



UNIT-8

Implementation – improving Environmental Performance

Learning Outcomes

By the end of this unit the learner will be able to:

- ✓ Describe the manager's role in setting monitoring and communicating objectives and targets.
- ✓ Identify suitable operational controls to improve environmental performance

Unit 8

Implementation – improving Environmental Performance

The Manager's role in setting, Communicating and monitoring Objectives and targets.

To have a truly effective performance management process that supports employee performance, development and success, you need to get everyone involved.

Having engaged and informed senior executives, managers and employees will ultimately result in higher participation rates and better quality performance management.

So you need to clearly communicate to everyone, what they are responsible for as part of your new performance management process. Here's breakdown of the responsibilities of each stakeholder group: executives and leadership, managers, employees and HR.

As a manager, you have a responsibility to recognize and reinforce strong performance in your employees, and identify and encourage improvement where needed. But to begin with, you need to view performance management as a two-way discussion that goes on throughout the year. Your employees should never be surprised by the ratings and feedback they receive in their formal performance reviews.

As a manager, you are expected to:

- Use the performance management process as a valuable tool for supporting employee development and improvement.
 - If your employees sense a lack of interest on your part, they'll lose interest too.
 - When talking with your team about the process, be sure to emphasize its benefits, and encourage employees to take ownership of their own performance and development.
- Determine an appropriate schedule for regular performance conversations with those you manage directly.
 - Conduct short, regular meetings to discuss and record milestones, accomplishments, successes and challenges as they occur, when details are fresh in both your minds. This will allow you to better monitor progress on goals, and provide coaching as required. Plus, these short meetings reduce the effort it takes to prepare for and conduct your annual performance reviews because you've tracked progress and performance and provided the needed feedback when it was most valuable.

- Use the annual performance review meeting to review the achievements, setbacks, development and training that have already been discussed throughout the year — and then use this information to establish goals and a development plan for the coming year.
- Deliver regular positive and constructive feedback.
 - Give employees feedback during one-on-one meetings and informally as regularly as possible.
 - Commend your employee in front of their peers.
 - Make performance notes about each employee in the period between conversations, so that come conversation time, you have concrete examples to share.
 - Remember that the goal of feedback is to describe desired behaviors and expectations, not to dwell on undesirable behaviors.
- Check-in on goal progress
 - Regularly check in with employees on their progress on goals; offer coaching or assistance, or revise goals as necessary.
- Communicate and revisit performance expectations.
 - Communicate your organizations' performance standards and expectations to your employees. This will help your employees differentiate between acceptable and unacceptable behaviors and results and reduce any misunderstandings.
 - Gather feedback on employee performance from multiple sources. Use a 360-degree feedback or survey tool to complete and validate your own observations and perceptions.
- Improve your management and leadership skills.
 - Take the time to learn how to be a better manager and coach. Invest in your own development!
- Acquaint yourself with the different management needs of the different generations.
 - Employees from the millennial generation may have different needs and different expectations of managers. Research tells us they require constant feedback and recognition, and expect quick career advancement. Workers from other generations have different needs. Learn what motivates each employee, and adjust your management approach accordingly.
- Coach your employees in a way that strengthens two-way communication and reinforces desired behaviors.

- Coach when you want to focus attention on a specific aspect of the employee's performance.
 - Advise the employee ahead of time of issues you want to discuss.
 - Focus on describing your expectations and the desired behaviors rather than describing the gaps.
 - Take the time to understand why their performance is what it is, and get them to take ownership for performance improvements.
- Support your employees' professional and career development while making them accountable for it.
 - Regularly ask employees about their career aspirations and help them identify areas they may wish to improve or develop, as well as resources available.
 - Ensure each employee has a well-defined job description and understands the skills and competencies they must develop in order to progress up the career ladder.
 - Give your employees the time and flexibility they need to complete learning and development activities.
 - Ensure development is having an impact on performance.
- Submit your completed employee reviews by the designated deadline.
 - Failing to complete your formal performance review documentation on time sends your employees the message that recognition of their success and support for their development is not your top priority. It may also delay any pay for performance/ merit increases or bonuses your organization allocates to employees based on their performance ratings.
 - Understand and correctly use your organization's rating scale.
 - Be objective and have quantitative/qualitative facts ready to substantiate the ratings you give.
 - Provide details on how the employee demonstrated the core and job specific competencies you are rating them on.
 - Provide details on how they accomplished their goals, the milestones they met and work products they delivered.
 - Assign each employee a development plan to help them improve their performance and support the organization's success.

Key Terms in Planning:

- **Aspect:**

An element of the organization's activities, products, or services that can interact with the environment or with health and safety of employees, visitors or neighbors.

- **Impact:**

Any change to the environment, health and safety of employees, visitors or neighbors, wholly or partly resulting from an organization's activities, products, or services. Can be positive or negative. Objectives: Goals that your organization sets for its EMS. Can (should) be integrated with other business goals.

- **Targets:**

A measure of the EMS goal (objective) that your facility wants to reach. Usually connected with an end date (e.g. reduce hazardous waste by 50% by 2005).

