UNIT-5 Planning for Environmental 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 5

Planning for Environmental Improvement

on successful completion of this unit the Candidates will be able to..

- understand how to identify and evaluate an organisation's environmental aspects and impacts
- Outline the methodology and scope of an environmental aspect review, including inputs, outputs and operations of the organisation, direct and indirect environmental aspects, abnormal and emergency situations.
- Identify environmental aspects related to the activities, products and services of the organisation.

Environmental Aspects ISO 14001 Definition

Elements of an organization's activities, products or services which can interact with the environment. (For example: wastewater discharges, air emissions, resource consumption, energy usage, ecosystem alterations, etc.)

ISO 14001 Requires Organizations to..

- develop procedures to identify environmental aspects in order to determine those which have or can have significant impact on the environment
- Keep aspects information up-to-date (regularly, and whenever changes occur), not once and done.
- Necessary records will include aspects lists, and significant aspects list
- Aspects are "cause", impact is the "effect"
- Control and influence of aspects is a factor
- Aspects can be:
  - direct or indirect
  - normal, abnormal, or emergency
  - past, present, or future
- Aspects address not only waste stream, but resource consumption, energy, and other "non-traditional" factors (noise, odor, visual)

Role of Aspects in the EMS

- Significant aspects drive the EMS and are a subset of the full list of aspects
- EMS is designed to identify, control, manage, and improve upon the significant aspects
- Compliance with Legal and Other Requirements is a part of the system that does relate to the aspects
- Elements such as operational control (procedures and work instructions), training, monitoring and measurement, emergency planning, and setting objectives all depend on significant aspects

Going About the Aspects Process

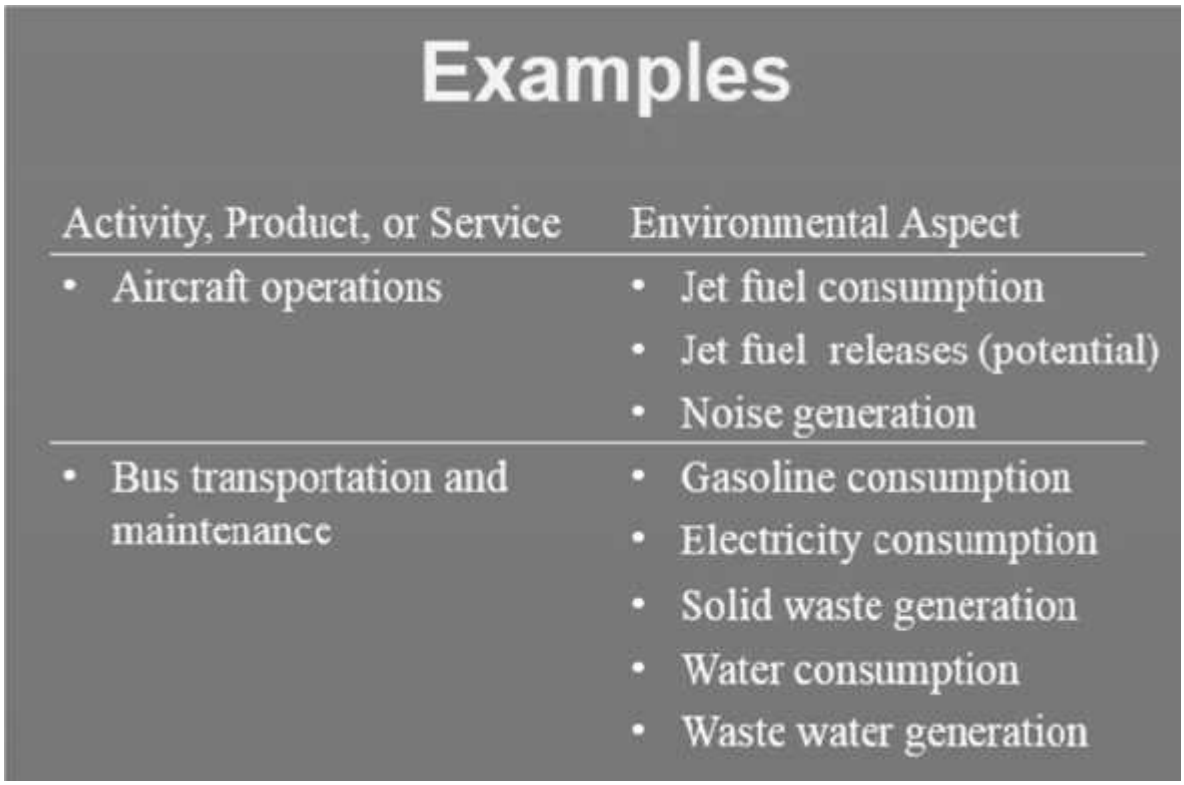
- Identify who and how this will be done (aspects procedure)
- List and characterize activities, products services
- Identify aspects and impacts for each A/P/S -Tap into your knowledge base!
- Determine significance
- Maintain records

