HSE Human Factors Briefing Note No. 4

Procedures

Briefing Note 1 – 'Introducing Human Factors' explains the background to these Briefing Notes.

The term 'procedure' refers to the written description of the steps you need to follow to perform a task. Procedures are usually on paper but they could be presented on a computer screen. They may have diagrams, pictures, flowcharts and checklists to make the text easier to understand.

Case study

In May 1995, two process workers at a plant making ferric chloride were killed when they inhaled hydrogen sulphide gas. They had just added sodium sulphide to a 'pickling solution' but the pH of the solution was too low, also, they had added too much sodium sulphide.

The accident report identifies among other faults, 'inadequate management procedures…. work carried out in an improvised manner instead of following working procedures', 'inadequate supervision of how the work was actually carried out' and 'a lack of safety culture'.
Source: Ref 1

A major oil company reviewed its operating procedures and benefited from significant efficiency gains, for example, reduced start-up times. The full involvement of employees was a crucial feature of this process.
Source: HSE Inspector's Comment
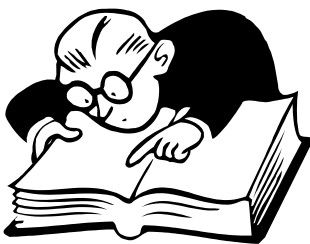
Why address procedures?

We are concerned about procedures because research has shown that, where the *general* cause of incidents (near misses) is 'human factors', in most cases the *specific* cause is a problem with procedures.
Source: HSE Training Course slides

Non-Compliance or 'Violations'

Even the best employees can make an error and inadvertently fail to follow a procedure. Sometimes, people deliberately choose to ignore a procedure. This is known as a 'violation'.

Violations are defined as any deliberate deviations from the rules, procedures, instructions and regulations drawn up for the safe or efficient operation and maintenance of plant or equipment. They are important, as they have been found to be linked with between 70% and 90% of incidents and accidents.
Source: Ref. 2

Your Major Accident Prevention Policy (MAPP) should describe how you develop, review/revise and publicise your procedures. This will include your permit to work system and any other systems you have for protecting health, safety and the environment.

HSE concerns

- Operating procedures may not be the best way of controlling major hazards or risks, at least not as the sole defence against human error.
- COMAH sites should have a 'procedure for managing procedures.' This should include processes to work out which tasks need procedures, how detailed the procedures need to be, how to keep procedures up-to-date and to make sure personnel comply with procedures.
- Sites should review procedures for safety critical tasks (start-up/shut down, commissioning, abnormal/emergency events, bulk transfers, maintenance and plant/process change). This should include talking to users, identifying 'informal' working practices ('black books'), walking through a sample of procedures at the workplace and analysing incidents/accidents/non-compliances.

Procedures checklist:

If your company has good procedures, you should be able to tick *most* of the boxes below:

Our company's procedures are:

- Always easy to find when you need them – for
  - ➢ Operational tasks (including start up/shutdown)   ☐
  - ➢ Commissioning tasks   ☐
  - ➢ Maintenance tasks   ☐
  - ➢ Abnormal or emergency tasks   ☐
- Are completely up to date   ☐
- Set out in logical steps   ☐
- Very easy to read and clear because: ☐
  - ➢ They use words our people understand   ☐
  - ➢ They use diagrams, pictures, flowcharts and checklists to make each task step clear   ☐
  - ➢ The size, colour and style of lettering and illustrations is clear   ☐
- Are accurate – describe how we actually do the job   ☐
- Always highlight the steps in a task where you need to be especially careful   ☐
- Helpful in describing all items of special equipment (tools, clothing) you need for each job   ☐
- Always in good condition (not dirty, torn or with pieces missing)   ☐
- Used to train people how to do the job   ☐
- Changed quickly if the way of doing the job changes   ☐
- There for a good reason, not just as a 'knee jerk' reaction to the latest accident   ☐
- Completely consistent with other information (e.g. with verbal instructions from supervisors)   ☐
- Supplemented by other job aids (pocket sized checklists; reference material)   ☐

Note: no company will be able to tick all of the above; if you have, you should look again very carefully at the questions.

Learning more about procedures

Usually, if something is wrong with a procedure, it means there is something wrong with the system that produced it. The ideas below describe a formal system to develop and maintain procedures.

