
Procedures

Why are procedures needed?

COMAH Safety Reports

‘all activities are performed in accordance with defined standards and procedures’

‘operators adhere to well-practiced written procedures’

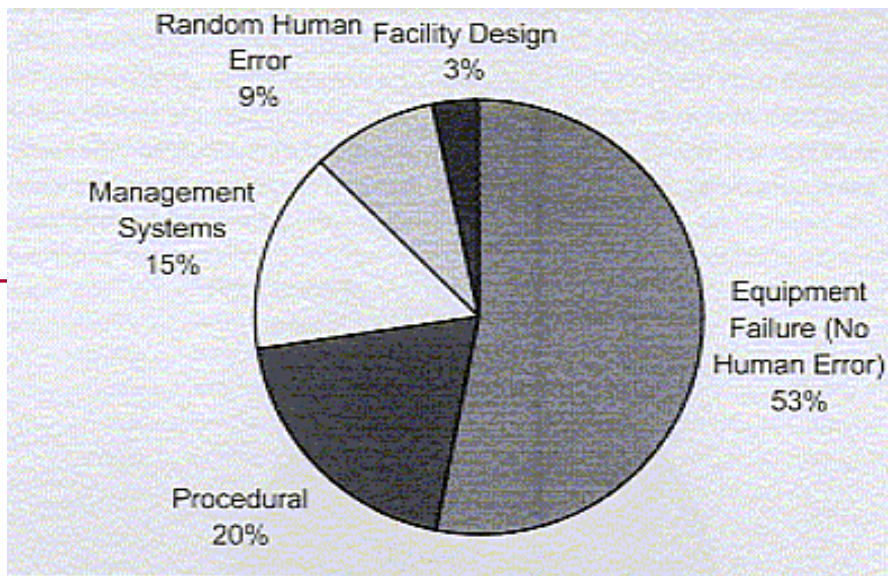


Figure 2. Level 1 Cause Contribution Factors

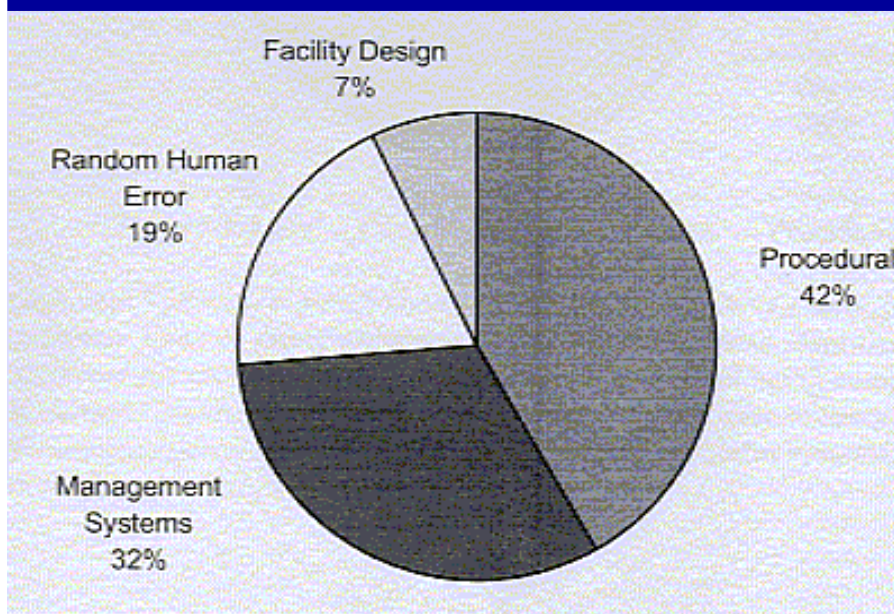


Figure 3. Level 1 Cause Contribution Factors Excluding Equipment

- Contribution to incidents
 - Most common human factors root cause – e.g. study of 130 incidents in US refineries
- Bhopal
- Piper Alpha
- Texas City
- Others?

Why are procedures needed?