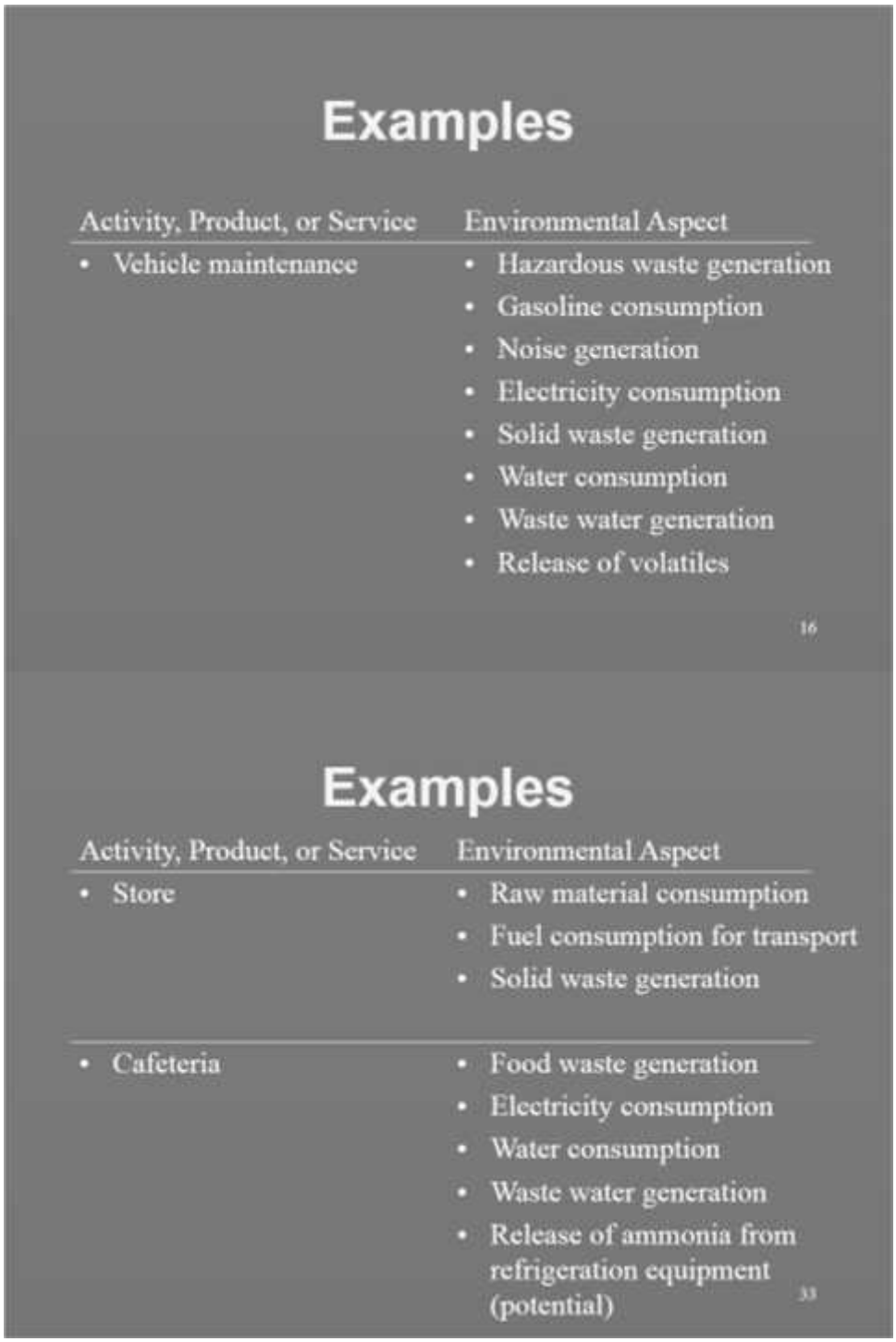
Activities, Products and Services

- This is where you describe what you do at your facility – mostly "activities" for Feds
    - Consider mission – what 'facility' is designed to do - e.g. visitor center
    - Consider activities that support the mission – e.g. vehicle maintenance
    - Consider actions that are both regulated and not regulated e.g. commuting to work

