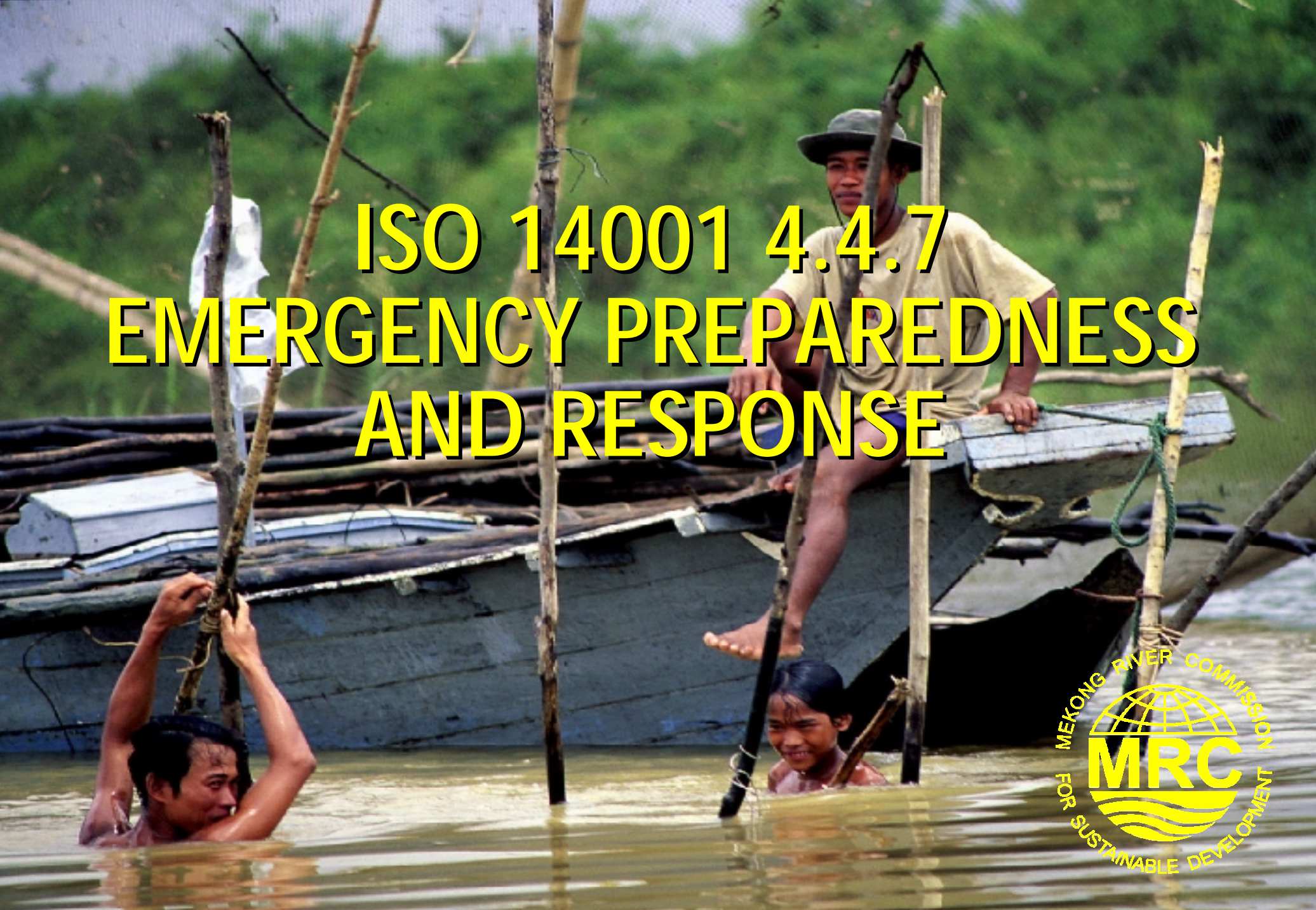# ISO 14001 4.4.7 EMERGENCY PREPAREDNESS AND RESPONSE

Lesson Learning Goals

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

➔ Say why emergency preparedness is important

➔ Name 3 ways to identify potential emergencies

➔ Map a sequence of steps for an emergency preparedness procedure, giving examples

➔ State criteria for different levels of emergencies

➔ Outline the contents of an emergency response plan, with examples for each section

➔ List the benefits of emergency response drills

➔ Describe the steps in an incident investigation

Purpose of Emergency Preparedness and Response

➔ Minimize the risks of emergencies occurring

➔ Identify potential emergency situations

➔ Develop, implement, and test plans to respond promptly and effectively to emergencies

➔ Minimize the impact of emergencies on the environment

➔ Continually improve emergency preparedness and response procedures

ISO 14001 Emergency Preparedness and Response says:

The organization shall establish and maintain procedures to identify potential for and respond to accidents and emergency situations, and for preventing and mitigating the environmental impacts that may be associated with them

Think Prevention

➔ ISO 14001 section 4.4.7 speaks first of PREPAREDNESS, i.e., prevention of emergencies

➔ Requires the development of a procedure to identify all possible incidents, accidents, and emergency situations during normal and abnormal operating conditions

Identify Emergencies

➜ Review incident reports for past five years

➜ Check statistics on incidents and emergencies at other similar operations

➜ Review environmental aspects list for potential emergencies under abnormal operating conditions

➜ Gather a group of personnel representing each function in the organization to brainstorm possible incidents and emergencies

Potential Emergencies

→ Fire, explosion

→ Gas leak, spill

→ Natural disasters - lightning, earthquake, flood, extreme weather

→ Tank, dam, equipment structural failure

→ Electric power or gas cut

→ Crash, collision

→ Sabotage, vandalism, terrorist attack, riot, bomb threat, hostage incident

Potential 'Hot Spots'