- **Milestones:**

Checkpoints in the schedule you set for your EMS that help gauge if/how EMS objectives are being met.

- **Pace:**

Schedule that your organization sets for reaching EMS objectives and targets.

Factors to consider when defining competence, training and awareness requirements within an environmental management system.

ISO 14001 Requirements

The organization shall ensure that any person(s) performing tasks for it or on its behalf that have the potential to cause a significant environmental impact(s) identified by the organization is (are) competent on the basis of appropriate education, training or experience, and shall retain associated records.

The organization shall identify training needs associated with its environmental aspects and its environmental management system. It shall provide training or take other action to meet these needs, and shall retain associated records.

The organization shall establish, implement and maintain a procedure(s) to make persons working for it or on its behalf aware of....

1. the importance of conformity with the environmental policy and procedures and with the requirements of the environmental management system,
2. the significant environmental aspects and related actual or potential impacts associated with their work, and the environmental benefits of improved personal performance,
3. their roles and responsibilities in achieving conformity with the requirements of the environmental management system, and
4. the potential consequences of departure from specified procedures.

Explanation:

The Standard requires that the organization shall identify training needs and this clause requires that all personnel whose work may create a significant impact upon the environment have received appropriate training. There are two excellent reasons for training employees about environmental management and your EMS:

- Every employee can have an impact on the environment.
- Any employee can have good ideas about how to improve environmental management efforts.

Each person and function within your organization can play a role in environmental management. For this reason, your training program should cast a wide net. Everyone in the organization should be trained on the environmental policy, significant environmental impacts of their work activities, key EMS roles and responsibilities, procedures that apply to their activities, and the importance of conformance with EMS requirements. All personnel should receive appropriate training. However, training is just one element of establishing competence, which is typically based on a combination of education, training, and experience. For certain key roles which includes tasks which can cause significant environmental impacts, you should establish criteria for measuring the competence of individuals performing those tasks.

Thus the organization must satisfy the following four criteria:

1. **Ensure that Training Needs are Identified:** This can be performed via appraisals. In most companies this is an annual event – at the very least for salary review purposes. From this training needs will be identified and a plan of either internal or external training planned. All

individuals will need some level of training in the requirements of the environmental policy and a background to the requirements of ISO 14001. Some individuals will need specific training in emergency response. Others may need their roles to be changed and defined. An internal quality assurance auditor may well need to be 'converted' to an environmental systems auditor via an external training course.

2. **Ensure that these planned Needs are Met:** There must be a system to ensure that such individual training plans are carried out as intended. Procedures will be needed to describe such mechanisms, as well as including a broader description of how the organization's training strategy is structured. In addition to specific external courses or seminars, internal workshops and briefings are an acceptable vehicle for training. Internal environmental newsletters are also part of the range of tools available.
3. **Verify that the Training has Achieved its purpose i.e. increased Awareness:** This verification can be performed via feedback from training sessions: either a written report from the individual or a simple questionnaire to complete. Some organizations will ask personnel to undertake simple 'tests' to measure the effectiveness of the training. Other ways of verifying 'awareness' could be through the internal audit system. Asking questions of personnel during such audits will give an indication of their knowledge. One of the challenges can be the measurement of 'continuous improvement' within training. Clearly, measurable targets can be set for delivering the training, i.e. records of attendance would show who has attended such sessions. However, how can an organization 'measure' whether the knowledge (awareness) of personnel has 'improved' compared with their knowledge of say, 12 months ago?
4. **Verify that following training, the individual is competent at applying the awareness gained to their particular job:** This can be achieved by monitoring an individual's work, noting any improvements in work or, conversely, monitoring any persistent failure to absorb such training for example, by not being aware of the consequences of departure from a specific work instruction. Contractors, working on behalf of the organization, must also be subject to training requirements and this must be addressed in the training procedures. The employees of the contractor should have a certain level of training, that level to be determined by the organization. For both contractors and the organization itself, it must be kept in mind that the concept of significance must be applied to any training plans or programmes. The individual who is in an environmental front-line position – whose actions have the potential to cause a major impact on the environment – should have priority in environmental training followed by a more intensive scrutiny of awareness and competence than the individual whose actions have little potential to impact on the environment. Further, if for example an individual is trained to operate a pH meter to check effluent pH, clearly both awareness and competence can be verified by giving

the individual a sample of liquid of known pH and asking him to test it. If the results are correct it would tend to demonstrate that the training was successful.

