THE MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

Ternopil Ivan Puluj National Technical University

The department of management

in manufacturing sphere

The course of lectures on discipline

**Environmental Management**

for the 4th year students

of the specialty 6.030601«Management»



Теrnopil – 2016

Lutsykiv I. V. The course of lectures on discipline “Environmental Management” for the 4th year students of the specialty 6.030601 “Management” (full-time study bachelors).– Ternopil: ФОП Паляниця В. А., 2016. – 83 p.

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The course of lectures on discipline “Environmental Management” have been discussed and approved at the meeting of the department of management in manufacturing sphere of the Ternopil Ivan Pul'uj National Technical University on September 5, 2016, minutes № 2.

The course of lectures on discipline “Environmental Management” have been discussed and approved at the meeting of the methodical committee of the faculty of Management and Business in Manufacturing Sphere of the Ternopil Ivan Pul'uj National Technical University on \_\_\_\_\_\_\_\_\_\_\_\_\_, 2016, minutes № \_\_\_.

**Сontents**

***Introduction***…………………………………………………………………….…….4

***Lecture 1.***  FUNDAMENTALS OF ENVIRONMENTAL MANAGEMENT………6

***Lecture 2.*** ENVIRONVENTAL PROTECTION…………………………………...20

***Lecture 3.*** ENVIRONMENRAL POLICY……………………………...…………..30

***Lecture 4.*** ENVIRONMENTAL CERTIFICATION AND ECOLOGICAL PASSPORT OF ENTERPRISEE……………………………………………………43

***Lecture 5.*** ENVIRONMENTAL EXPERTISE (EXAMINATION)………………..54

***Lecture 6.*** ENVIRONMENTAL AUDIT………………………………...………...62

***Lecture 7.*** THE ISO 14000 MODEL...………………………………………..…….72

**INTRODUCTION**

In recent years the topic of environmental management has become very common. In sustainable development conditions, central and local governments much more often notice the need of acting in ways that diminish negative impact on environment. Environmental management may take place on many different levels - starting from global level, e.g. climate changes, through national and regional level (environmental policy) and ending on micro level. This publication shows many examples of environmental management. The diversity of presented aspects within environmental management and approaching the subject from the perspective of various countries contributes greatly to the development of environmental management field of research.

This edition explores the nature and role of environmental management, covering key principles and practice, and offers a comprehensive and understandable introduction, which points readers to further in-depth coverage.

This course is an introduction to ecological, economic, political, and sociocultural perspectives on relationships between humans and the rest of the natural world.

Environmental Management is concerned not only with the impact of humankind on the planet but also with the patterns of human behavior necessary to preserve and manage the environment in a self-sustaining way. Study is linked to the areas of new thinking in environmental management, environmental economics and the quest for alternative technologies. It provides students an interdisciplinary survey of the broad range of contemporary environmental issues and concepts.

The aims of this course are to enable students to acquire:

 An understanding that humankind is part of this system and depends on it;

 An appreciation of the diverse influences of human activity on the natural system;

 An awareness of the need for management and human responsibility to keep the system in a healthy condition if life as we know it is to continue;

 An understanding of sustainable development and management to meet the needs of the present without compromising the ability of future generations to meet their own needs;

 An understanding what is environmental policy, certification and ecological passport of enterprise;

 An understanding the difference about environmental audit and environmental protection;

 An awareness of their own values concerning environmental issues;

 A willingness to review their own attitudes in the light of new knowledge and experiences;

 A sound basis for further study, personal development and participation in local and global environmental concerns

Students are expected to demonstrate knowledge and understanding of:

 The wide range of processes contributing to:

 The functioning of the Earth’s natural, geophysical and ecological systems;

 Human development within the natural system and the impact of human activity on the total environment;

 The concept of environmental interdependence, and should be able to place local environmental questions in an international or global setting;

 The implications of the unequal distribution of resources and of the unequal patterns of human development;

 The concept and practice of sustainable development;

 Ways of reducing and repairing environmental damage.

Methodology: The course is presented as a series of lectures.

**LECTURE 1. FUNDAMENTALS OF ENVIRONMENTAL MANAGEMENT**

1. *The essence of Environmental Management*

*2. Environmental Management Principles*

*3. Environmental Management System (EMS)*

*4. Environmental problems*

***1. The essence of Environmental Management***

Environmental Management offers research and opinions on use and conservation of natural resources, protection of habitats and control of hazards, spanning the field of applied ecology without regard to traditional disciplinary boundaries. Contributions of this discipline are drawn from biology, botany, climatology, ecology, ecological economics, environmental engineering, fisheries, environmental law, forest sciences, geology, information science, public affairs, zoology and more. As the principal user of nature, humanity is responsible for ensuring that its environmental impacts are benign rather than catastrophic. Environmental Management presents the work of academic researchers and professionals outside universities, including those in business, government, research establishments, and public interest groups, presenting a wide spectrum of viewpoints and approaches.

Environmental management is a process that industries, companies, and individuals undertake to regulate and protect the health of the natural world. In most cases, it does not actually involve managing the environment itself, but rather is the process of taking steps and promoting behaviors that will have a positive impact on how environmental resources are used and protected. So, *the subject of environmental management* - is the person or organization that provides environmental management; *the object* - is the activities which related to production.

***Environmental management*** is an attempt to control human impact on and interaction with the environment in order to preserve natural resources. Environmental management focuses on the improvement of human welfare for present and future generations.

Organizations engage in environmental management for a couple of different reasons, but caring for the natural world, following local laws and rules about conservation, and saving money are usually near the top of most lists. Management plans look different in different industries, but all aim for roughly the same goals.