➔ Hazardous chemical storage

➔ Hazardous waste storage

➔ Bulk oil and fuel tanks

➔ Process start-up and shut-down

➔ High pressure vessels

➔ Rail and road tankers, ships

➔ Unloading, shipping points

➔ Waste treatment facilities

➔ Storm water drains

Map the 'Hot Spots'

➔ Locations, types, amounts of chemicals, gases, fuel, oil on-site

➔ Location, volume, age, secondary containment, inspection history of storage tanks

➔ Unloading, loading, transfer points for chemicals, fuel, oil

➔ Storm water run-off paths

Neighbourhood Receptors

➔ Identify sensitive local, regional areas:

» Residential, industrial, agricultural, fishing, recreation areas

» Drinking water sources

» Environmentally sensitive areas, nature reserves, endangered species

» Cultural, heritage sites

➔ Record prevailing wind direction in preparation for a gas leak

Equipment and Supplies

➜ Identify types, quantities, and storage locations of emergency equipment and supplies:

» Fire fighting equipment - hoses, extinguishers, blankets, foam

» Escape respirators, gas masks, self contained breathing apparatus

» Protective gloves, goggles, suits

» Spill absorbents, containment booms, neutralising chemicals

» Mobile emergency equipment

Scope of Emergency

Define levels of emergency:

➔ Level 1:
  » Can be dealt with by local department personnel

➔ Level 2:
  » Need to activate facility emergency response team; may need to evacuate site

➔ Level 3:
  » Full scale emergency requiring outside assistance; possible neighbourhood evacuation

Preventive Maintenance

A Key Factor in Emergency Preparedness

Regular inspection and maintenance of:

- ➔ Storage tanks
- ➔ Secondary containment facilities
- ➔ Pumps, valves, joints, pipelines
- ➔ Alarms for gases and liquids
- ➔ Process equipment
- ➔ Storm drains

Preventive Maintenance (Cont'd)

Regular inspection and maintenance of:

➔ Pollution control equipment

  » helps prevent failures, leaks, accidents, emergencies

Overview of Emergency Response Plan

➔ In addition to characterising potential emergencies and minimising risks, there must be an Emergency Response Plan covering:

» Procedures (i.e., roles, responsibilities, reporting relationships, resources, activities, records) for responding to the various types of emergencies identified

Emergency Response Plan Requirements

➔ First alert procedure

➔ Internal emergency communication structure - chain of command

➔ Emergency Response Team members' responsibilities

➔ Internal, external emergency phone numbers

➔ Evacuation routes, assembly points

➔ Responses to various types of emergency

Emergency Response Plan Requirements (Cont'd)

➔ Internal, external reporting requirements

➔ External communications - neighbours, media

➔ Restoration, remediation, disposal of clean-up materials

➔ Post-incident de-briefing of Emergency Response Team

➔ Incident investigation, corrective, preventive actions

➔ Emergency response training

Specific Requirements for Emergency Response Plan

➔ First alert procedure - all personnel
  » What to do, who to contact when an emergency is discovered
  » Emergency phone number(s), reporting requirements
  » Initial response actions

➔ Post instructions around the site

More Specific Requirements for Emergency Response Plan

➔ Define the chain of command

» Describe structure, responsibilities, reporting relationships, phone numbers for Emergency Response Team members, facility managers and supervisors

➔ Response plans for various emergencies:

» Fire, explosion, gas leak, spill

» Command post, emergency team deployment, equipment needs, site security, mitigation measures

Still More Specific Requirements for Emergency Response Plan

➔ Evacuation of facility personnel

» Identify primary and secondary evacuation routes and safe assembly points on site map

» Post maps at various locations on the site

➔ Evacuation of neighbourhood

» Notification of local residents, other neighbours, external emergency agencies: police, fire, ambulance, doctors, hospital

» Identify escape routes, responsibilities

Yet More Specific Requirements for Emergency Response Plan

➔ Reporting requirements and responsibilities
- » Internal: within the facility and organization
- » External: to government, neighbours, media

➔ Site clean up, remediation plan
- » Includes safe disposal of contaminated absorbents and other materials

➔ Emergency response team debriefing
- » Procedure for assessing effectiveness of emergency response actions
- » Recommendations for improvement

ISO 14001 Emergency Preparedness and Response also says:

The organization shall review and revise, where necessary, its emergency preparedness and response procedures, in particular, after the occurrence of accident or emergency situations

The organization shall also periodically test such procedures where practical

Additional Specific Requirements for Emergency Response Plan

➔ Incident investigation

  » Roles, responsibilities, and process

  » Root cause analysis

  » Corrective and preventive actions

  » Records of the incident and emergency response

  » Revision of procedures to prevent recurrence

Final Specific Requirements for Emergency Response Plan

➔ Drills to test emergency response procedures

  » Schedule drills regularly to simulate various types of emergencies

  » After a drill, emergency response team reviews effectiveness of procedures

  » Revise response procedures when necessary

  » Hold periodic evacuation drills for entire site

➔ Periodic review/revision of, and distribution list for, Emergency Response Plan

Concluding Thoughts

Important points to remember are:

- Prevention (i.e., risk management) is a key component of emergency preparedness

- An organization must have a procedure for identifying potential accidents and emergencies

- Need to know all potential sources, types, and environmental impacts of emergencies

Concluding Thoughts (Cont'd)

Additional points to remember are:

➔ An emergency response plan should cover roles, responsibilities, resources, actions, impact mitigation, communications, training, incident investigation, and review procedures

➔ Keep the emergency preparedness and response plan up to date

➔ Hold regular drills to test the plan