UNIT-7 Planning for Environment Improvement

Learning Outcomes

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

- ✓ Identify environmental impacts arising from environmental aspects.
- ✓ Evaluate the significance of environmental aspects.

Unit 7

Planning for Environment Improvement

The goal of this unit is to teach you how to identify and evaluate an organization's **environmental aspects**, outline the processes and scope of an environmental aspect review (including inputs, outputs and operations, and accounting for abnormal and emergency situations), and identify which activities relate to which environmental aspects.

Environmental Aspects

The ISO 14001 defines environmental aspects as those elements of an organization's activities or processes that can influence the environment. For example, wastewater discharges, air emissions, resource consumption, energy usage, and ecosystems all fall under this definition.

In terms of environmental aspects, the ISO 14001 requires organizations to:

- develop ways to identify environmental aspects in order to determine those that have or may have a significant impact on the environment,
- maintain accurate and regularly updated documentation of these aspects
- include aspect lists (emphasizing significant aspects) in necessary reports
- consider these aspects as causes, and their impacts as effects

Keep in mind that aspects can be:

- direct or indirect
- normal, abnormal or emergency
- past, present or future

Role of Aspects in the EMS

Significant aspects drive the EMS, which is specifically designed to identify, control, manage and improve such aspects. Aspects play an important role in determining compliance with legal and other obligations, and elements such as operational control, training, monitoring, measurement, planning, and setting goals all depend on which aspects are significant.

The Aspects Management Process

There are several steps to aspect identification and management. These include:

- Listing and characterizing activities and processes with possible environmental interactions
- Identifying aspects and impacts for each activity and process
- Determining the significance of each aspect
- Maintaining detailed records

Federal considerations for environmental aspects and the EMS include:

- The mission, or what the facilities are designed to do
- The activities that support the mission, for instance, vehicle maintenance
- The actions that are both regulated and not regulated, for instance, work commute

Fig. 7.1: examples of environmental aspects

Examples

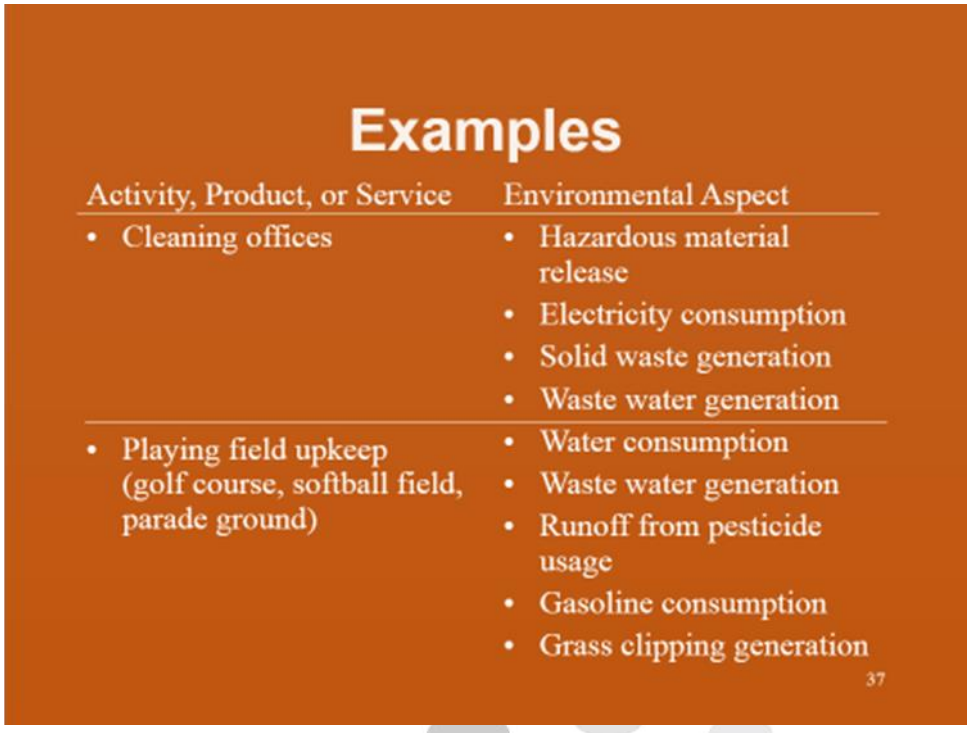
Activity, Product, or Service	Environmental Aspect
• Store	• Raw material consumption • Fuel consumption for transport • Solid waste generation
• Cafeteria	• Food waste generation • Electricity consumption • Water consumption • Waste water generation • Release of ammonia from refrigeration equipment (potential)