***2.* *Environmental Management Principles***

There are five guiding principles for incorporating environmental concerns in to decision making. These principles can be used to design environmental instruments and to raise funds to finance environmental public investments plans in the sectoral and overall budget. They are,

1. Polluter pays principle (PPP)

2. User pays principle (UPP) (or resource pricing principle).

3. Precautionary principle (PP).

4. Subsidiary principle (SP)

5. Intergenerational equity principle (IEP)

1. *Polluter pays principle*

The Polluter Pays Principle was first widely discussed in the United Nations Conference on Environment and Development held in Rio de Janeiro of Brazil in June 1992. This principle was endorsed by all the attending representatives of the countries.

The PPP required that the polluter has to bear the cost of complying with environmental standards, which are predetermined by public authorities. If the polluters have to pay for the cost of any pollution they cause, market forces will then encourage them to change their activities either by introducing new pollution control technologies or by switching to more efficient production process. For instance every day, individual households, firms and industries turn over million tons of tap water into wastewater, which requires proper treatment before disposal. Prior to the introduction of sewage charges (example of polluter pay principle), the cost of sewage collection and treatment came entirely from the public revenue. The disadvantages of such an arrangement are that the public is unaware of the cost of the sewage services and therefore has no incentive to reduce water pollution.

There are two objectives with PPP towards encouraging to more efficient production process, they are:

**i.** To promote economic efficiency in the implementation of pollution control policies.

**ii.** To minimize potential trade distortions arising from environmental policies.

PPP was partly based on equity considerations (the polluter should pay the cost of any mitigation measures), and partly ensure that countries do not provide competitive advantage for their producers by subsidizing the pollution abatement measures.

One more important point is that PPP is not necessary to achieve an efficient solution to an environmental problem and it does not require pollution to recede to zero levels, nor does it require reduction to optimal level even though it is not excluded. PP required only that the environment is in an acceptable state, which will evolve from a political process requiring inputs from local, national and international level.

There are two versions of PPP evolved. First one is equal to the price changes for the use of resources with the cost of damage over society by using them. The changes linked directed on the process that generates pollution. Difficulty with this procedure is the deciding right price to change, when the damage to the society cannot be assed in monetary terms. Later the PPP asserts the full cost of controlling pollution by an adequate measures shall be undertaken by the polluter, preferably without public subsidy or tax concession.

1. *User pays principle*

The UPP states that the beneficiaries should pay for the full cost of using the resources and its related service; the full cost included the cost of losses for future generations. Both PPP and UPP principle considered as equitable and both offer the prospect of achieving efficiency.

However, UPP concept has conflict with certain social objections, example all the home should connected to electricity supply, telephone service, sewage and be closed to public transport. The provision of universal services to all or most location with high marginal costs beyond the reach of most consumers is conflict with this principle. The resolution of these conflicting principles is a matter of public policy. However, this principle is more easily applied to the consumer of public services involving the collection and treatment of effluents.

1. *Precautionary principle*

According to Rio Declaration on Environment and Development Precautionary Principle as meaning that where there are threats of serious or irreversible damage to environment, lack of scientific certainty should not be used as s to environment for postponing cost effective measures to prevent environmental degradation.

This principle is seeking present and eases environmental stress before conclusive evidence of damage exists and adopts policy when raw evidence is available.

1. *Subsidiary principle*

Subsidiary principle (SP), was not designed for as an environmental principle, but it provides useful guidance when applying the PPP and UPP and the PP. SP states that political decisions should be taken by lowest possible level of public authority dependence with effective action. So that setting standards and interpreting risk are politically involved process. The SP recommends that these decisions are made by the authorities that are closed to the population concerned.

1. *Intergenerational equity principle*

The IEP is the central principle in the definition of sustainable development. According to the Brundtland Report sustainability states that ‘meeting needs of present generations without compromising the needs of future generations’. Generally this principle is considered with the trilogy of economic, environmental and social objectives underlying sustainable development. This principle is the basis of the environmental accounting measures of sustainable income.

All the above five environmental management principles will be used to guide the sectoral policies and budgeting process.

***3. Environmental Management System (EMS)***

The most commonly used framework for an EMS is the one developed by the International Organization for Standardization (ISO) for the ISO 14001 standard. Established in 1996, this framework is the official international standard for an EMS.

An ISO 14001 environmental management system (or commonly referred to as an EMS) is a structured system designed to help organisations manage their environmental impacts and improve environmental performance caused by their products, services and activities. An environmental management system provides structure to environmental management and covers areas such as training, record management, inspections, objectives and policies.

***So, Environmental Management System*** (EMS) is a set of processes and practices that enable an organization to reduce its environmental impacts and increase its operating efficiency.

Serves as a tool, or process, to improve environmental performance and information mainly "design, pollution control and waste minimization, training, reporting to top management, and the setting of goals".

The main purpose of EMS *– to brings together the people, policies, plans, review mechanisms*, and procedures used to manage environmental issues at a facility or in an organization

Is the aspect of the organization’s overall management structure that addresses immediate and long-term impacts of its products, services and processes on the environment.

An EMS helps a company address its regulatory demands in a systematic and cost-effective manner. This proactive approach can help reduce the risk of non-compliance and improve health and safety practices for employees and the public.

An EMS can also help address non-regulated issues, such as energy conservation, and can promote stronger operational control and employee stewardship.