A critical first step in developing your training program is assessing your training and skill needs. In assessing these needs, you should consider both general and specific aspects. For e.g., What EMS procedures affect Operator's daily work and what happens if they aren't followed? What environmental impacts might Operator's work cause? What broader understanding of environmental issues and our EMS does Operator need? Look at the training you conduct already, for compliance with environmental and health and safety regulations and other purposes. You may find that your existing training efforts go a long way towards satisfying the requirements for the EMS. Because of the level of effort involved in a training program, this is one EMS area where you don't want to start from scratch. Many employees may already be qualified on the basis of their experience and previous training. All training should be documented. Since some employees may require training on how to run a process safely, on the job training certainly plays a role. Plan and schedule training opportunities carefully. While finding enough time for training can be a challenge, there may be creative ways to make "more time". Use venues like safety meetings, staff meetings, and tool box meetings to provide "training" and reinforce key messages. New employees can pose a significant training challenge. Consider developing an EMS training package for new employee orientation. Even better, videotape one of your current EMS training courses to show new employees. In reviewing training needs, don't forget to consider the qualifications and training needs of your environmental manager and your trainers. Professional certification programs may be appropriate for certain functions. Factor your EMS skills requirements into your recruiting, selection, and new employee orientation efforts. Establishing competency for various tasks can be a challenge. Competency criteria for jobs that can cause significant environmental impacts should be as objective as possible. Consider "job aids" to supplement training or help establish competence. Examples of job aids include written or pictorial job procedures, decision tables or flow charts..

Key Steps in Developing a Training Program

- Step 1:** Assess training needs requirements
- Step 2:** Define training objectives
- Step 3:** Select suitable programs and methods
- Step 4:** Prepare training plan (who, what, when, where, how)
- Step 5:** Implement training program
- Step 6:** Track training (and maintain records)
- Step 7:** Evaluate training effectiveness
- Step 8:** Improve training program (as needed)

An EMS is a management system that effectively integrates environmental considerations into an organization's day-to-day operations and management culture. The structure of an EMS may vary, though the most common is the ISO 14001 standard because it offers the opportunity to become certified. While voluntary, ISO 14001 certification is an effective and widely recognized method for demonstrating an organization's commitment to environmental performance and quality management, which can make it a valuable marketing and contracting tool for many businesses. In some cases, certification is necessary in order for an organization to compete in the global marketplace. An EMS may be developed for the whole facility, or it may be confined to a specific process or area of an organization. The term "fenceline" refers to the boundary that an organization sets for its EMS, i.e. the operations and activities that will be addressed in its EMS.

Key Elements of an EMS A properly designed EMS should follow the "Plan-Implement (Do)-Check-Review (Act)" cycle that is based on the principle of continuous improvement. TURA Program EMS Guidance Document July 2006 9 1.

1. Environmental Policy:

An organization's environmental policy serves as the basis for EMS design and implementation. It sets out the organization's goals and defines the actions the organization will follow. Environmental policies should be well documented and demonstrate a commitment to compliance, pollution prevention, and the well being of employees, customers, and the local community. The policy must be approved by top management and communicated to all employees, since they will play an integral role in meeting the goals of the policy.

2. Planning:

Careful planning allows the organization to proceed with implementation of an EMS in a logical, orderly manner. Planning should include comprehensive analysis of an organization's operations and the inherent environmental aspects and related impacts that may be controlled and for which an influence can be achieved, as well as consideration of the steps necessary to meet new goals. As part of the EMS planning phase, an organization must consider its environmental aspects and impacts, legal requirements, internal performance criteria, environmental objectives and targets and environmental plans and management programs. While development of an Environmental Policy falls under the planning phase, it is usually recommended that it be developed as a first step with the goal of setting forth a vision statement that has top management endorsement.

3. Implementation and Operation:

Implementation of an EMS will likely require new priorities and practices and across-the-board training and other forms of support to universal understanding of the EMS process among staff. Documented procedures help establish and maintain momentum towards the organization's

environmental and economic performance goals. To successfully meet the intent of this key EMS requirement, the following factors should be considered in the implementation and operation phase of the cycle: resources; EMS alignment and integration within the organization's overall business model, accountability and responsibility (e.g., roles and responsibilities), environmental awareness, knowledge skills and training, communications and reporting, EMS documentation, operational controls, and emergency preparedness and response.

4. Checking and Corrective Action:

A successful EMS uses various methods to monitor and improve on its performance. Auditing, monitoring, and measurement of environmental indicators are necessary to achieve the goals and objectives of the EMS as defined in the Environmental Policy. They also provide opportunities to create performance incentives for all levels of staff. An organization has the ability to meet this specific requirement via consideration of the following: measuring and monitoring data associated with daily performance, corrective and preventive action, EMS records and information management and results of EMS audits.

Describe a range of methods for Communicating Environmental Information.

There are two levels of communication to be concerned with: internal communication and external communication. In both instances, a successful communication program hinges on:

- Setting communication objectives in a timely manner;
- Communicating regularly and integrating EMS communication results with other EMS records; and
- Ensuring that stakeholder dialogue is a two-way process.

1. Setting Communication Objectives:

Communication objectives help you to frame the message you want to convey about your EMS; if the objective also includes a "how", then you can begin to gain a sense for the method to most effectively communicate your message. Your facility probably already has some communication programs in place. Think of the Right to Know station you may have in your facility as an example of a communication program. If you have the informational posters, the Material Safety Data Sheets, and contact information if employees have questions, then you have at least one internal communication program in place at your facility.

