ISO 14001 4.4.6
OPERATIONAL CONTROL

MEKONG RIVER COMMISSION

MRC

FOR SUSTAINABLE DEVELOPMENT

Lesson Learning Goals

At the end of this lesson you should be able to:

➔ Name four types of operational control

➔ Describe when a documented operating procedure is needed

➔ List three benefits of documented procedures

➔ Using an example, summarize the steps in conducting an operational analysis leading to a documented procedure

➔ State the key topics covered by a procedure

➔ Specify expectations for suppliers and contractors

What are Operational Controls?

➔ Means by which an organization prevents pollution from operations, e.g.:

 » Pollution control equipment such as scrubbers, filters, precipitators, clarifiers, biological and chemical treatment, etc.

 » Alarms for gas, pH, conductance, tank level, etc.

 » Preventive maintenance practices

 » Operating procedures

ISO 14001 Operational Control says:

The organization shall identify those operations and activities that are associated with identified significant environmental aspects in line with its policy, objectives and targets. The organization shall plan these activities, including maintenance, in order to ensure that they are carried out under specified conditions by:

ISO 14001 Operational Control (Cont'd)

(a) establishing and maintaining documented procedures where their absence could lead to deviations from the environmental policy and objectives and targets

(b) stipulating operating criteria in the procedures

First Requirement of ISO 14001 4.4.6

➔ Refer to significant environmental aspects list to identify key operations and activities

➔ These must be controlled to:
  » Prevent pollution
  » Comply with legislation and regulations
  » Continually improve
  » Achieve objectives and targets

Methods of Operational Control

➔ Process controls:
  » electronic
  » mechanical
  » monitoring
  » observation

➔ Operating procedures:
  » verbal
  » documented

The Importance of Preventive Maintenance

➔ Key factor in preventing pollution from:
  » leaking connections, valves, pumps, lines, tanks
  » breakdown of machinery, pumps, pollution control equipment
  » incorrect instrument readings (calibration)
  » blocked lines, pumps, valves, equipment
  » catastrophic failure - explosion, burst, fire

➔ Helps to conserve energy, resources

What is a Procedure? Simple Version

➔ Instructions on how an activity should be done:
  » Who authorises and manages it
  » Who does what
  » When it should happen
  » What equipment is used
  » Sequence of tasks to be performed

What is a Procedure? Advanced Version

➔ An activity carried out according to specified instructions

➔ Combination of responsibilities, authority, resources, instructions needed to consistently perform an activity

➔ A procedure may be documented (i.e., written), but the document is NOT the procedure

When is a Written Procedure Required?

➔ When ISO 14001 specifies a "documented procedure"

➔ When the absence of a written procedure could lead to deviations from the environmental policy and objectives and targets

➔ When an operation, activity, or task is:

» complex

» conducted infrequently

» sensitive to operating variables

Advantages of Documented Procedures

➔ Help to achieve consistency between:
  » different divisions, departments, operators
  » different operators doing the same activity

➔ Specify consistent operating conditions, limits, targets, precautions

➔ Define roles, responsibility, accountability, reporting requirements

➔ Useful when training operators

Some Operations That May Need Written Procedures

➔ Production/manufacturing

➔ Maintenance

➔ Raw material procurement

➔ Handling, storage of raw materials, product

➔ Purchasing, shipping/receiving

➔ Contractor, supplier management

➔ Waste treatment, disposal, recycling, re-use

More Operations That May Need Written Procedures

➔ Transportation of raw materials and product

➔ Laboratory operations

➔ Changes to processes, equipment, or facilities

➔ Start-up and shut-down of processes and equipment

➔ Research, development, design, engineering, construction

➔ Decommissioning of equipment or facilities

Beware!!

→ ISO 14001 does not require extensive written materials

→ Assess carefully whether a procedure needs to be documented

→ Document only if the absence of written instructions may result in problems

→ Confirm that intended users can read

Who to Involve in Developing a Procedure

➔ Involve people who are knowledgeable and experienced in the operation, activity, or task

➔ Identify the 'star performers' and draw upon their collective wisdom

➔ Do not rely only on supervisors and managers

➔ Make this a democratic process - equal opportunity for input

How to Develop a Procedure

Four steps:

1. Identify an operation, activity, or task
2. Break it into a sequence of individual steps (called Operational Analysis)
3. Construct a flow-chart of the sequence (optional)
4. Describe each step in writing (= the procedure)

Step 1 in Developing a Procedure

Identify a discrete operation, activity, or task, e.g:

» filling a tank with chemical

» conducting a laboratory analysis for BOD

» replacing oil in a vehicle engine

» reporting monitoring results to government

» loading hazardous waste on a truck

Step 2 in Developing a Procedure

Break the operation, activity, task into a sequence of individual steps, e.g:

FILLING A TANK WITH CHEMICAL

- » Put on personal protective equipment (specify type)
- » Ensure spill containment and clean-up equipment is at hand (specify materials)
- » Check existing level of chemical in tank (how?)
- » Calculate amount of chemical to be added (how?)

Step 2 in Developing a Procedure (Cont'd)

FILLING A TANK WITH CHEMICAL

» Inspect condition of connecting hose (specify what for)

» Note gauge readings on tank (record on form)

» Connect hose between tank and chemical supply (how?)

» Check connections and valves for leaks - pressure test (how?)

» Etc.

Step 3 in Developing a Procedure

➔ Construct a flow-chart of steps in the operation, activity or task if a visual representation would be helpful

➔ Designate somebody to convert the notes from Step 2 into a clear, concise, logical documented procedure

➔ Include environmental and safety precautions, skills and knowledge required, operating criteria

Step 4 in Developing a Procedure

➔ Include responsibilities for managing, supervising, authorizing, doing, reporting on each step of the operation, activity, or task

➔ Originators and 'owner' review the procedure, and make changes if needed

➔ Designated person 'owner' authorises use of the final version and any future revisions

Format for a Written Procedure

➔ Title, 'owner'/originator

➔ Organization, department, function

➔ Purpose/objective, scope, definitions

➔ Instructions - sequence of actions, persons responsible, skills, qualifications

➔ Records, forms, related documents, references

➔ Authorized approval signature

➔ Initial date, and dates of revisions

One More Thing from ISO 14001 4.4.6

The organization shall establish and maintain procedures related to the identifiable significant environmental aspects of goods and services used by the organization and communicate relevant procedures and requirements to suppliers and contractors

Responsibilities of Contractors and Suppliers

➡ The organization is responsible for informing contractors and suppliers about operating procedures relating to their goods and services

➡ Contractors must comply with all EMS requirements when on site

➡ Suppliers may be required to meet specified environmental standards in their own facilities

Concluding Thoughts

Important points to remember are:

➔ Operational controls include pollution control equipment, alarms, preventive maintenance, and operating procedures

➔ Preventive maintenance is a key method of controlling operations

➔ ISO 14001 requires a documented procedure if the absence of one could cause environmental problems

Concluding Thoughts (Cont'd)

Additional points to remember are:

➔ Documented procedures define roles, responsibilties and operating criteria; help to achieve consistent performance; and assist with training

➔ Document a procedure only if it adds value

➔ Operational analysis deconstructs an activity or task into a sequence of simple steps

Concluding Thoughts (Cont'd)

Yet more points to remember are:

➔ Use 'local talent' to guide operational analysis

➔ Use standard format for documents

➔ Communicate environmental requirements to suppliers and contractors