

# THE IMPORTANCE OF WORK INSTRUCTIONS AND PROCEDURES



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Procedures and protocols are a crucial focal point for both management and workers; to understand what the organisations minimum management expectations are and to provide instruction and guidance for work tasks for day-to-day operations, non-standard tasks and for emergency situations.

Procedures must provide the user with all of the required information in a clear and concise manner relevant to the activity being undertaken or the situation being managed. This is critical when dealing with non-standard and emergency response events where time pressures and human factors can potentially impact upon the behaviours of personnel involved in a negative way.

There are many examples from major industrial accidents where workers and process operators were not given clear information as to how to proceed or were even directed to carry out incorrect actions due to the poor quality of procedures, including the minor incident that escalated to a major accident at the Three Mile Island nuclear plant in 1979.

#### WHAT IS IT AND WHAT DOES IT DO?

Terminology can differ between organisations as procedures for work activities can be defined in different ways, for example by the use of the terms 'work instruction', or 'standard operating procedure' (SOP). For our purposes, the term 'procedure' or 'protocol' are defined as "a structured, documented instruction defining the steps to undertake a standard, non-standard or emergency activity in an approved, assessed and systematic manner."

High level safety management documents such as policy statements and vision and mission statements are not procedures for our purposes as they outline requirements but do not detail the 'how' as to how they are to be achieved.

Working within a system, senior management do not have to rely on individuals to work to their own initiative to figure out how to carry out their work activities or the other safety management functions such as incident reporting. Procedures are that part of the system that provides instructions to both management and workers as to how the requirements of the system are to be implemented, whether on a daily basis or in an emergency situation.

Procedures may be ubiquitous within an organisation and can cover an extraordinarily wide range of activities and tasks. Since they are the systems instructions, they themselves must be handled in a systematic manner; this is normally handled under a document control or document management system which aims to ensure a consistent level of quality and content. When considering how procedures are to be used the following points should be noted.

Procedures should:

- Ensure continuity of operations so that work tasks are carried out in a consistent and systematic manner.
- Be maintained and updated to remain relevant and accurate.
- Ensure that those involved in the work task have input into the content or procedures.
- Clearly and concisely communicate all necessary requirements to users undertaking activities.
- Be made available to the user in a form that is appropriate and in a language that is understood.
- Be developed and delivered within a document control system to ensure consistency across an organisation.
- Ensure that where training is provided for work activities, procedures match the training requirement.
- Cover both corporate level safety management requirements and workplace activities.
- Not be in conflict with legal requirements, policy requirements or industry best practice standards or guidelines.



The point relating to procedures being relevant and accurate is important. It is possible that alternative or unofficial procedures can gain common use where workers see that official procedures are no longer relevant. This unofficial approach is a good indication to management that there are developing and unresolved issues within the organisation that need to be investigated and addressed.



#### **OVERVIEW**

The approach to developing procedures will depend on the scope of the work activities that an organisation undertakes but in general terms there are three types of procedures; corporate, protocols and activity level.

Corporate procedures should detail:

- **Standard operations** activities defined within the <u>safety management system</u> that apply to all departments. Examples include incident and accident reporting, minimum personal protective standard requirements, unsafe act and unsafe condition reporting, etc.
- **Emergency response** procedures detailing arrangements for medical evacuation, crisis management, handling of the media and other company wide emergency arrangements.

Protocols should detail:

• **Non-standard events** – provide guidance and instruction when assessing a non-standard event to reach a decision on future action.

Activity level procedures should detail:

- **Standard operations** day-to-day or relatively frequent activities.
- **Emergency operations** procedures detailing arrangements for medical evacuation, emergency shutdowns and other local or project emergency arrangements.

#### CORPORATE PROCEDURES

Corporate procedures are those which provide instructions to workers and management for activities which are support functions that apply to all business units, facilities or projects. They are the macro procedures for the organisation and allow senior management to:

- Gather information in a systematic way, for example by specifying the precise requirements to create safety statistics for weekly and monthly reports,
- Exert a degree of risk control over production activities, for example by the management of change procedure,
- Ensure that activities are in compliance with regulations and policy requirements.