33

Examples

Activity, Product, or Service	Environmental Aspect
• Office work	• Electricity consumption • Water consumption • Waste water generation • Release of ozone depleting substances in air cooling units (potential) • Solid waste generation • Heavy metals "use" in computers

35



Determining Significant Aspects

A significant aspect is one that has or may have a huge impact on the environment. The owner of the site related to the aspect is responsible for deciding how to determine significance. Significance can be based on a numeric value of a subjective assessment composed of yes or no questions. Significance is tied to factors such as environmental degradation, natural resource supplies, regulatory or legal requirements, and the concerns of interested parties.

Environmental Impacts

The environmental impacts of an aspect are defined as any changes to the environment, be they good or bad, that may be wholly or partly caused by an organization's activities, products or services.

Environmental impacts include things such as:

- Air quality degradation
- Water resource depletion or contamination
- Soil contamination
- Area nuisance
- Increased CO2 from coal-fired power plant emissions
- Landfills and resource usage

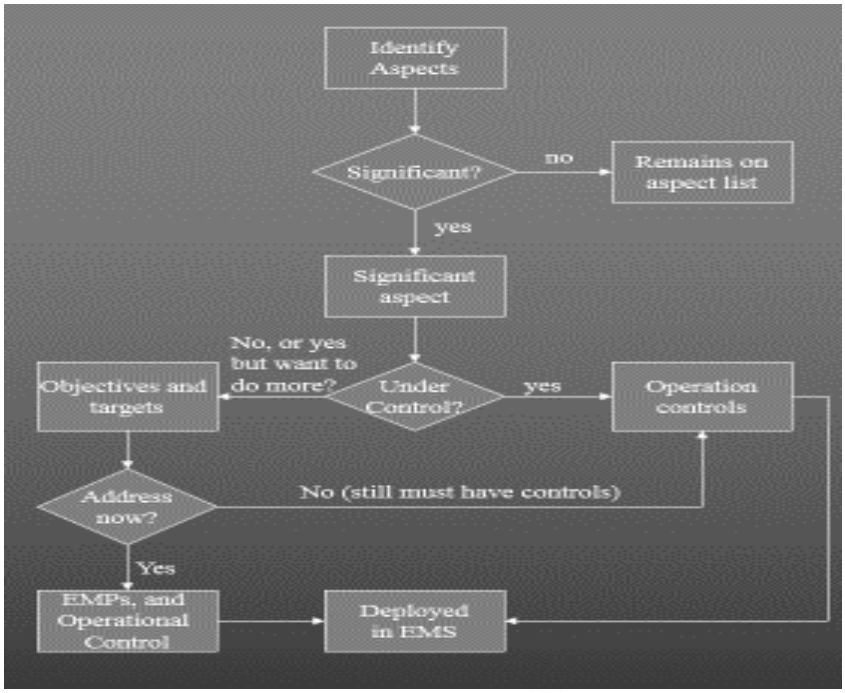


Fig. 6.2: aspect significance

ENVIRONMENTAL THEME	ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT
Air (acidification)	Sulphur dioxide emissions from transport, heating etc.	Acidification of water and soil
Water	Discharges of polluted water	Adverse impacts on water ecosystems
Soil	Leakages from pipes	Soil pollution
Natural resources/energy	Use of water and non-renewable energy, lighting, and paper consumption.	Depletion of natural resources, air pollution, greenhouse effect

Fig. 6.3: environmental aspects and impacts

Environmental Aspects and Impacts

The standard distinguishes between environmental aspects and environmental impacts. The environmental aspects of an organization can cause environmental impacts. Examples of environmental impacts include water and soil acidification, the greenhouse effect, etc. An environmental impact is the consequence of the environmental aspect on people, plants or animals.

The ISO 14001 standard makes a distinction between environmental aspect and environmental impact to help organizations determine their environmental footprint. The point of the EMS is to control environmental aspects in order to prevent negative environmental impact. Aspects, unlike impact, are relatively easy to determine and evaluate.

Once the significance of each aspect has been determined, goals for dealing with these aspects must be formed, along with procedures for achieving these goals. Since all aspects cannot be addressed at the same time or to the same degree, more significant aspects must be prioritized.

In other words, there are four basic steps to aspect evaluation.