2. Communicating Progress on the EMS:

Communicating progress on your EMS is an ongoing activity that:

- Helps maintain the momentum of support for your EMS (e.g., meets the continuous improvement requirement);

- Reinforces the information you are trying to communicate; and
- Helps create two-way dialog between your facility and the stakeholders and can provide a great opportunity to get regular input from your stakeholders. Simple and effective methods of regular internal communication include:
 - Bulletin board postings;
 - Email/printed newsletters;
 - Breakfast meetings or staff meetings, if they occur regularly; and
 - Pre-printed messages on pay stubs or inserts in paychecks.
- Examples of regular external communication include:
 - Community newsletters;
 - Facility tours;
 - Presentations at local organizations, including Chambers of Commerce and schools; and
 - Holding public meetings when you feel it is appropriate.

You will need to decide which techniques are best suited for your facility given its staff, resources, and relative proximity and interest level of external stakeholders. You will also need to periodically review your communication programs to ensure they are effective and up-to-date.

3. Ensure Communication is a Two-Way Process:

Whether you are dealing with internal or external stakeholders, you need a system to ensure that inquiries are addressed. This is especially important when dealing with external stakeholders. A Stakeholder Communication Record can serve to document the nature of the inquiry, to whom it was made, when it was made, what it concerned, and the response given. Documenting inquiries and responding in a timely manner can help strengthen customer and supplier relationships, investor and employee morale, and community and regulator trust.

4. Explain the importance of the control of documents in the context of an environmental management system.

A dynamic EMS must keep pace with constantly changing environmental requirements, changes in the business world, and personnel and management changes in the facility. It therefore becomes critical to the success of the EMS to devise a system for keeping documents up-to-date and ensuring that staff is working with timely information. This is document control.

Document Control generally calls for the organization to:

- Develop a procedure for controlling EMS documents.
- Determine who needs to be involved in this process, including who has the authority to revise existing EMS documents or develop new ones.

- Determine who needs access to controlled copies of EMS documents and ensure it.
- Notify users when new documents are created or existing documents are revised
- Provide a mechanism for periodic review and updating of EMS documents.
- Provide a mechanism to ensure that obsolete documents are not used
- Where possible, integrate EMS document control with other systems (such as quality) The heart of EMS document control is the development of a procedure that outlines:
 - Who is authorized to create new EMS documents and revise existing ones;
 - The process for revising documents;
 - Review of EMS documents to determine need for revisions and removal; and
 - Where to find EMS documents.

If you have the resources, an electronic system can be used for document control. Create a document control index to track the revision history of EMS documents. If multiple copies of the same EMS document exist in your facility, keep a log of who has these copies.

5. Identify suitable operational controls to improve environmental performance.

Operational controls are the specific actions or procedures your facility will follow to prevent or minimize negative impacts from processes or activities at your facility. It is especially important to consider those processes or activities that were identified as significant environmental aspects. Operational controls may be a procedure or a work instruction. It may be useful to adopt the following strategy in drafting operational controls:

- For existing written operational controls, interview the staff responsible for the process or activity. Find out if anything has been changed, and why.
- For unwritten operational controls, interview the staff and draft an operational control.
- Check the Operation and Maintenance Manuals! For processes, see if trade organizations have established Best Management Practices.
- For all operational controls, get input from the staff responsible for the process, since they will be implementing the operational control. Their input may help in identifying and preventing and controlling environmental and worker safety and health risks.

In determining which activities require operational controls, it is helpful to use the following guidelines:

Identify operations associated with legal requirements, significant environmental aspects, and objectives and targets:

- Which have procedures and are documented, which have procedures but aren't documented, which don't have procedures (but need them), and which are adequately controlled with simple work instructions?
- Do your operational controls ensure regulatory compliance?

- For operational controls that are linked to objectives and targets, the target measure should show that the root cause (i.e. the fundamental cause of the environmental impact) is addressed.

Determine How Source Reduction may Address these Operations:

Source reduction is about minimizing the risk of environmental impacts by using processes that are:

- a) Inherently safe or safer than its counterparts; and
- b) Prevent waste from occurring in the first place. Source reduction consists of six techniques:
 - Input Substitution: replacing a toxic or hazardous substance or raw material with a non-toxic or less toxic substance.
 - Product Reformulation: substituting an existing end product with one that is non-toxic or less toxic (or resource intensive) upon use, release, or disposal.
 - Process Redesign or Modification: Developing and using processes of a different design than those currently used.
 - Process Modernization: upgrading or replacing existing process equipment and methods with other equipment and methods based on the same process line.
 - Improved Operation and Maintenance: improved housekeeping practices, system adjustments, product and process inspections, or process control equipment or methods.
 - Recycling, Reuse, or Extended Use of Chemicals or Resources: Use of equipment that is integral (hard-piped) to the process line; closed-loop.

If Source Reduction is not Feasible, Determine what Controls exist, and if they are Effective:

1. Improve existing controls or to identify new ones:

Operational controls that fail to meet the objectives and targets can be improved. The existing practices may not have been appropriate or they may have been appropriate but were not properly implemented.

2. Determine who is responsible for maintaining and reviewing operational controls:

For each process or activity that requires an Operational Control, you need to identify a Responsible Person for maintaining and reviewing the controls. The Responsible Person must ensure the Operational Control is consistently carried out. Depending on the size of your facility, one person may be responsible for both tasks. In larger operations, though, line workers would be responsible for implementing the operational control, while the line manager might be responsible for reviewing the operational controls.