Corporate procedures will be at a level above activity procedures. In effect, all departments within an organisation will operate with both corporate and activity procedures; it's not one or the other. Corporate procedures can be developed to manage quite specific issues, for example to define personal protective equipment (PPE) standards across an organisation so that PPE to the required specification is being used regardless of location or activity.

This then brings in the issue of the potential benefits of economies of scale for the purchasing of PPE and other items required organisation-wide which can be managed at a corporate level and not at a local level where the sourcing and purchasing of PPE to the required standards may be difficult or expensive.

Corporate level procedures therefore create a consistent and known input into the management system. Examples of safety related corporate level procedures can include but are not limited to:

- Accident and incident reporting
- Accident investigation
- Audits and inspections
- Contractor assessment, tendering and contractor management
- Drug and alcohol abuse and testing
- Emergency medical evacuation
- Emergency response and crisis management
- Journey management
- Management of change

- Medical fitness to work
- Occupational and process safety performance reporting
- Permit to work
- PPE (minimum standards)
- Planned preventative maintenance
- Right to refuse work
- Safety communications (defining meeting types and expected frequencies)
- Safety observation reporting (unsafe acts and conditions)
- Permit to Work / Integrated Safe System of Work

Although there are considerable benefits to having a wide range of suitable corporate procedures, there are a number of issues that need to be taken into account:

- For large organisations, the sheer volume of documentation can be overwhelming and important information can be lost in the system if it is not properly implemented, organised and delivered.
- More procedures do not necessarily correlate with better safety performance.
- Who writes procedures and how they are written has a significant impact on their effectiveness. For example, if procedures are not written by those who do the work, it is possible that those who undertake the tasks may deviate from them if the procedure does not reflect the reality of the actual work activity.
- Operational or production pressures on personnel, either explicit or implied can mean procedures may not be followed if personnel feel that shortcuts can be made to save time or increase production.
- Where issues with procedural content are raised, there needs to be an effective and responsive process to manage these valuable inputs such as a document change request system.
- When working with international markets, be very careful if procedures (especially those with a safety critical component) need to be translated into another language. Ensure that a qualified technical translator is used and do not expect multi-lingual members of the workforce to undertake this role.
- Ensure that document management is covered within the internal audit and review cycle.

## PROTOCOLS

At a facility level there may be a requirement to issue activity protocols which are guidance documents for possible non-standard events rather than for work activities. These non-standard events should be foreseeable and already identified by the risk assessment process. For example, in a refinery environment it would be expected that the organisation would have a protocol in place on how to assess and manage a process leak prior to taking emergency action.

Since there are an almost infinite number of nonstandard scenarios that can occur, protocols tend to be general in nature but provide a structured approach to managing any potential developing scenario. For facilities which are affected by severe weather events such as hurricanes or flooding, a protocol could be developed to give guidance on what steps are required to secure the site, to make the operation safe and ensure the safety of personnel depending upon the forecasted severity and the type of event expected.

Protocols also have the advantage of ensuring that the decision making process is pre-defined depending on the stated criteria. When assessing unexpected or non-standard events, stating in this simple example that '*if A, B or C are present then go to emergency shutdown procedure XYZ*' eliminates any further discussion on the matter and provides a clear instruction to all involved parties. These documents are often used offshore in the decision making process for activities which can be disrupted due to severe storms or hurricane events that may require moving an operation away from a developing storm track or when consideration needs to be given to evacuating a facility.

A recommendation was made following the deadly explosion of the Corus #5 blast furnace explosion in the UK in November 2001 in which 3 people were killed, relating to the availability of protocols to assist in making decisions in a non-standard situation. The report recommended that:

"Decisions made by managers under pressure from adverse plant or process conditions present a potential source of significant error. Adequate training and experience is essential, but more precise decision-making protocols should be available for foreseeable circumstances to guide and inform decision making." 41



Protocols can be a significant aid in the decision making process ensuring that the appropriate response is given once all of the required information has been gathered, rather than an illconsidered or misinformed reaction to an unfolding event.