- To minimise error/mistakes
- To ensure critical safety/quality steps are carried out
- To provide a basis for training
- To protect against loss of operating knowledge (e.g. demanning)
- To standardise working practice
- To meet statutory requirements

Cleansing Services Group, Gloucester



- Major fire on low tier COMAH site (waste management facility)
- Incompatible materials not separated or segregated:
 - Initiation of incident
 - Escalation of incident





CSG fire, 30 October 2000







- Procedures heavily relied upon as a primary control measure
- **However:**
- Procedures did not support the decisions that staff had to make
- Inadequate management of procedures (Plan, Do, Check)



- Human factors expert witness statement
- Fine £250,000 plus costs of £400,000

Procedures: fit for purpose

- Not alternative to competence
- Types of procedures:
 - Background detail
 - Step-by-step written procedure
 - Job aid (e.g. checklist, flowchart, diagram)
- Use of 'Black Books'

Determining level of procedural support

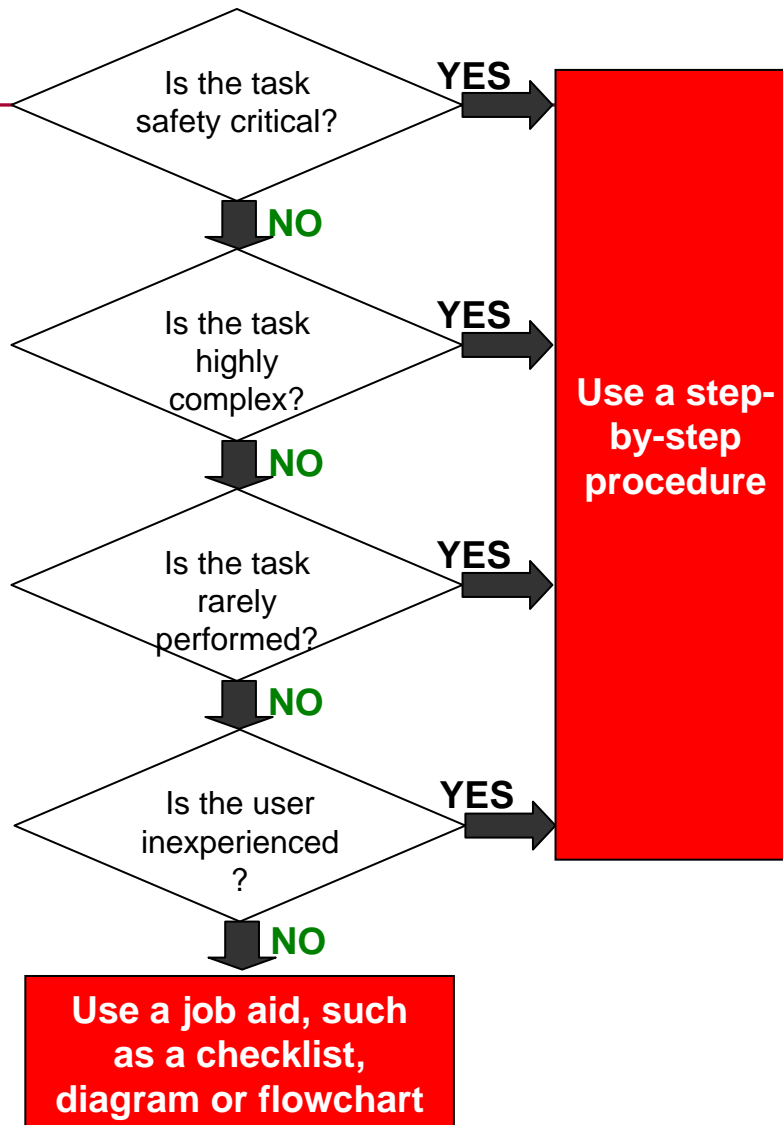


Task Criticality		Low			Medium			High		
Task Familiarity		Freq	Infreq	Rare	Freq	Infreq	Rare	Freq	Infreq	Rare
Task Complexity	Low	Green	Green	Yellow	Green	Yellow	Yellow	Yellow	Yellow	Red
	Medium	Green	Yellow	Yellow	Yellow	Yellow	Red	Yellow	Red	Red
	High	Yellow	Yellow	Red	Yellow	Red	Red	Red	Red	Red