*Basic Elements of an EMS (objectives of EMS):*

* EMS assists with planning, controlling and monitoring policies in an organization;
* It is provides a systematic way of managing an organization’s environmental affairs;
* Reviewing the company's environmental goals;
* Analyzing its environmental impacts and legal requirements;
* Helps understand legislative requirements to better determine a product or service's impact, significance, priorities and objectives;
* Gives order and consistency for organizations to address environmental concerns through the allocation of resources, assignment of responsibility and ongoing evaluation of practices, procedures and processes;
* Setting environmental objectives and targets to reduce environmental impacts and comply with legal requirements;
* Establishing programs to meet these objectives and targets;
* Focuses on continual improvement of the system and a way to implement policies and objectives to meet a desired result. This also helps with reviewing and auditing the EMS to find future opportunities;
* Sets framework for training to achieve objectives and desired performance;
* Monitoring and measuring progress in achieving the objectives;
* Creates environmental buy-in from management and employees and assigns accountability and responsibility;
* Ensuring employees' environmental awareness and competence;
* Reviewing progress of the EMS and making improvements;
* Encourages contractors and suppliers to establish their own EMS.

As most organizations implementing an EMS seek monetary benefits, a main concern is always: is an EMS an investment or just a cost? The answer depends on the approach taken and on the goals set.

***Costs and Benefits of an EMS***

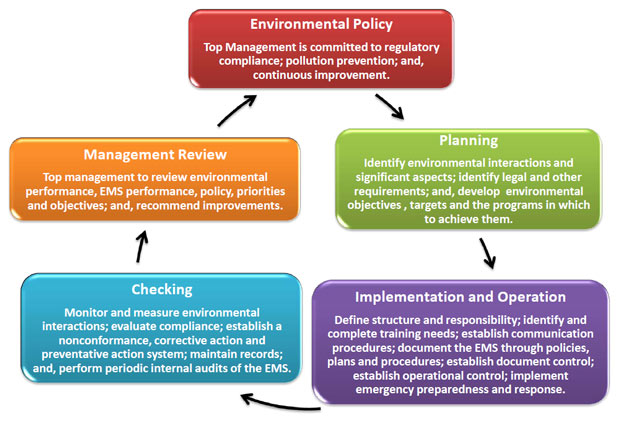
|  |  |
| --- | --- |
| ***Potential Costs*** | ***Potential Benefits*** |
| **Internal**   * Staff (manager) time * Other employee time   (Note: Internal labor costs represent the bulk of the EMS resources expended by most organizations)  **External**   * Potential consulting assistance * Outside training of personnel * Consultant fees. * Certification costs. * In-house training and specialized training costs. * Investment costs for improving environmental performance (depending on the objectives set up in an environmental management programme). | * Improved environmental performance * Enhanced compliance * Pollution prevention * Resource conservation * New customers/markets * Increased efficiency/reduced costs * Enhanced employee morale * Enhanced image with public, regulators, lenders, investors * Employee awareness of environmental issues and responsibilities * Competitive advantages * Fewer accidents. |

Getting the right training and laying the proper groundwork during the planning phase is often one of the costliest parts of the process. Most companies do not have the expertise to train their employees, which means that this must be outsourced. A number of different consulting companies offer educational services and tutorials, often on a case-by-case or project-by-project basis. Organizations that are really serious about long-term management initiatives sometimes also choose to create new positions and hire environmental experts in a more permanent capacity.

There are also usually a number of technical costs. Special equipment may be needed to measure outputs or intakes, for instance, and software programs and special computer metrics are often required to make sense of results and readings over time. It may also be the case that managing environmental consequences requires more expensive ways of doing business. Many companies are used to doing things the least expensive way possible, which is something that must often be reconsidered when how those methods affect the environment are taken into account.

In a great many cases, the benefits of an environmental management plan far outweigh the initial expenses. These include the prevention of pollution, the conservation of natural resources like water, and increased energy efficiency. Over time, these benefits often add up to significant cost savings in bills and utility outputs. Well-executed plans can also help companies avoid costly fines in places where there is regulation of energy consumption, disposal, and other environmental concerns.

An EMS encourages a company to continuously improve its environmental performance. The system follows a repeating cycle (see figure).



**Figure 1: The continuous improvement cycle**

The company first commits to an environmental policy, then uses its policy as a basis for establishing a plan, which sets objectives and targets for improving environmental performance. The next step is implementation. After that, the company evaluates its environmental performance to see whether the objectives and targets are being met. If targets are not being met, corrective action is taken. The results of this evaluation are then reviewed by top management to see if the EMS is working. Management revisits the environmental policy and sets new targets in a revised plan. The company then implements the revised plan. The cycle repeats, and continuous improvement occurs.

The five main stages of an EMS, as defined by the ISO 14001 standard, are described below:

*1. Commitment and Policy*

Top management commits to environmental improvement and establishes a company environmental policy. The policy is the foundation of the EMS.

*2. Planning*

A company first identifies environmental aspects of its operations. Environmental aspects are those items, such as air pollutants or hazardous waste, that can have negative impacts on people and/or the environment. A company then determines which aspects are significant by choosing criteria considered most important by the company. For example, a company may choose worker health and safety, environmental compliance, and cost as its criteria. Once significant environmental aspects are determined, a company sets objectives and targets. An objective is an overall environmental goal (e.g., minimize use of chemical X). A target is a detailed, quantified requirement that arises from the objectives (e.g., reduce use of chemical X by 25% by September 1998). The final part of the planning stage is devising an action plan for meeting the targets. This includes designating responsibilities, establishing a schedule, and outlining clearly defined steps to meet the targets.

*3. Implementation*

A company follows through with the action plan using the necessary resources (human, financial, etc.). An important component is employee training and awareness for all employees. Other steps in the implementation stage include documentation, following operating procedures, and setting up internal and external communication lines.

*4. Evaluation*

A company monitors its operations to evaluate whether targets are being met. If not, the company takes corrective action.

*5. Review*

Top management reviews the results of the evaluation to see if the EMS is working. Management determines whether the original environmental policy is consistent with company values. The plan is then revised to optimize the effectiveness of the EMS. The review stage creates a loop of continuous improvement for a company.