## ACTIVITY PROCEDURES

Activity procedures will tend to be location, project or facility specific and provide instructions to carry out tasks and activities. For projects especially if they are undertaken in locations outside the jurisdiction of the organisation or they are remote and need to be self-reliant, may need to develop and document their own corporate level project equivalent procedures, especially in terms of emergency response and medical emergencies.

#### USE OF MEDIA AND OTHER NON-TEXT MEANS IN PROCEDURES

Some consideration should be given to the use of non-text means to improve and clarify how information is displayed within an operating procedure, work instruction or other suitable document. After all, the purpose of a procedure is to pass on information in a clear, understandable and logical manner and the use of non-text means can help in this. Non-text means that can be embedded within a procedure or any other suitable document type, these can include:

- Work flow diagrams, tables, embedded video and animation.
- Hyperlinks (for Internet or Intranet connections).
- Hyperlinks (linking to other relevant documents within the document management system).
- Photographs, charts, schematics and pictograms.

The suitability of any of the above will be dependent upon the work task itself and the ability of the document management system to deliver media and Internet/Intranet content. The potential benefits of using non-text means within a procedure include:

Non-text content can combine different methods to deliver a range of information to a user in a more interesting and interactive manner.

- Non-text means can make procedures more interesting and relevant to users.
- Employees can get involved in the development of procedures by developing non-text content such as videoing a work task which can then be included within a procedure. This direct involvement of employees can help to promote ownership of the safety management system.
- Procedures with effective use of non-text content may be used as a training resource.



Although there are benefits, there are also drawbacks if the process is not well considered:

- Non-text content can make procedures too information dense if many different types are used in a single procedure.
- A procedure may be compromised if media or hyperlinks embedded within the procedure are corrupted or links are broken. This can quickly frustrate users.
- The more non-text information is embedded within a procedure, the more problematic it may be during the review and approval process.
- Developing professional standard animations or third party filming of work activities can be expensive.
- If non-text content is not used in a controlled and considered manner, the combination of text and non-text content may differ widely from procedure to procedure and vary in quality.
- Non-text content may mean procedures cannot be printed out in hard copy, for example where animations are embedded into a procedure.
- For safety critical, non-standard and emergency procedures additional non-text content must not impact upon the clarity and effectiveness of the procedure itself.

# WHAT CAN I DO?

This basic procedure outline list is not exhaustive and can differ considerably depending on the particular needs of the organisation. When considering how procedures and protocols should be developed, the following points should be noted:

- Establish a documented document control procedure stating the requirements for the management of all formal organisation documents, including:
  - Minimum basic content for both corporate or production level procedure templates.
  - Define the document creation, review, approval and archiving process.
  - Define the document change request process.
- 2. Ensure that workers who are involved in the work task are involved in the procedure creation and periodic review process. For corporate level procedures, ensure that they are reviewed by the legal departments where regulatory compliance is required.
- 3. Ensure that where it is appropriate, suitable and sufficient risk assessments are created for procedures where there is a safety consideration. Risk assessments may be either generic or task specific.
- 4. Ensure that the system controlling documents is included the audit and review process.

## PROCEDURE FORMAT EXAMPLE

There are varied options to choose from for the layout of procedures but the example below may provide some guidance;

- Unique document number All documents within an organisation need to have unique identification number which also provides some indication as to the document type, location and department where it is used. Corporate level documents should be easily distinguishable from activity level documents.
- 2. **Purpose and Scope** Purpose can be defined as the work activity to be undertaken and what is to be achieved. The scope is where the procedure is applicable, such as a specific plant, system, facility or business unit.
- 3. **Definitions** Many industries use specialist terms to describe roles, positions, work equipment, test equipment and work locations

and it may be worth considering defining these where not knowing or not clearly understanding what these mean could adversely impact the activity. Don't assume that everyone, including employees and contractors or even external auditors will be familiar with all of the terms and abbreviations used within your organisation.