No Written Instruction required

Job Aid required e.g. checklist/memory aid

Step by Step instruction required



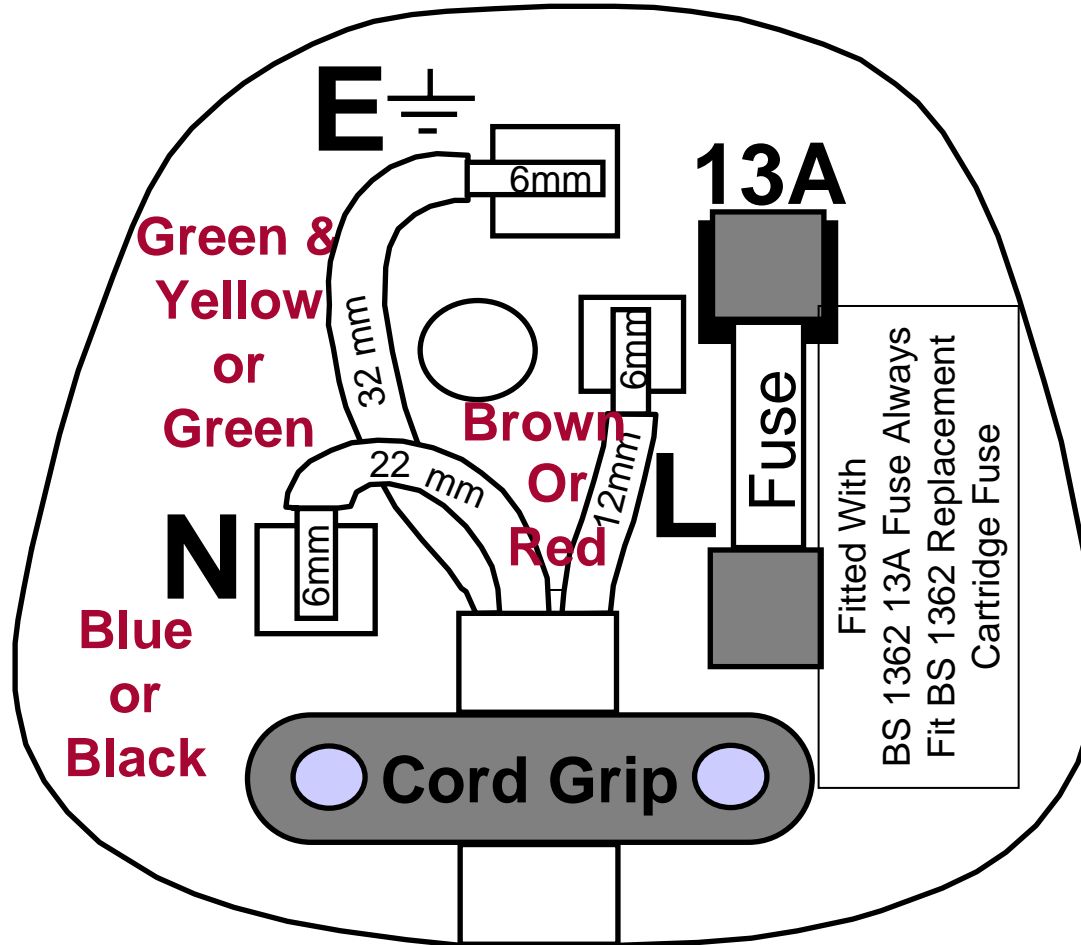
Determining level of detail required

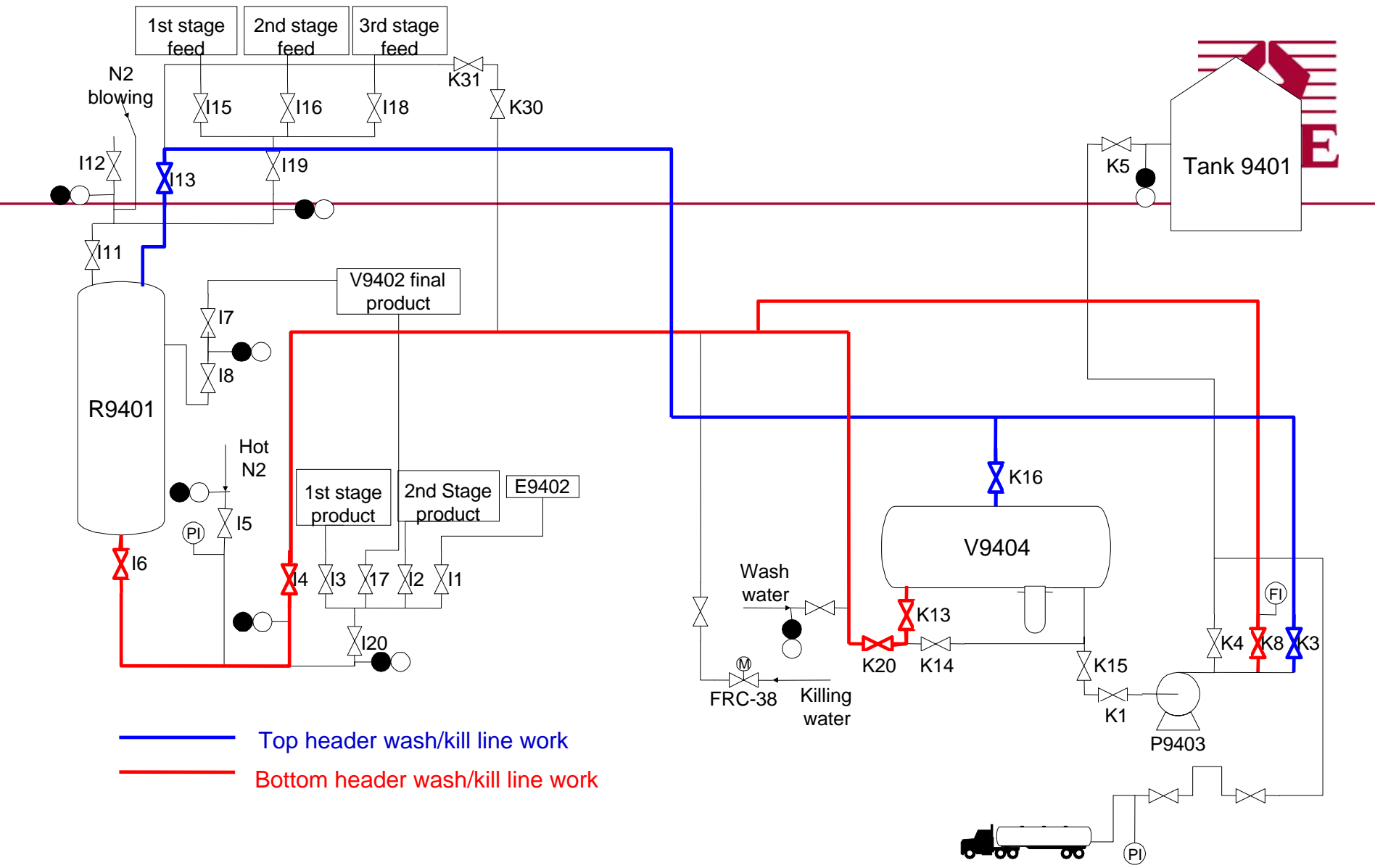
Job Aids

**“Any source of information used to support the successful performance of tasks”
(e.g. reminders and memory aids)**

- Job aids decrease
 - the amount of decision making needed
 - the need to memorise procedures and references
 - the need to carry manuals
- Practical - designed to be consulted on the job

Plug Cover Job Aid





————— Top header wash/kill line work
————— Bottom header wash/kill line work

I Bed Wash/Kill line work for use during bed turnaround

Procedural violations

- Whether a procedure is likely to be followed or not is as important a question as considering the technical merits of the procedure

Encouraging compliance

- Design the job so that the correct procedure is hard to avoid
- Base the procedure on how task is actually performed*
- Identify incentives to take short cuts
- Adopt a control and review process
- Write procedures:
 - with the user in mind
 - involving users.