*Implementation of an environmental management system* requires the following steps to be completed by an organization:

Development of an environmental policy that reflects its commitments;

Appointment of a person(s) responsible for its coordination;

Identification of how the organization interacts with the environment;

Identification of actual and potential environmental impacts;

Identification of relevant legal and other requirements;

Establishment of environmental objectives, targets and programs;

Monitoring and measurement of the progress to achieve its objectives;

Reviewing the system and environmental performance; and

Continuous improvement of the organisation's environmental performance.

***4. Environmental problems***

Our environment is constantly changing. There is no denying that. However, as our environment changes, so does the need to become increasingly aware of the problems that surround it. With a massive influx of natural disasters, warming and cooling periods, different types of weather patterns and much more, people need to be aware of what types of environmental problems our planet is facing.

Global warming has become an undisputed fact about our current livelihoods; our planet is warming up and we are definitely part of the problem. However, this isn’t the only environmental problem that we should be concerned about. All across the world, people are facing a wealth of new and challenging environmental problems every day. Some of them are small and only affect a few ecosystems, but others are drastically changing the landscape of what we already know.

Our planet is poised at the brink of a severe environmental crisis. Current environmental problems make us vulnerable to disasters and tragedies, now and in the future. We are in a state of planetary emergency, with environmental problems piling up high around us. Unless we address the various issues prudently and seriously we are surely doomed for disaster. Current environmental problems require urgent attention.

The poisoning of the world's land, air, and water is the fastest-spreading disease of civilization. It probably produces fewer headlines than wars, earthquakes and floods, but it is potentially one of history's greatest dangers to human life on earth. If present trends continue for the next several decades, our planet will become uninhabitable.

Overpopulation, pollution and energy consumption have created such planet-wide problems as massive deforestation, ozone depletion, acid rains and the global warming that is believed to be coused by the greenhouse effect.

The seas are in danger. They are filled with poison: industrial and nuclear waste, chemical fertilisers and pesticides. The Mediterranean is already nearly dead; the North Sea is following. The Aral Sea is on the brink of extinction. If nothing is done about it, one day nothing will be able to live in the seas.

Every ten minutes one kind of enimal, plant or insect dies out for ever. If nothing is done about it, one million species that are alive today will have become extinct twenty years from now. Air pollution is a very serious problem. In Cairo just breathing the air is life threatening- equivalent to smoking two packs of cigarettes a day. The same holds true for Mexico City and 600 cities of the former Soviet Union.

Industrial enterprises emit tons of harmful substunces. These emissions have disastrous consequences for our planet. They are the main reason for the greenhouse effect and acid rains. An even greater environmental threat are nuclear power stations. We all know how tragic the consequences of the Chernobyl disaster are.

People are beginning to realise that environmental problems are not somebody else's. They join and support various international organosation and green parties. If governments wake up to what is happening- perhaps we'll be able to avoid the disaster that threatens the natural world and all of us with it.

***Current Environmental Problems:***

1. *Pollution:* Pollution of air, water and soil require millions of years to recoup. Industry and motor vehicle exhaust are the number one pollutants. Heavy metals, nitrates and plastic are toxins responsible for pollution. While water pollution is caused by oil spill, acid rain, urban runoff; air pollution is caused by various gases and toxins released by industries and factories and combustion of fossil fuels; soil pollution is majorly caused by industrial waste that deprives soil from essential nutrients.

2. *Global Warming:* Climate changes like global warming is the result of human practices like emission of Greenhouse gases. Global warming leads to rising temperatures of the oceans and the earth’ surface causing melting of polar ice caps, rise in sea levels and also unnatural patterns of precipitation such as flash floods, excessive snow or desertification.

3. *Overpopulation:* The population of the planet is reaching unsustainable levels as it faces shortage of resources like water, fuel and food. Population explosion in less developed and developing countries is straining the already scarce resources. Intensive agriculture practiced to produce food damages the environment through use of chemical fertilizer, pesticides and insecticides. Overpopulation is one of the crucial current environmental problem.

4. *Natural Resource Depletion:* Natural resource depletion is another crucial current environmental problems. Fossil fuel consumption results in emission of Greenhouse gases, which is responsible for global warming and climate change. Globally, people are taking efforts to shift to renewable sources of energy like solar, wind, biogas and geothermal energy. The cost of installing the infrastructure and maintaining these sources has plummeted in the recent years.

5. *Waste Disposal:* The over consumption of resources and creation of plastics are creating a global crisis of waste disposal. Developed countries are notorious for producing an excessive amount of waste or garbage and dumping their waste in the oceans and, less developed countries. Nuclear waste disposal has tremendous health hazards associated with it. Plastic, fast food, packaging and cheap electronic wastes threaten the well being of humans. Waste disposal is one of urgent current environmental problem.

6. *Climate Change:* Climate change is yet another environmental problem that has surfaced in last couple of decades. It occurs due to rise in global warming which occurs due to increase in temperature of atmosphere by burning of fossil fuels and release of harmful gases by industries. Climate change has various harmful effects but not limited to melting of polar ice, change in seasons, occurrence of new diseases, frequent occurrence of floods and change in overall weather scenario.

7. *Loss of Biodiversity:* Human activity is leading to the extinction of species and habitats and loss of bio-diversity. Eco systems, which took millions of years to perfect, are in danger when any species population is decimating. Balance of natural processes like pollination is crucial to the survival of the eco-system and human activity threatens the same. Another example is the destruction of coral reefs in the various oceans, which support the rich marine life.

8. *Deforestation:* Our forests are natural sinks of carbon dioxide and produce fresh oxygen as well as helps in regulating temperature and rainfall. At present forests cover 30% of the land but every year tree cover is lost amounting to the country of Panama due to growing population demand for more food, shelter and cloth. Deforestation simply means clearing of green cover and make that land available for residential, industrial or commercial purpose.