3. Train employees and contractors on operational controls:

Once the operational controls are drafted, develop a training program for those individuals who are responsible for maintaining or reviewing the controls. Document this training as you would other EMS training modules and be sure to maintain records. Where possible, try to include operational controls training with general environmental training. For your EMS program, the process followed for the development and implementation of operational controls should be documented, including:

- How operational controls are determined;
- How they are catalogued;
- Who is responsible for maintaining the operational controls;
- How they are developed and reviewed
- How they are documented; and
- Where they are kept/how they are made available where needed

The importance of Emergency Preparedness and Response.

An emergency response plan (ERP) is a mandatory part of the OH&S program. Emergency response is one of the four activities included in emergency management and also includes: prevention, preparedness and recovery. The ERP involves a process with procedures that outlines the internal/external resources, roles, responsibilities and accountabilities; and training requirements needed to deal with emergency situations in a controlled manner. In an emergency, all workers must know their specific roles and responsibilities to keep themselves and others safe. Musculoskeletal injury (MSI) prevention considerations should always be included in emergency response planning.

Some examples include:

- ensuring all emergency signage is understandable and easy to read
 - placing emergency equipment and gear within easy reach of those who are required to use it
 - making sure workers understand what is required of them in the event of an emergency
- Incorporating emergency preparedness and response into the OH&S program strengthens the internal responsibility system and is essential to building a positive safety culture and healthy workplace.

Benefits of Emergency Preparedness Response

Outlined below are some of the benefits associated with developing effective emergency preparedness and response procedures that go beyond legislated requirements.

- demonstrating the commitment to the health and safety of workers and the public
- reducing potential loss to people, equipment, material and the environment

- ensuring that all workers, including managers and supervisors, know their roles and responsibilities, and are trained to respond
- identifying both internal and external resources and capabilities
- ensuring mutual aid agreements with other organizations are effective*
- being effective in reducing emergency response times
- helping restore business operations as soon as possible
- enhancing public perception that industry and their emergency responders are effectively managing emergencies

Members of the Co-ordinating Group will be well placed to understand the emergency response agencies and the resources available in the local area or will know where to get the information.

The following tasks are involved in Step 1:

- Compile a list of potential emergency response participants. In addition, Coordinating Group members may be aware of specialist groups that could be called on in specific emergency situations. (Another tool is the Community Development Toolkit. Please see box on the following page).
- Obtain copies of existing emergency plans and review these to identify any further emergency response agencies and participants.
- Establish concerns, such as deficiencies in resources or weaknesses in response capabilities. Prepare a brief description (perhaps a spreadsheet) of all emergency participants, their roles and resources, including personnel, equipment, special knowledge, facilities and so on. Pay particular attention to understanding and documenting the boundaries between the different providers, gaps, overlaps and any unclear roles and responsibilities.

Many mines and smelters operate in remote areas where government agencies and infrastructure may be extremely limited or, where they do exist, are severely under resourced. In such cases the mine or smelter will provide virtually all the resources necessary to deal with emergencies. It may already have provided equipment, such as community ambulances, or training to local groups such as volunteer firefighters. In some cases, towns or settlements adjacent to mines and smelters may have grown substantially as a result of the company's presence and have outgrown the capabilities and resources of its emergency response agencies. Volunteer organisations may exist that are capable of fulfilling a role, such as organizing an evacuation.

A checklist of emergency response participants can be developed along the following lines. For mines operating in remote areas, not all of these agencies will be present, and company personnel will fulfil many of these functions:

- Fire department and police;
- Emergency health services such as ambulances, paramedic teams and poisons centres;
- Hospitals, both local and for evacuation for specialist care;

- Public health authorities;
- Environmental agencies, especially those responsible for air, water and waste issues;
- Other industrial facilities in the locality with emergency response facilities;
- Transport companies and suppliers;
- Civil defence teams;
- Welfare services;
- Red Cross/Crescent;
- Public works and highways departments, port and airport authorities; and
- Public information authorities and media organisations.

Some mines are fly-in, fly-out operations remote from towns and from emergency response agencies. Some are in pristine areas with no local community, where the emergency response would be aimed at preventing damage to sensitive ecosystems. Again, the operation may have to provide most of the equipment and facilities to be able to react to an incident. However, there may be agencies responsible for or NGOs concerned with the protected areas that may also be able to mobilize staff and equipment in the case of an accident.

In other cases, facilities are located in highly developed areas with efficient emergency services and environmental agencies present. There is, therefore, a wide variety of situations, and the inventory of potential emergency response providers and available resources will be different in each case.

The response to environmental emergencies often comes from a huge range of groups: local communities, local and national authorities, foreign governments, the United Nations, non-governmental organizations, and increasingly, corporate entities. In this confusing melée, the Joint Environment Unit is the primary multilateral focal point with a remit to mobilize and coordinate international responses to environmental emergencies. Over the past 15 years, the Joint Environment Unit has worked with many international partners to develop tools, systems, training and coordination mechanisms that make environmental emergency responses more effective. The world will never be free from environmental emergencies: natural forces are too strong to be contained, accidents will happen, and conflict recurs. If anything, climate change and population pressure will increase the danger. But with planning, preparation and coordination, vulnerable countries can be ready to deal with disaster and the international community can respond quickly and effectively.