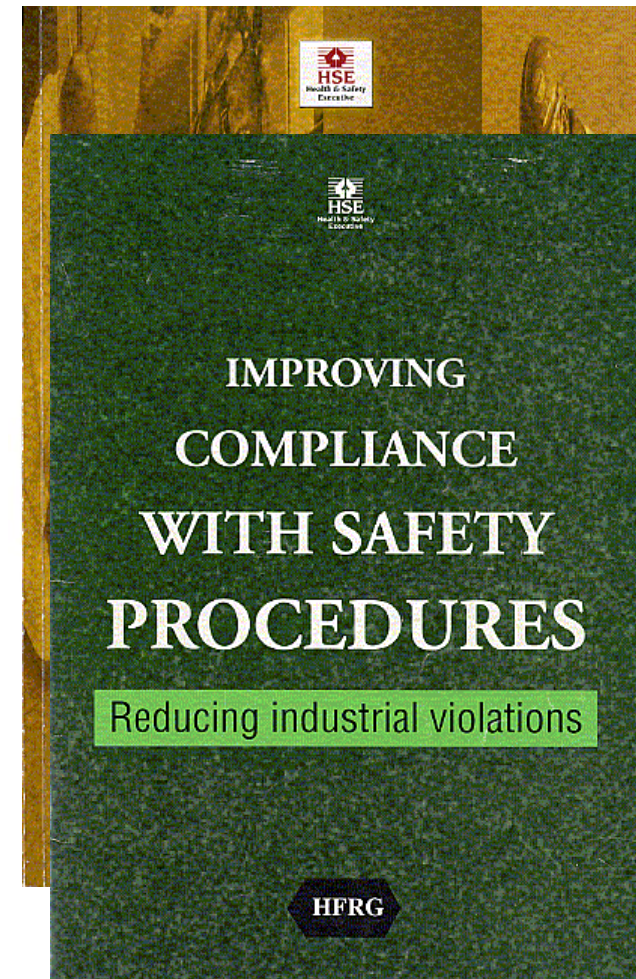
*As long as HS&E is not compromised

Information and guidance

- HID information sheet
- HSG48 (especially pages 26-31)
- Improving maintenance guide
- Improving compliance with safety procedures - tools



Reducing error and influencing behaviour



HSE approach

Examine procedure(s) for safety-critical operation(s)
For example:

- Start-up & shut-down
- Commissioning
- Abnormal/emergency
- Bulk loading/unloading
- Maintenance
- Plant/process change



Procedures for safety-critical operations

- States **who** does **what**, and **when**?
- Use of present tense & active voice?
- Only use UPPER CASE for emphasis?
- Do not use more than one negative?
- One action for each procedural step?
- Give quantitative values and limits?
- Quantities and dimensions correspond to those on controls & displays?

Questions for management

Does the site have processes for:

- Determining which safety critical operations/tasks need procedures (e.g. by HAZOP/risk assessment);
- Considering how the work activities of non-company personnel (e.g. contractors) are managed;
- Approving operating procedures;
- Involving operators in writing of procedures;
- Ensuring consistency in the procedures used across site/plant for identical tasks or operations;

Questions for management 2

- Ensuring that procedures remain valid and up-to-date;
- The removal of all out-of-date procedures;
- Ensuring that staff are trained in new/updated procedures;
- Ensuring compliance with procedures;
- Reviewing relevant procedural controls following an incident or audit non-compliance

Talk to workforce

- Do they use the procedures? - Why not?
- Were they involved in developing them?
- Are they up-to-date?
- Do they reflect reality?
- Are they of the right level of detail?
- Do they include safety critical tasks?
- Are they easy to use?

Workforce continued

- Do operators use 'black books'? - Why?
- Ask them to explain how to do a task
 - Do they always do it that way?
 - How do they remember how to do it?
- Do they identify all necessary warnings?
- What do they really think of procedures?