9. *Ocean Acidification:* It is a direct impact of excessive production of CO2. 25% of CO2 produced by humans. The ocean acidity has increased by the last 250 years but by 2100, it may shoot up by 150%. The main impact is on shellfish and plankton in the same way as human osteoporosis.

10. *Ozone Layer Depletion:* The ozone layer is an invisible layer of protection around the planet that protects us from the sun’s harmful rays. Depletion of the crucial Ozone layer of the atmosphere is attributed to pollution caused by Chlorine and Bromide found in Chloro-floro carbons (CFC’s). Once these toxic gases reach the upper atmosphere, they cause a hole in the ozone layer, the biggest of which is above the Antarctic. The CFC’s are banned in many industries and consumer products. Ozone layer is valuable because it prevents harmful UV radiation from reaching the earth. This is one of the most important current environmental problem.

11. *Acid Rain:* Acid rain occurs due to the presence of certain pollutants in the atmosphere. Acid rain can be caused due to combustion of fossil fuels or erupting volcanoes or rotting vegetation which release sulfur dioxide and nitrogen oxides into the atmosphere. Acid rain is a known environmental problem that can have serious effect on human health, wildlife and aquatic species.

12. *Water Pollution:* Clean drinking water is becoming a rare commodity. Water is becoming an economic and political issue as the human population fights for this resource. One of the options suggested is using the process of desalinization. Industrial development is filling our rivers seas and oceans with toxic pollutants which are a major threat to human health.

13. *Urban Sprawl:* Urban sprawl refers to migration of population from high density urban areas to low density rural areas which results in spreading of city over more and more rural land. Urban sprawl results in land degradation, increased traffic, environmental issues and health issues. The ever growing demand of land displaces natural environment consisting of flora and fauna instead of being replaced.

14. *Public Health Issues:* The current environmental problems pose a lot of risk to health of humans, and animals. Dirty water is the biggest health risk of the world and poses threat to the quality of life and public health. Run-off to rivers carries along toxins, chemicals and disease carrying organisms. Pollutants cause respiratory disease like Asthma and cardiac-vascular problems. High temperatures encourage the spread of infectious diseases like Dengue.

15. *Genetic Engineering:* Genetic modification of food using biotechnology is called genetic engineering. Genetic modification of food results in increased toxins and diseases as genes from an allergic plant can transfer to target plant. Genetically modified crops can cause serious environmental problems as an engineered gene may prove toxic to wildlife. Another drawback is that increased use of toxins to make insect resistant plant can cause resultant organisms to become resistant to antibiotics.

The need for change in our daily lives and the movements of our government is growing. Because so many different factors come into play; voting, governmental issues, the desire to stick to routine, many people don’t consider that what they do will affect future generations. If humans continue moving forward in such a harmful way towards the future, then there will be no future to consider. Although it’s true that we cannot physically stop our ozone layer from thinning (and scientists are still having trouble figuring out what is causing it exactly,) there are still so many things we can do to try and put a dent in what we already know. By raising awareness in your local community and within your families about these issues, you can help contribute to a more environmentally conscious and friendly place for you to live.

**LECTURE 2. ENVIRONVENTAL PROTECTION**

*1. Approaches to environmental protection*

*2. Environmental agreements*

*3. Environmental law*

*4. Environmental movement and environmental organizations*

1. ***Approaches to environmental protection***

More than 2 million annual deaths and billions of cases of diseases are attributed to pollution. All over the world, people experience the negative effects of environmental degradation ecosystems decline, including water shortage, fisheries depletion, natural disasters due to deforestation and unsafe management and disposal of toxic and dangerous wastes and products. Indigenous peoples suffer directly from the degradation of the ecosystems that they rely upon for their livelihoods. Climate change is exacerbating many of these negative effects of environmental degradation on human health and wellbeing and is also causing new ones, including an increase in extreme weather events and an increase in spread of malaria and other vector born diseases. These facts clearly show the close linkages between the environment and the enjoyment of human rights, and justify an integrated approach to environment and human rights.

There are three main dimensions of the interrelationship between human rights and environmental protection:

* The environment as a pre-requisite for the enjoyment of human rights (implying that human rights obligations of States should include the duty to ensure the level of environmental protection necessary to allow the full exercise of protected rights);
* Certain human rights, especially access to information, participation in decision-making, and access to justice in environmental matters, as essential to good environmental decision-making (implying that human rights must be implemented in order to ensure environmental protection);
* The right to a safe, healthy and ecologically-balanced environment as a human right in itself.

Environmental protection is a practice of protecting the natural environment on individual, organizational or governmental levels, for the benefit of both the natural environment and humans. Due to the pressures of population and technology, the biophysical environment is being degraded, sometimes permanently. This has been recognized, and governments have begun placing restraints on activities that cause environmental degradation. Since the 1960s, activity of environmental movements has created awareness of the various environmental issues. There is no agreement on the extent of the environmental impact of human activity, and protection measures are occasionally criticized.

Academic institutions now offer courses, such as environmental studies, environmental management and environmental engineering, that teach the history and methods of environment protection. Protection of the environment is needed due to various human activities. Waste production, air pollution, and loss of biodiversity (resulting from the introduction of invasive species and species extinction) are some of the issues related to environmental protection.

Environmental protection is influenced by three interwoven factors: environmental legislation, ethics and education. Each of these factors plays its part in influencing national-level environmental decisions and personal-level environmental values and behaviors. For environmental protection to become a reality, it is important for societies to develop each of these areas that, together, will inform and drive environmental decisions.