List of Aspects, for example:

- Releases to air
- Water consumption, pollution
- Land contamination
- Use of raw materials, natural resources
- Other local environmental, community issues





Examples

Activity, Product, or Service	Environmental Aspect
• Vehicle maintenance	• Hazardous waste generation • Gasoline consumption • Noise generation • Electricity consumption • Solid waste generation • Water consumption • Waste water generation • Release of volatiles

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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)

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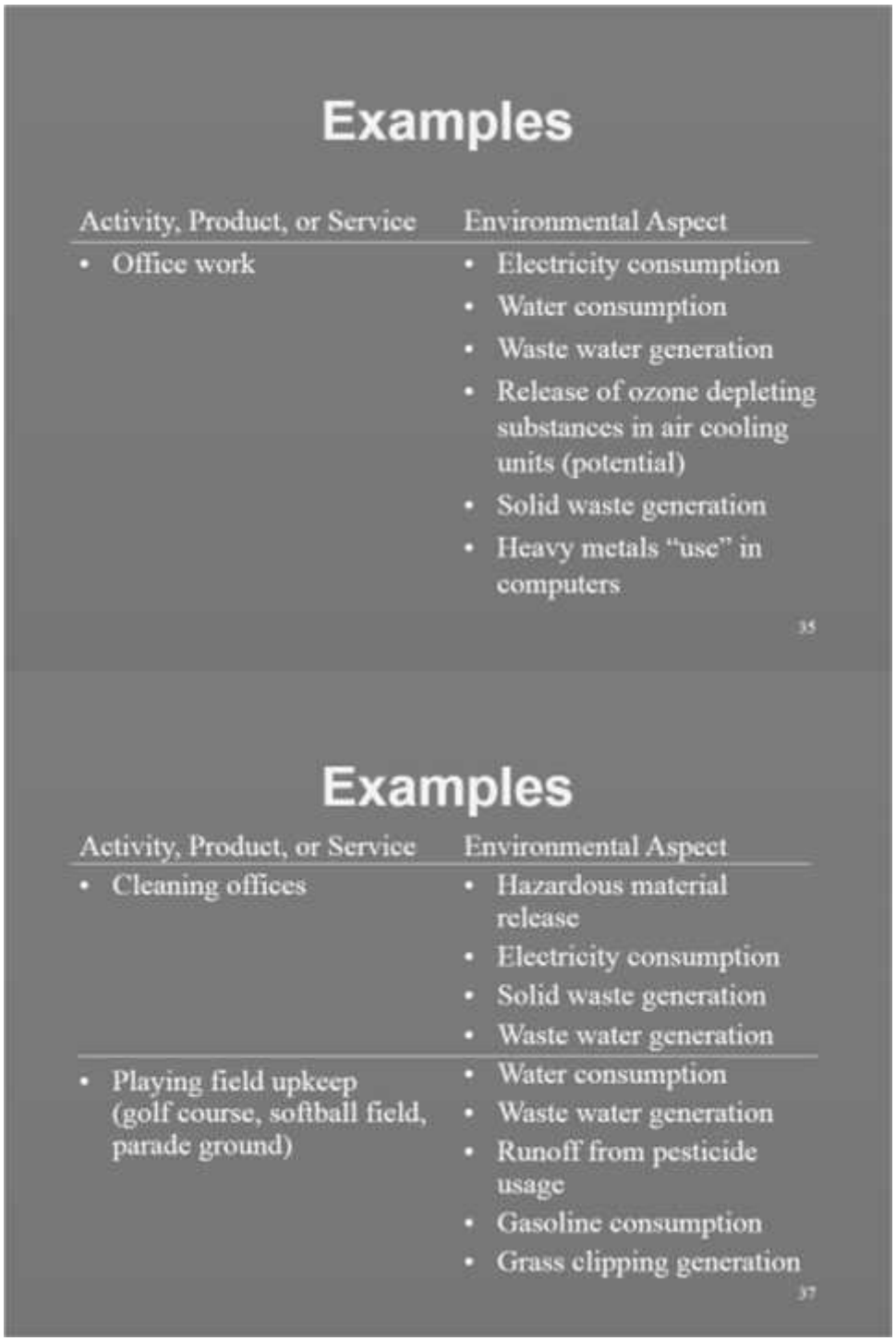