ISO 14001 Requirements

The organization shall establish, implement and maintain a procedure(s) to identify potential emergency situations and potential accidents that can have an impact(s) on the environment and how it will respond to them.

The organization shall respond to actual emergency situations and accidents and prevent or mitigate associated adverse environmental impacts.

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

The organization shall also periodically test such procedures where practicable.

The Standard requires that three components be addressed by the organization:

Establish and maintain procedures to identify the potential for, and the response to, accidents and emergency situations, in order to prevent and mitigate the environmental impacts that may be associated with them.

Review and revise the importance of learning from incidents. Obviously corrective actions will be taken and results of audits will be considered after the occurrence of accidents or emergencies or even 'near misses'.

Testing of emergency plans should be planned and the Standard indicates that periodic testing of such procedures should be carried out where practicable.

Describe the types of emergency situation that might have an impact on the environment.

Basically, if there is an emergency situation where a negative environmental impact takes place, the company needs to have plans in place to deal with this situation to avoid or minimize environmental damage. In order to decide which situations to anticipate, it is best to look to the environmental aspects that you identified early in your implementation of ISO 14001

The impact – Since the environmental aspects are any part of your company's activities that could interact with the environment, either positively or negatively, it is important to note how the aspect makes an impact. Obviously, you do not need to make plans for an emergency response when the impact to the environment is positive – only when it is negative.

Control – Part of the identification is indicating if you control the aspect or merely have influence over it. This is important, since you need to have control over the aspect in order to create an emergency plan and respond to it.

Significance – This is probably the most helpful part of the aspect identification when it comes to identifying the need for emergency preparedness. If the aspect has been identified as significant, such as the potential for a large fire in a process, then this is an indication that you might need to have an emergency response plan ready in the case of a fuel spill occurring. If the potential fire would be small, and the burning fuel would have only a small impact on the environment (such as burning alcohol rather than rubber tires), then the aspect may not have been identified as significant and an emergency plan may not be necessary (or would be much simpler than a plan for a major fire).

Environmental emergencies may be caused by natural, technological or humaninduced factors or a combination of all three and have the potential to cause severe harm to the environment, as well as loss

of human life or property. Mining activities generate significant concern in terms of their potential adverse impact on the environment, as well as on the health and safety of employees and surrounding communities. Potential environmental hazards and risks associated with mining operations include, but are not limited to, land contamination from waste dumps, contamination of ground and surface water systems, the release of hazardous materials and the stability of dams with a safety risk. A well-known example of an environmental emergency incident is the Marries Pruitt tailings dam failure in 1994. The 31m high northern wall of the Harmony Gold Mine tailings dam collapsed resulting in about 2.5 million tonnes of liquefied tailings flooding the entire nearby mining village. Seventeen people lost their lives, many homes were destroyed and severe harm was caused to the environment. At the time of the Marries Pruitt disaster, there was little to no legislation that dealt with the environmental implications of an emergency incident or disaster. This changed with the introduction of the National Environmental Management Act 107 1998 as amended (NEMA), which makes specific provision for dealing with emergency incidents that may be potentially hazardous to the environment and to people. Section 30 of NEMA relates to the control of environmental incidents. An incident is defined as “an unexpected, sudden and uncontrolled release of a hazardous substance, including from a major emission, fire or explosion that causes, has caused or may cause significant harm to the environment, human life or property”. Section 30 places a duty on the person responsible for the environmental incident to report to the relevant authorities on a number of aspects related to the incident, including individuals whose health and safety may be affected. Furthermore, the responsible person is obliged to undertake all reasonable steps to contain and minimise the effects of the incident on the environment; to undertake clean-up procedures; to remedy the effects of the incident; and to assess the immediate and long-term effects of the incident on the environment and public health. Failure to comply with the provisions of section 30 may result in a compliance notice been issued by an Environmental Management Inspector (EMI). It is important to note that there has been a recent amendment to section 30 of NEMA, in terms of the National Environmental Management Laws Second Amendment Act 30 of 2013 by the insertion of section 30A. Section 30A introduces the concept of “an emergency situation” which differs from the definition of an “incident” in section 30. An “emergency situation” is defined as “a situation that has arisen suddenly that poses an imminent and serious threat to the environment, human life or property, including ‘disaster’ as defined in section 1 of the Disaster Management Act, 2002 (Act No. 57 of 2002) but does not include an incident referred to in section 30 of this Act”. Section 30A will come into effect on 18 December 2014. Section 30A (1) allows for verbal and written directives to be issued by a competent authority to the person responsible to undertake listed or specified activities, without obtaining the prerequisite environmental authorisation in order to prevent or contain an emergency situation or to prevent, contain or mitigate the effects of an emergency situation. By specifically excluding the definition of an “incident” from the definition of an “emergency situation”, it appears as if the legislature intends to make a clear and deliberate distinction between an “environmental incident” and an “environmental emergency situation” which appears to have the following effects:

- Where an environmental incident arises and a listed activity is triggered whilst undertaking reasonable measures to prevent or contain an incident or to prevent, contain or mitigate the

effects of an incident, the responsible person must first obtain environmental authorisation from the competent authority before commencing with the listed activity.