*An ecosystems approach* to resource management and environmental protection aims to consider the complex interrelationships of an entire ecosystem in decision making rather than simply responding to specific issues and challenges. Ideally the decision-making processes under such an approach would be a collaborative approach to planning and decision making that involves a broad range of stakeholders across all relevant governmental departments, as well as representatives of industry, environmental groups and community. This approach ideally supports a better exchange of information, development of conflict-resolution strategies and improved regional conservation.

1. ***Environmental agreements***

Environmental agreements are legally binding, project-specific, multi-party contracts that establish the roles of the developer, INAC, other government departments, Aboriginal organizations and affected parties during the various phases of a major project such as a diamond mine. These agreements ensure that the environmental monitoring and mitigation measures support an integrated environmental management regime.

*Ecological defence of environment is provided by such basic types of agreements:*

1. *Voluntary environmental agreements*

In industrial countries, voluntary environmental agreements often provide a platform for companies to be recognized for moving beyond the minimum regulatory standards and, thus, support the development of best environmental practice. In developing countries, such as throughout Latin America, these agreements are more commonly used to remedy significant levels of non-compliance with mandatory regulation. The challenges that exist with these agreements lie in establishing baseline data, targets, monitoring and reporting. Due to the difficulties inherent in evaluating effectiveness, their use is often questioned and, indeed, the environment may well be adversely affected as a result. The key advantage of their use in developing countries is that their use helps to build environmental management capacity.

1. *International environmental agreements*

Many of the earth’s resources are especially vulnerable because they are influenced by human impacts across many countries. As a result of this, many attempts are made by countries to develop agreements that are signed by multiple governments to prevent damage or manage the impacts of human activity on natural resources. This can include agreements that impact factors such as climate, oceans, rivers and air pollution. These international environmental agreements are sometimes legally binding documents that have legal implications when they are not followed and, at other times, are more agreements in principle or are for use as codes of conduct. These agreements have a long history with some multinational agreements being in place from as early as 1910 in Europe, America and Africa. Some of the most well-known multinational agreements include: ***the Kyoto Protocol*** (The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing greenhouse gas (GHG) emissions .These reductions amount to an average of five per cent against 1990 levels over the five-year period 2008-2012.), ***Vienna Convention on the Protection of the Ozone Layer***(The Vienna Convention for the Protection of the Ozone Layer is a Multilateral Environmental Agreement. It was agreed upon at the Vienna Conference of 1985 and entered into force in 1988. In terms of universality, it is one of the most successful treaties of all time, having been ratified by 196 states (all United Nations members as well as the Holy See, Niue and the Cook Islands) as well as the European Union.

It acts as a framework for the international efforts to protect the ozone layer. However, it does not include legally binding reduction goals for the use of CFCs, the main chemical agents causing ozone depletion. These are laid out in the accompanying Montreal Protocol.) and ***Rio Declaration on Environment and Development*** (The Rio Declaration on Environment and Development, often shortened to Rio Declaration, was a short document produced at the 1992 United Nations "Conference on Environment and Development" (UNCED), informally known as the Earth Summit. The Rio Declaration consisted of 27 principles intended to guide future sustainable development around the worlds. Some of the principles contained in the Rio Declaration may be regarded as third generation rights by European law scholars.).

An international survey of 12 nations (China, Czech, Spain, Ireland, Iran, Korea, Macedonia, Noway, Portugal, Sweden, Serbia, United kingdom) found that people from those nations attach different levels of importance to environmental protection. The perceived importance are lower in Ireland, Iran, South Korea and Norway. Support of environmental protection is found to be significant correlated to support of animal rights in Czech, Iran, South Korea, Norway and Sweden.

1. *Government environmental agreements*

Discussion concerning environmental protection often focuses on the role of government, legislation and law enforcement. However, in its broadest sense, environmental protection may be seen to be the responsibility of all people and not simply that of government. Decisions that impact the environment will ideally involve a broad range of stakeholders, including industry, indigenous groups, environmental group and community representatives. Gradually, environmental decision-making processes are evolving to reflect this broad base of stakeholders and are becoming more collaborative in many countries.

Many constitutions acknowledge the fundamental right to environmental protection, and many international treaties acknowledge the right to live in a healthy environment. Also, many countries have organizations and agencies devoted to environmental protection. There are international environmental protection organizations, as the United Nations Environment Programme.

Although environmental protection is not simply the responsibility of government agencies, most people view these agencies as being of prime importance in establishing and maintaining basic standards that protect both the environment and the people interacting with it.

1. ***Environmental law***

The main issues for developing countries like Brazil and Mexico are that protected areas suffer from encroachment and poor management. In Brazil, protected areas are increasing but there are significant challenges caused by human impacts. Logging and mining are potentially huge threats to protected areas. Developing countries need to allocate more money from their budgets if they hope to address these problems.

African governments face several challenges in implementing environmental protection mechanisms. In Tanzania for example these include lack of financial resources to manage protected areas, poor governance and corruption, and significant illegal logging and hunting. Also with such large allocations of land to national parks, indigenous people have been forced to relocate what resulted in a lack of local participation in environmental decision making processes. As a result of these factors recent calls have been made to allow “parks with people” as a mean to encourage the support of better overall management and care of the land.

Due to the Australian climate being dominated by deserts and semi-arid regions, most of the environmental protection challenges focus on availability and management of water resources. Even though this will continue to be an issue in areas of great demand, such as the Murray-Darling basin, several events were pivotal battles in environmental protection.

One of major protective documents, which operates in every country is*Environmental law.*  Environmental law is a collective term describing international treaties (conventions), statutes, regulations, and common law or national legislation (where applicable) that operates to regulate the interaction of humanity and the natural environment, toward the purpose of reducing the impacts of human activity.