Examples

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

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Examples

Activity, Product, or Service	Environmental Aspect
• Cleaning offices	• Hazardous material release • Electricity consumption • Solid waste generation • Waste water generation
• Playing field upkeep (golf course, softball field, parade ground)	• Water consumption • Waste water generation • Runoff from pesticide usage • Gasoline consumption • Grass clipping generation

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Determine Significant Aspects

- A significant aspect is one that has or can have a significant impact on the environment.
- Site selects the criteria for significance rating and cutoff value
- Significance can be determined by numeric cutoff value or subjective assessment based on yes/no answers

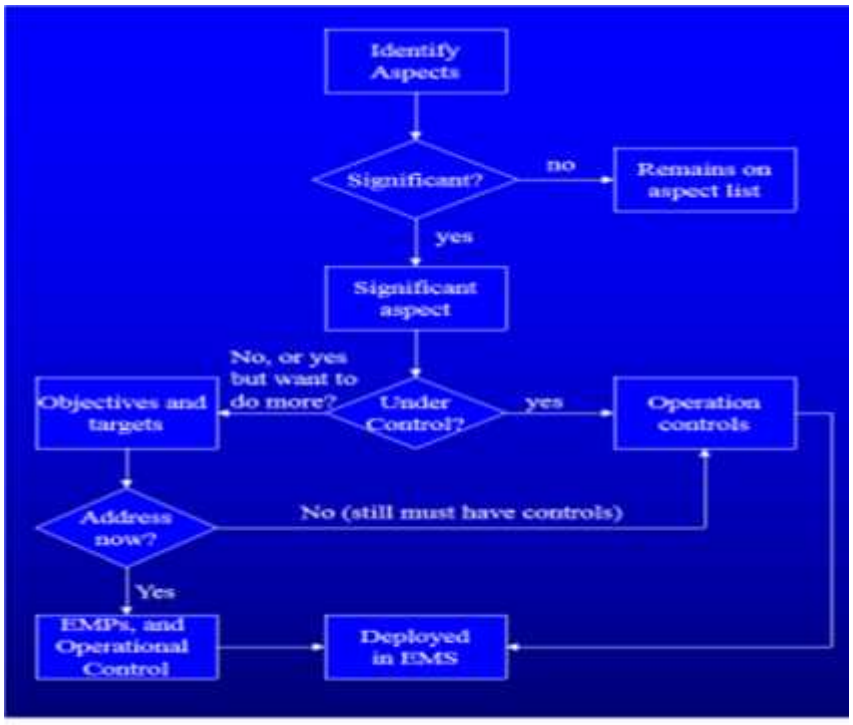
- Significance could be tied to: environmental degradation concerns, natural resource concerns, regulatory or legal exposure, concerns of interested parties

Environmental Impacts

Any change to the environment, whether adverse or beneficial, wholly or partly resulting from an organization's activities, products, or services (based on the aspects, for example: air emissions impacts the air by degrading the air quality).

Impacts

- Air quality degraded
- Water resource depleted
- Storm water contaminated
- Soil contaminated
- Area nuisance
- Increased CO2 from coal-fired power plant emissions
- Landfill space conserved, raw materials conserved



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

Environmental aspects and environmental impacts

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

Since it is very difficult for an organization to accurately valuate its environmental impacts, the ISO 14001 standard distinguishes between environmental aspect and environmental impact. The point of the environmental management system is to control and curtail the environmental aspects in or der to prevent environmental impact. The environmental aspects are reasonably easy for an organization to evaluate, and give a good idea of the points to consider in the environmental management system.

Evaluating the Significance of Environmental Aspects.

Once the organization has determined its significant environmental aspects, it must formulate objectives and targets, as well as the programmer of procedures for meeting them. Since priorities must be set when formulating the objectives, this should be seen as the next step after evaluating the environmental aspects.