- Where an environmental emergency situation arises, the competent authority may dispense with the requirements for obtaining environmental authorisation where a listed activity is triggered, for purposes of undertaking reasonable measures to prevent or contain an emergency situation or to prevent, contain or mitigate the effects of an emergency situation. Based on the above, it is important for a mining operation to be able to distinguish between an environmental incident and an environmental emergency situation.

The definition of what constitutes a disaster in terms of the Disaster Management Act is therefore important.

A disaster is defined as “a progressive or sudden, widespread or localised, natural or human-caused occurrence which –

(a) Causes or threatens to cause

- Death, injury or disease;
- Damage to property, infrastructure or the environment;
- Disruption of the life of a community;

(b) Is of a magnitude that exceeds the ability of those affected by the disaster to cope with its effects using only their own resources” In light of the above definition, the mine must determine whether an event may be classified as a disaster.

In doing so, the mine must assess the potential severity of the impact on the environment, human life and property, and whether it is of a significant magnitude to warrant the involvement of other parties, such as the State, in order to cope with the effects of the situation. It therefore envisages a situation similar to that of the Merriespruit tailings dam failure where the effects of the situation impacted the whole mining village as opposed to a minor spillage of hazardous materials in a confined area at the mine, which may be regarded as an environmental incident rather than an emergency situation. However, the drafting of section 30A of NEMA, is somewhat problematic as the definition of an “emergency situation” is arguably too broadly defined and overlaps with the definition of an “incident” in section 30 (above), despite the exclusion of an “incident” as referred to in section 30. The definition includes both a sudden situation that poses an imminent and serious threat to the environment, human life or property as well as a disaster, since the word “including” prefaces the reference to a disaster. Thus, the intended distinction between an “environmental incident” and an “emergency situation” becomes vague and may result in an undesirable situation where the responsible person may attempt to rely on section 30A rather than section 30. It is therefore hoped that the broad definition of an “emergency situation” does not lead to such potential abuse by the responsible person identifying an “environmental incident” as an “emergency situation” by the simple fact that it has the potential to cause an imminent or serious impact on the environment. Such abuse, may possibly lead to directives

being issued by the competent authority to dispense with the requirement to obtain an environmental authorisation, under inappropriate circumstances. Nevertheless, the insertion of section 30A may require a mine to amend its emergency preparedness plan and emergency procedures so as to provide for disaster management; and further require the mine to facilitate training of its employees to be able to identify instances which may result in a disaster situation. Overall effective management of environmental incidents and environmental emergency situations is a risk management tool which must be utilised by a mining operation to prevent or minimise the effects of a potential incident or emergency situation on the environment and enable appropriate action to be taken by the person responsible. While sections 30 and 30A of NEMA may not have prevented disasters such as Marries Pruitt, the impact that such a disaster had on the environment would have to have been taken into consideration. “Prevention is not only more humane than cure, it is also much cheaper. Above all let us not forget that disaster prevention is a moral imperative, no less than reducing the risks of war,” quote by Kofi Annan, the Secretary General of the United Nations in July 1999.

Detail How Prior Preparation and Provision of Training and Resources can Mitigate any Effects.

The Purpose Of mitigation is to identify measures that safeguard the environment and the community affected by the proposal. Mitigation is both a creative and practical phase of the EIA process. It seeks to find the best ways and means of avoiding, minimizing, and remedying impacts.

Mitigation measures must be translated into action in the correct way and at the right time if they are to be successful. This process is referred to as impact management and takes places during project implementation. A written plan should be prepared for this purpose, and includes a schedule of agreed actions.

Mitigation is a critical component of EIA process. It aims to prevent adverse impact from happening and to keep those that do occur with an acceptable level.

The objectives of mitigation are to:

- Find better alternatives and ways of doing things
- Enhance the environment and social benefits of a proposal
- Avoid, minimize or remedy adverse impacts

There is a misconception that whose work in emergency preparedness and response is an additional responsibility on top of the regular normative and developmental work of the Organization, and that this work is mainly funded through ad hoc extra budgetary resources. This may be appropriate for response to specific and unpredictable crises but not to the fulfilment of whose core function to strengthen the capacity of Member States in emergency preparedness and risk reduction.

Being a technical development area, WHO key activities to support risk reduction and emergency preparedness activities should be primarily funded through the WHO country regular budget. However, additional funding could be obtained from:

- Earmarking a proportion of extra budgetary overseas development assistance and/or relief and recovery funds for capacity-building for emergency preparedness in the affected and neighboring countries.
- Fund-raising for specific projects that are not funded by the above sources and aiming at country capacity-building in the field of emergency preparedness and response.