The topic may be divided into two major subjects: pollution control and remediation, and resource conservation, individual exhaustion. The limitations and expenses that such laws may impose on commerce, and the often unquantifiable (non-monetized) benefit of environmental protection, have generated and continue to generate significant controversy.

Given the broad scope of environmental law, no fully definitive list of environmental laws is possible. The following discussion and resources give an indication of the breadth of law that falls within the "environmental" metric.

Environmental law is often the source of controversy. Notably, the early history of national environmental regulation in the United States (at the time the world leader in environmental regulation) was marked by relative political unity. The National Environmental Policy Act (1969), the Clean Air Act (1970), the Clean Water Act (1972), and the Endangered Species Act (1973) all were enacted with broad bipartisan support, and ultimately signed into law by Republican President Richard Nixon.

***Environmental law*** is Bbody of rules and regulations, and orders and statutes, concerned with the maintenance and protection of the natural environment of a country. It provides basis for measuring and apportioning liability in cases of environmental crime and the failure to comply with its provisions.

An ***environmental ministry*** is a national or subnational government agency politically responsible for the environment and/or natural resources. Various other names are commonly used to identify such agencies, such as Ministry of the Environment, Department of the Environment, Department for the Environment, Department of Environmental Protection, Department of Natural Resources, and so forth. Such agencies typically address environmental concerns such as the maintenance of environmental quality, nature preserves, the sustained use of natural resources, and prevention of pollution or contamination of the natural environment.

1. ***Environmental movement and environmental organizations***

The environmental movement is a term that includes conservation and green politics, is a diverse scientific, social, and political movement for addressing environmental problems. Environmentalists advocate the sustainable management of resources and stewardship of the environment through changes in public policy and individual behavior. In its recognition of humanity as a participant in (not enemy of) ecosystems, the movement is centered on ecology, health, and human rights.

The environmental movement is an international movement, represented by a range of organizations, from the large to grassroots and varies from country to country. Due to its large membership, varying and strong beliefs, and occasionally speculative nature, the environmental movement is not always united in its goals. At its broadest, the movement includes private citizens, professionals, religious devotees, politicians, scientists, nonprofit organizations and individual advocates.

Many environmental lawsuits question the legal rights of property owners, and whether the general public has a right to intervene with detrimental practices occurring on someone else's land. Environmental law organizations exist all across the world, such as the Environmental Law and Policy Center in the midwestern United States.

An *environmental organization* is an organization that seeks to protect, analyze or monitor the environment against misuse or degradation from human forces.

In this sense the environment may refer to the biophysical environment, the natural environment or the built environment. The organization may be a charity, a trust, a non-governmental organization or a government organization. Environmental organizations can be global, national, regional or local.

Some of the environmental issues that are of interest to environmental organizations are pollution, waste, resource depletion and increasingly on climate change.

Green politics is a political ideology which places a high importance on environmental goals and Green parties have formed to implement environmental policy at a government level.

*Types of environmental organizations:*

* Intergovernmental organizations:

**Worldwide**

* [Earth System Governance Project](http://en.wikipedia.org/wiki/Earth_System_Governance_Project)
* [Global Environment Facility](http://en.wikipedia.org/wiki/Global_Environment_Facility) (GEF)
* [Intergovernmental Panel on Climate Change](http://en.wikipedia.org/wiki/Intergovernmental_Panel_on_Climate_Change) (IPCC)
* [United Nations Environment Programme](http://en.wikipedia.org/wiki/United_Nations_Environment_Programme) (UNEP)
* [World Nature Organization](http://en.wikipedia.org/wiki/World_Nature_Organization) (WNO)
* [World Wide Fund for Nature](http://en.wikipedia.org/wiki/World_Wide_Fund_for_Nature) (WWF)

**Regional**

* [European Environment Agency](http://en.wikipedia.org/wiki/European_Environment_Agency) (EEA)
* [Partnerships in Environmental Management for the Seas of East Asia](http://en.wikipedia.org/wiki/PEMSEA) (PEMSEA)

**Local governments**

* [ICLEI - Local Governments for Sustainability](http://en.wikipedia.org/wiki/ICLEI)
* Government organizations (The governments of many countries have ministries or agencies devoted to monitoring and protecting the environment). For example: **Australia (**Department of Sustainability, Environment, Water, Population and Communities), **Brazil (**Brazilian Institute of Environment and Renewable Natural Resources), **Canada (**Environment Canada), **Denmark** (Danish Ministry of Climate and Energy), **Germany** (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety);
* Non-governmental organizations (These non-governmental organizations are involved in environmental management, lobbying, advocacy, and/or conservation efforts);
* Environmental community organizations.

***Interesting information:***

To borrow a famous quote from "Spider-Man," with great power comes great responsibility. And it also means that with great stardom comes a great responsibility to the world around, as some of our most admired actors have proven time and again with their commitment to the environment. Today in our look at Green Filmmaking, here are just a few examples of ***organizations supported by some of today's most admired stars:***

*Conservation International*: Harrison Ford serves as Vice Chair, Board of Directors for this non-profit organization based in Washington, D.C., and has served on its board for over a decade.

*Earth Day Network:* Brad Pitt, Miley Cyrus, Cate Blanchett, and Orlando Bloom are just a few of the people who have supported and celebrated this coordinated yearly focus on environmental issues.

*Global Green:* Dedicated to creating green buildings and urban environments, this non-profit counts many celebrities among its network including Brad Pitt, Oliver Stone, Penelope Cruz, Salma Hayek, Charlize Theron, Jake Gyllenhaal, and James Cameron.

*Green Cross International:* Pierce Brosnan was given an Environmental Leadership Award, and its current network includes Robert Redford and Ted Turner.