The following steps can be drawn from the text above:

- **Step1:** Identifying the environmental aspects which the organization can control or influence.
- **Step2**: Determining which environmental aspects have significant impacts
- **Step3**:Determining and taking measures for the selected significant environmental aspects
- **Step4:**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 on the level of detail at which to do so, and then which environmental impacts must be considered and designated a significant. For environmental aspects with significant environmental impacts, the question is which objectives must be identified and how they can be embedded in the system.

Possible Criteria for Evaluation

Possible criteria for evaluation are:

- Are there legislation and regulations which apply?
- What is the range and frequency of the aspect?
- Have internal standards been drawn up?
- Are there associated environmental risks (with 'permanent' environmental damage) before and after any measures are taken?
- Are there local conditions, for example, are a company' sperm is as close to a nature preserve or water- collection area?
- Table lists the evaluation criteria for the inventory as used in our samples. The companies have chosen the following as principles for determining their significant environmental aspects:
- The environmental aspects with legal requirements are significant;
- The environmental aspects which have generated complaints are significant.

The table below was compiled based on the above; here the environmental aspects are 'weighed 'to arrive at a selection.

The table is the result of the following steps:

1. Making the inventory of environmental aspects and impacts;
2. weighing their significance;
3. the end result: which environmental aspects are significant and which environmental aspects must be assigned improvement measures?

ACTIVITY	ENVIRONMENTAL THEME	ENVIRONMENTALASPECT	ENVIRONMENTAL IMPACT	LEGAL REQUIRE-MENTS	SURROUNDINGS /COMPLAINTS	IMPACT BEFORE MEASURE	IMPACT AFTER MEASURE	SIGNIFICANTASPECT	DEGREEOFCONTROL	POSSIBLE MEASURE
Transportation and storage	Waste	Concrete mortar an draw materials: spillage, sweepings (not usable in process)	Depleting natural resources, waste	No	No	Moderate	Low	Yes	Good(operational instructions)	Catcher
	Noise and vibrations	Average140lorries /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		Study making modifications to vehicles
	Water	Rain water from site contaminated with concrete mortar and raw materials	Impact on water in ecosystems (in so far as discharged into surface water)	Yes,2)	No	Moderate	Moderate	Yes	Good(operational instructions for good management)	Only if discharge limits are exceeded
	Soil(only from an incident)	Leakage from vehicles, storage of material, underground tanks, spillage	Contaminated soil	Yes	No	High	High	Yes		Study extra accident-prevention measures

	Energy	Energy consumption from external(diesel) and internal transportation(LPG, diesel)	Depletion of natural resources							Modify driving habits, motorsand vehicles
Measuring and mixing	Waste	Packaging of dyes, leftover concrete from cleaning mixer plant	Waste of materials and energy							
	Noise and vibrations	Refilling mixer plant and escape of air from vents	Disturbance to surroundings							
	Air	Refilling mixer plant, emissions limited by dust filters	Disturbance to surroundings							Maintenance dust filters

	Water	Rinse water from cleaning mixer plant, part lyre-use din 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

The key considerations in setting objectives and targets associated with the significant environmental aspects of the organisation.

Significance Criteria Considerations

- Address Facets of the Environmental Impacts
- Be Consistent With What is Important to the

Organization's Priorities

- Alignment With EMS Policy
- Limit the Number of Criteria
- Regulated - (legal requirement)
- Community/Media Concerns – (community concerns or perception)
- Impact to Human Health - (the potential or actual impact to human health)
- Impact to Environment - (the potential or actual impact to flora/fauna and/or other natural resources)
- Magnitude - (volume, size, or amount of the Impact)
- Severity - (measure of the intensity of the Impact; impact, damage, or deterioration)
- Probability - (measure of how likely it is that the Impact will occur)
- Cost - (the total money, time, and resources associated with controlling, mitigating or responding to an impact)
- Operational impact - (the level of influence, consequence, or effect an Impact can have on the day-to-day operations of the organization)

Best Practices

- Engage Staff across the Organization to Develop Activities List
- Employ the Core Team to Identify Significant Impacts
- Make Your Scoring Methods and Criteria Simple, but Meaningful
- Determine Significance Based on Scoring as well as Organizational Priorities and Limitations
- Make Sure to Address Plan Components
- Document Your Methods and Final Decisions
- Review Your List on a Periodic Basis (Annually)

Further Reading:

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