- 4. Roles and Responsibilities Roles are temporary assignments that need to be undertaken as a part of the procedural process such as a fireman during a welding activity, fire warden during emergency drills or a media coordinator during an emergency scenario. Although they are not work positions per se, roles may also have minimum training or certification requirements and these will also need to be detailed. Responsibilities should define which individual or job position has overall responsibility for the activity and any additional responsibilities for personnel involved in the activity: these are normally defined by job position and not by individual names for activity procedures but may include names for corporate procedures as these may address senior management positions.
- 5. Minimum Requirements Minimum requirements need to be clearly stated such as any required personal protective equipment, a requirement for a toolbox meeting to be held, whether specific or specialised tools or work equipment are to be used or the procedure covers a task that requires a permit to work.
- 6. Limitations Detail information on any limitations that may apply to a work task. For example the task should not be undertaken when particular equipment is in production mode or if there are time constraints or environmental weather limitations. Reference can also be made to related documents where operational restrictions are documented, such as a matrix of permitted operations or other activity controlling documents.
- 7. **Procedural Steps** Steps for the task to be carried out usually in a sequential order or the process to be followed in case of a corporate procedure. Depending on the activity, work flow diagrams are often used as an alternative to text.
- 8. Forms and Records Some procedures will create written records which are recorded on specific forms, such as for a toolbox meeting, a permit to work form or an inspection checklist. These forms should be identified with their unique ID number and form title in this section

to avoid confusion with other forms. It also provides an audit trail if a procedure specifies particular records to be created when a task is undertaken.

- 9. **References** Include the name, document number and version number of any reference documents that apply to the procedure which may include a task specific or generic risk assessment, reference to company guidelines or industry guidance, a standard or Code of Practice. Ensure that references are periodically reviewed so that there is a degree of assurance that out of date or revoked material is not referenced in current procedures.
- **10. Document Control** All document pages should include the procedure title, document ID, current version number, page number and number of pages, as a minimum. Some organisations have the document template number too but this can be an unnecessary complication. For example, if both the revision and template revision numbers are available there can be confusion between the two where revision numbers differ.

# CAUTIONARY TALES

The Three Mile Island nuclear accident occurred on the 28th, March 1979 in Pennsylvania, U.S. This accident started out as a relatively small cooling circuit failure incident which should have been effectively managed but it escalated into a major nuclear accident due to the errors made by the personnel working at the plant on that day.

"The accident to unit 2 happened at 4 am on 28 March 1979 when the reactor was operating at 97% power. It involved a relatively minor malfunction in the secondary cooling circuit which caused the temperature in the primary coolant to rise. This in turn caused the reactor to shut down automatically. Shut down took about one second. At this point a relief valve failed to close, but instrumentation did not reveal the fact, and so much of the primary coolant drained away that the residual decay heat in the reactor core was not removed...The operators were unable to diagnose or respond properly to the unplanned automatic shutdown of the reactor." <sup>2</sup>

Although there were other contributing factors, the inadequacy of their procedures was highlighted as a factor that significantly contributed to the confusion of the operators as the event unfolded. The accident investigation report stated: "...we found that the specific operating procedures, which were applicable to this accident, are at least very confusing and could be read in such a way as to lead the operators to take the incorrect actions they did." <sup>3</sup>

Poorly written procedures played a significant contributory factor in the evolution of a manageable minor incident into a major nuclear accident. This single example illustrates that procedures and protocols are a significant safety control and should not be overlooked as part of an <u>effective safety management system</u>.

- Accident Investigation Report HSE The Explosion of No. 5 Blast Furnace, Corus UK Ltd, Port Talbot, 8 November 2001, Lesson 13, p6
- 2. World Nuclear Association <u>Three Mile Island</u> <u>Accident</u>
- **3.** Report of The President's Commission on the Accident at Three Mile Island. Causes of the Accident, p5
- 4. Ibid., p6



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