Mitigation as an integral part of environmental assessment aims at the avoidance and reduction of project related impacts that may be connected with previous policies, plans or programmes. The EU defines mitigation in Directive 85/337/EC as 'measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects' (European Union, 1985). Treweek (1999) defined mitigation as 'any deliberate action that is taken to alleviate adverse effects, whether by controlling the sources of impacts or the exposure of receptors to them'. Rundcrantz and Skärbäck (2003) defined mitigation as something that 'limits or reduces the degree, extent, magnitude or duration of adverse impacts'. A particular useful and influential definition of mitigation in the context of designated European Wildlife Sites was provided by the European Commission's guidance note on Article 6 of the Habitats Directive (European Commission, 2000), defining mitigation as 'measures at minimizing or even negating the negative impact of a plan or project, during or after its completion'. Compensation can be distinguished from 'mitigation' in the sense that it involves undertaking measures to replace lost or adversely impacted environmental values that should have similar functions equaling existing environmental values. Cowell (2000) defined environmental compensation as 'the provision of positive environmental measures to correct, balance or otherwise atone for the loss of environmental resources'. Kuiper (1997) talked about compensation in terms of 'the creation of new values, which are equal to the lost values'. If the lost values are irreplaceable, compensation concerns the creation of values which are as similar as possible. In the USA, for the purposes of the Clean Water Act, under which wetland permits are issued, mitigation is defined as: "sequentially avoiding and minimizing impacts and compensating for remaining unavoidable impacts".

Detail the Reporting Requirements of Pollution Incidents to Regulatory Agencies.

A pollution incident means an incident or set of circumstances during or as a consequence of which there is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur. It includes an incident or set of circumstances in which a substance has been placed or disposed of on a premises, but it does not include an incident or set of circumstances involving only the emission of any noise.

The specific requirements for PIRMPs are set out in Part 5.7A of the POEO Act and the Protection of the Environment Operations (General) Regulation 2009 (POEO (G) Regulation). In summary, this legislation requires the following:

- All holders of EPLs must prepare a pollution incident response management plan (section 153A, POEO Act);

- The plan must include the information detailed in the POEO Act (section 153C) and the POEO(G) Regulation (clause 98C) and be in the form required by the POEO(G) Regulation (clause 98B);
- Licensees must keep the plan at the premises to which the EPL relates (section 153D, POEO Act);
- Licensees must test the plan in accordance with the POEO(G) (at least every 12 months and after a pollution incident) in accordance with the POEO(G) Regulation (clause 98E); and
- If a pollution incident occurs in the course of an activity so that material harm to the environment is caused or threatened, licensees must immediately implement the plan (section 153F, POEO Act).

Under section 148 of the POEO Act, licensees and anyone causing a pollution incident are required to report pollution incidents. The Amending Act makes the following changes to this reporting obligation:

- the pollution incident must be reported **‘immediately’**, rather than ‘as soon as practicable’ which was the previous requirement under section 148;
- ‘each relevant authority’ must be notified of the pollution incident, not just the appropriate regulatory authority under the POEO Act. Relevant authorities may include, but are not limited to, the EPA, the Ministry of Health, the Work Cover Authority, local councils and Fire and Rescue NSW;
- the EPA is able to direct the occupier of the premises where the pollution incident occurred to notify any other person of the incident that the EPA considers necessary; and
- the maximum penalty for failing to notify of a pollution incident in accordance with the requirements of the POEO Act has been doubled to \$2 million.

Pollution Incidents Requiring Notification

There is no change to the type of pollution incidents which must be notified, namely where there is a risk of ‘material harm to the environment’. Section 147 of the POEO Act provides that;

(a)...harm to the environment is “material” if:

- it involves actual or potential harm to the health or safety of human beings or to eco systems that is not trivial, or
- it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations), and

(b) loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.’

Information Requiring Notification

Section 150 of the POEO Act provides that the following information about a pollution incident must be notified:

the time, date, nature, duration and location of the incident;
 the location of the place where pollution is occurring or is likely to occur;
 the nature, the estimated quantity or volume and the concentration of any pollutants involved, if known;

- the circumstances in which the incident occurred (including the cause of the incident, if known);
- the action taken or proposed to be taken to deal with the incident and any resulting pollution or threatened pollution, if known; and
- any other information prescribed by the Regulations.
- Notification of the pollution incident must be made immediately after a pollution incident becomes known. The duty to notify is also ongoing and any information that is not known at the time the incident is notified must be provided when it becomes known...

The Environment Agency incident hotline to report:

- damage or danger to the natural environment
- pollution to water or land
- poaching or illegal fishing
- dead fish or fish gasping for air
- watercourses blocked by a vehicle or fallen tree causing risk of flooding
- flooding from main rivers or the sea
- incidents at Environment Agency-regulated waste sites
- illegal removals from watercourses
- unusual changes in river flow
- collapsed or badly damaged river or canal banks

Further Reading:

- ✓ *Environmental Performance Reviews OECD Environmental Performance ...By OECD,(2013)*
- ✓ *Environmental Performance Reviews OECD Environmental Performance ...By OECD(2013)*