, including supervision
- Organisational change
- Safety-critical communication
- Human factors in design
- Fatigue & shiftwork
- Organisational (safety) culture
  - Learning organisation
- Maintenance, inspection and testing
Towards a deeper level of learning from incidents: use of scenarios

Ronny Lardner, CPsychol, AFIChemE, The Keil Centre Ltd
Captain Ian Robertson, AFNI, Marine Incident Investigator, BP Shipping Ltd., UK
Background

- Serious maritime incident

- Communication of lessons learned to all relevant parties

- Question: “could something like that happen again?”
  - Onshore management and commissioning of modifications

- Devised novel method to answer the question
The scenario

- Something the audience might encounter in a typical day
- Designed to address question re. “could something like that happen again?”
- 12 critical decisions onshore which contributed to incident 6 months previously
- Different type of equipment, ship, operation, country…
- Participants asked to think how they would actually deal with this, and what might influence their decisions
- Worked through individually first time round, then discussed answers as a group
- Explanation of link between scenario, and earlier serious incident
  - Only one person recognised link
Scenario results (23 people)

- Individual Scores (Max = 12)
  - Range: 4-10
  - Average: 6.7

- Critical decision scores
  - Range: 0-22
  - Average: 12.8

- Patterns can be identified
## Types of Learning

<table>
<thead>
<tr>
<th>Levels of learning</th>
<th>Types of change resulting from learning</th>
<th>Type of learning method</th>
<th>Design of scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>Thinking</td>
<td>Passive Less mindful</td>
<td>More effective</td>
</tr>
<tr>
<td>Team</td>
<td></td>
<td>Active More mindful</td>
<td></td>
</tr>
<tr>
<td>Organisational</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Typical incident learning**

- **Type of experience**
  - Direct: Own experience
  - Indirect: Others experience

*... considerably (up to 3 times) more effective in promoting safety knowledge and safety performance ..., particularly when the severity level of hazardous event/exposure is high.*
Evaluation of individual impact 4 weeks after workshop, via internet survey

- Scenario method itself
  - 95% positive, liked

- Describe anything new that you learned or realised as a result of completing and discussing the scenario...
  - 93% described new learning

- Has completing the scenario, and discussing it with your peers, affected how you would approach a similar situation in the future?
  - 61% yes

- Shown grouped results, which they had not seen before.

- Do the grouped results supplement what you learned from participating in the workshop?
  - 85% yes

- Do you think the use of similar scenarios offer any additional benefits to more traditional ways of learning from incidents, such as "post-incident briefings"?
  - 78% yes

Reactions included discomfort, concern and disappointment. A
Applying this approach elsewhere…

• Series of process isolation incidents, over 7 year period

• Large amount of upcoming commissioning, with many isolations & de-isolations

• Constructed scenario based on 8 incidents, with key features of all included

• Initial reactions
  o Engaging, interesting
  o Stimulated debate
  o Widespread use supported

• Extended to Working at Height
How could you use this knowledge?

<table>
<thead>
<tr>
<th>Type of learning method</th>
<th>Passive</th>
<th>Active</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Less mindful, don’t have to think for yourself</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>More mindful, makes you think and reflect</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of learning experience</th>
<th>Direct</th>
<th>Indirect</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Own experience, you get feedback on how much you know, and how this applies to you, which helps learning</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>You learn via others’ experience only, what others did, and not how this may apply to you.</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Most effective learning**
Implications for current practice

• Scenarios, and other more active / direct learning methods, could be used for…

• Communicating the results of incidents in a more active and direct fashion, leading to greater learning and behavioural change

• Strengthening learning from incidents when hardware or software fixes are not possible, and changes in thinking style, knowledge and routine behaviour must be relied upon

• Testing whether generic lessons have been successfully applied to other situations

• Assessing and developing the knowledge and judgement necessary to successfully manage safety.
Further information & resources

• “Reducing Error and Influencing Behaviour”
  o Download free at www.hsebooks.co.uk - search for HSG48

• The Keil Centre Ltd publications
  o http://www.keilcentre.co.uk/downloads.aspx

• UK Health and Safety Executive HOF web-site
  o http://www.hse.gov.uk/humanfactors/index.htm

• Energy Institute HOF briefing notes

• Two papers on more effective learning from incidents
  o http://tinyurl.com/n5e5c49
  o http://tinyurl.com/kvtmyp8

• Step-Change in Safety
  o “Human Factors – how to take the first steps” – search in Google
Questions?