1. Identifying which environmental aspects the organization can control or influence.
2. Determining which environmental aspects have significant impacts.
3. Prioritizing significant aspects and taking action to deal with these aspects.
4. Updating the identification and evaluation of environmental aspects.

An organization will have to make choices at each of these steps. For example, when identifying aspects, it must decide how detailed the identifications should be, and which aspects are significant. For environmental aspects with significant environmental impacts, the question then concerns what must be done to cope with these impacts, and how best to incorporate these considerations into the system.

Possible criteria for aspect evaluation include the following:

- Are there any legislation and regulations which apply?
- What is the range and frequency of the aspect?
- Are there internal standards for dealing with this aspect?
- Does it pose any environmental risks (especially of permanent damage)?
- Are there local conditions related to this aspect?

The table below (Fig. 6.4) was compiled based on the above. The environmental aspects are weighed to arrive at a decision regarding how to prioritize significant aspects. Here, aspects with legal requirements and aspects that have generated complaints are considered significant by the company.

This table is the result of the following steps:

1. Identifying and listing environmental aspect and impacts.
2. Determining the significance of each aspect based on its impact.
3. Determining which significant aspects need to be dealt with first.

ACTIVITY	ENVIRONMENTAL THEME	ENVIRON-MENTAL ASPECT	ENVIRONMENTAL IMPACT	LEGAL REQUIRE-MENTS	SURROUNDINGS /COMPLAINTS	IMPACT BEFORE MEASURE	IMPACT AFTER MEASURE	SIGNIFIC-ANT ASPECT	DEGREE OF CONTROL	POSSIBLE MEASURE
Transp-ortation and storage	Waste	Concrete mortar and draw materials: spillage, sweepings (not usable in process)	Depleting natural resources, waste	No	No	Moderate	Low	Yes	Good (operation-al instruct-ions)	Catcher
	Noise and vibrat-ions	Average140 lorries/day as result of delivery and disposal movements	Disturbance to surroundings/ neighbours	No	Occasional	Low	Low	Yes		

	Air	Emissions from transport vehicles, dust (blown about)	Acidification, greenhouse effect, health	Yes	Yes, frequent, about dust	Moderate	Low	Yes		Modific-ations to vehicles
	Water	Rain water from site contaminated with concrete mortar and raw materials	Impact on water in ecosystems (discharged into surface water)	Yes	No	Moderate	Moder-ate	Yes	Good (operation-al instruct-ions)	Only if it exceeds disch-arge limits
	Soil (only from an incid-ent)	Leakage from vehicles, storage of material, underground tanks, spillage	Contaminated soil	Yes	No	High	High	Yes		Extra accident preven-tion measures

	Energy	Energy consumption from external (diesel) and internal transportation (LPG, diesel)	Depletion of natural resources							Modify driving habits, motors, and vehicles
Meas-uring and mixing	Waste	Packaging of dyes, leftover concrete from cleaning mixer plant	Waste of materials and energy							
	Noise and vibrat-ions	Refilling mixer plant and escape of air from vents	Disturbance to surroundings							
	Air	Refilling mixer plant, emissions limited by dust filters	Disturbance to surroundings							Mainten-ance dust filters

	Water	Rinse water from cleaning mixer plant, partly re-used in process	Impact on water ecosystems if discharged to surface water							
	Energy	Electric motors of mixing machines, heating of mixing water	Depletion of natural resources							Energy-saving plan

Fig. 6.4: aspect and impact evaluations

Environmental Aspect Goals

When setting goals for dealing with environmental aspects, it is important to keep in mind that these goals must not only address the environmental impacts of these aspects but also remain consistent with the organization's priorities.

These priorities generally include:

- Alignment with EMS policy
- A limited number of criteria, for simplicity
- Fulfilling legal obligations
- Community/media concerns
- Potential or actual effect on human health
- Potential or actual effect on environmental health
- The size or extent of the impact
- The severity of the impact
- The likelihood of the impact occurring
- The total cost associated with addressing the impact
- How the impact will affect the daily operations of the organization

The best practices for dealing with significant aspects and impacts are:

- Involving the staff in the process
- Employing a core management team to identify significant impacts
- Making criteria and scoring methods simple but meaningful
- Considering scoring, priorities and limitations when determining significance
- Addressing all plan components
- Documenting methods and final decisions
- Periodically reviewing procedures and lists (generally, annually)

Further Reading:

- ✓ ***Environmentally Improved Production,*** **Lucas Reijnders (2012)**
- ✓ ***Continual Improvement with ISO 14000,*** **Edited by Lennart Piper (2003)**