Procedure for Developing and Maintaining Procedures

First Steps
- Use 'task analysis' to help you fully understand how the job should be done. Task analysis can be used when you devise a new task or to analyse an existing task.
- Base the task analysis on how the job is actually done (or could realistically be done if it's a new task), not on how managers feel it *should* be done
- Identify hazards that could arise in the task: hazards that the person doing the job could cause as well as hazards that they could be exposed to
- Decide if a procedure is the best way of controlling the hazard, if it is, write the procedure

Write Procedures
- Involve the people who will do the job in the first steps and in writing the procedures because:
  - They will have a realistic view of what is possible in the job
  - They can advise on the amount of detail needed in a procedure and on its wording and style
  - They can advise on how and why people might break with procedure (not use it, make a genuine mistake or do the job a different way)

Note. Involving the people who do the work in the early stages of developing procedures will encourage them to use it because it is their product not a management-imposed tool
- Support them with expert guidance in hazard and risk assessment and on how to write procedures.
- Use a good design guide on how best to present procedures e.g. layout, language, wording, typeface styles.
- 'Walk through' the procedure ('act it out') before using it on the job. Correct any problems found.
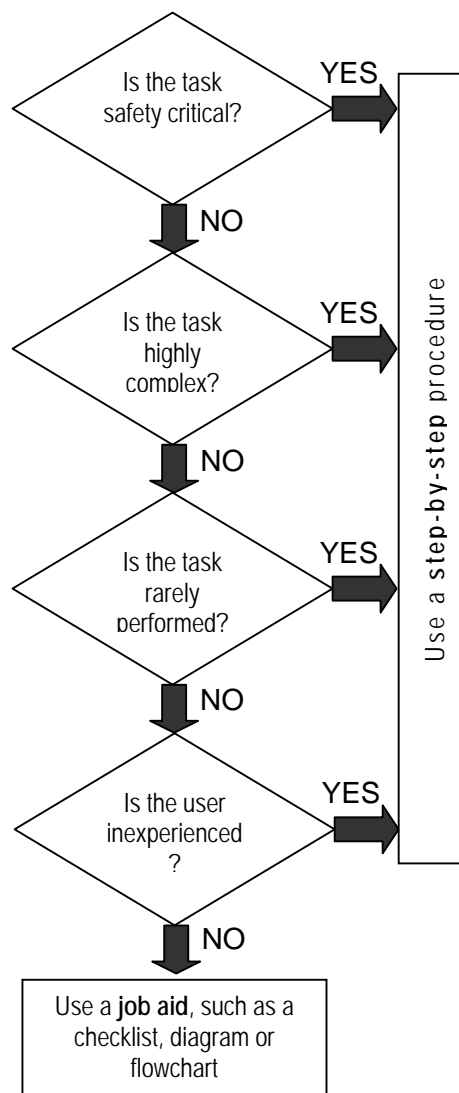
Use Procedures
- Train people in procedures: use the training to make them familiar with the content of the procedure but also to test the procedure itself – it may contain errors or may not be practical
- Make sure procedures are suitable for contractors who, for example, may not be familiar with local terminology or work practices and may have come from a different working culture
- Make sure that when someone needs a procedure, they can find it quickly and easily
- Novices may need a different type of procedure compared with 'experts', but, for hazardous and rare tasks, even experts should be required to use a procedure

Manage Procedures
- Keep checking that procedures are being used properly (e.g. if there are steps that need to be 'ticked off', make sure this is done when the step is completed not in bulk when a number of steps are complete).
- Get feedback from operators on any problems – make sure there's a system for reporting problems
- Deal with the problems as quickly as possible
- If people are not using procedures, find out why. They may have discovered a better method of doing the work; on the other hand, their new method may be risky. Make sure there is a system for considering new methods.

- Plan for any changes in the task (changes in equipment or materials used or changes in methods) – start to change the procedures well before they are needed and issues them for training or familiarisation before they are first used.
- You may need temporary arrangements if it is not possible to update a procedure quickly – extra supervision or temporary working instructions
- Control your procedures:
  - ➢ Put a date on them
  - ➢ Keep a log of who holds a copy and retrieve and dispose of out of date copies
  - ➢ Discourage the making and use of unofficial copies
  - ➢ Review procedures periodically to see if they need to be updated.

If the system for managing procedures is not working, be prepared to change it.

References

1. Major Accident Reporting System (MARS) entry 485
http://mahbsrv2.jrc.it/MARS/servlet/ShortReports
2. HSE (2000) 'Techniques for addressing rule violations in the offshore industries'. Offshore Technology Report 2000/096. ISBN 0 7176 2095 6
3. HSE (2004) Revitalising Procedures, Free information Sheet. Available on HSE's website.