*Keep America Beautiful:* Since the early 1950s, this organization has been dedicated to ongoing community improvement with supporters including Julianne Moore, Eva Longoria, and Brooke Shields.

*National Resources Defense Council:* This environmental advocacy charity has taken numerous steps to raise American awareness of worldwide green issues, including a 2008 letter campaign by Leonardo DiCaprio about polar bear endangerment and trustees including Robert Redford, who has joined its crusade for wilderness preservation.

*Rainforest Action Network:* Its green sustainable campaigns have drawn the support of celebrities including Woody Harrelson and Whoopi Goldberg.

*The Rainforest Foundation:* Co-founded by Sting to preserve the rainforests and its inhabitants, this charity has the support of actors including Meryl Streep, Channing Tatum, Kate Hudson and Scarlett Johansson.

*The Sierra Club:* One of the largest and most enduring environmental organizations, with supporters including Leonardo DiCaprio, Edward Norton, Megan Fox, Jessica Alba, and Paul Rudd.

*The Wilderness Society:* Edward Norton not only contributes to this organization devoted to America's wilderness, he also narrated a video about them.

**LECTURE 3. ENVIRONMENRAL POLICY**

*1. The essence of environmental policy*

*2. The developing an environmental policy*

*3. Procedure of creation of ecological politics*

*4. Examples of sample of environmental policy*

1. ***The essence of environmental policy***

An environmental policy is simply a statement of an organizations commitment to improving it’s environmental performance. The policy can be as short as 1-2 paragraphs or as long as 1-2 pages, depending on the size and complexity of the operation.

An environmental policy is a road map for improving your organizations environmental performance. Developing a policy will help you obtain a better understanding of how your organization’s activities impact on the environment and how to reduce those impacts. Improving your organizations environmental performance has numerous benefits including creating a healthier safer workplace, improving your bottom line and enhancing your corporate image in the community.

Many corporations have established organization-wide environmental policies to define and advance their environmental goals. An environmental policy sends a clear message to employees, vendors, and the community at large that your company considers environmentally intelligent practices an organizational priority. When a company adopts such a policy, it’s a meaningful first step in any effort to improve environmental performance.

An ***environmental policy*** is a written statement, usually signed by senior management, which outlines a business' aims and principles in relation to managing the environmental effects and aspects of its operations. Although putting one in place is voluntary, an increasing number of businesses are choosing to do so.

An environmental policy forms the foundation of environmental improvements made for your business, as defined by senior management. It sets out key aims and principles.

Having an environmental policy can provide significant benefits to your business. These include:

 helping you to stay within the law;

 improving information for employees about their environmental roles and responsibilities;

 improving cost control;

 reducing incidents that result in liability;

 conserving raw materials and energy;

 improving your monitoring of environmental impacts;

 improving the efficiency of your processes.

However, the benefits are not restricted simply to internal operations. By demonstrating commitment to environmental management, you can develop positive relations with external stakeholders, such as investors, insurers, customers, suppliers, regulators and the local community. This in turn can lead to an improved corporate image and financial benefits, such as increased investment, customer sales and market share.

Understanding how your operations impact on the environment is the first step to developing an environmental policy. Once you know how your activities can potentially affect the environment you can develop a policy to minimize these impacts.

Once you have an understanding of how your organization affects the environment you are ready to begin crafting the environmental policy. An environmental policy is a statement of an organization’s commitment to protect the environment. Many policies also state the general actions or guiding principles that will be used to implement this commitment.

1. ***The developing an environmental policy***

Having an environmental policy is essential if you want to implement an environmental management standard such as ISO 14001. It's also vital if you currently work or intend to work with large organisations, or if you need to demonstrate to customers and other stakeholders that you are committed to managing your environmental impacts in a responsible way.

The involvement of top management is necessary when developing an environmental policy. The environmental policy must consider the environmental impacts of the activities, products or services of the firm. Management must be committed to continuous improvement efforts, and develop and implement plans for pollution prevention. It is important for management to ensure compliance to environmental legislation and regulations, and also to other regulations that the firm may already be committed to. This may involve establishing communication links with various interest groups. There must be an established framework to review environmental objectives and targets and the environmental goals of the firm must be documented and effectively communicated to all employees. The public should also be made aware of the environmental policy of the firm. Thus, top management has the responsibility of making the public aware of its environmental policy.

***Planning***

A firm must develop a plan to help it achieve its environmental policy. Components of the plan are environmental aspects; legal and other requirements; environmental objectives and targets; and environmental management programs. Environmental aspects deal with procedures that the firm maintains to identify the environmental aspects of its activities, products or services. The firm makes an assessment of these impacts and determines its control over them and their expected impacts on the natural environment. The significant impacts must be considered in setting up environmental objectives. This information should be updated over time. It is a dynamic process that requires the firm to continuously monitor its environmental influence and impacts on the natural environment and update the available information as needed.

With regards to legal obligation and other requirements, it is the responsibility of the firm to be aware of the legal requirements it must comply with. It should maintain procedures to enable it to access such obligations that are applicable to the environmental aspects of its activities, products or services.

The firm must have environmental objectives and targets. These should be consistent with the environmental policy and commitment to pollution prevention. It is important that documentation is maintained at each relevant function and level within the organization. The objectives and targets should be cognizant of the legal and other requirements that the firm subscribes to, its significant environmental aspect, its technological options, financial, operational and business requirements as well as the views of other environmental interest groups. The targets should be measurable and specific and may be used to achieve the environmental objectives within a specified time-frame. Environmental management programs are the operational procedures to achieve environmental objectives and targets. They involve a breakdown of responsibilities for achieving objectives and targets; actions to be taken; resource allocation; and time-frame.

***Implementation and Operation***

To effectively implement the environmental management program, the firm must develop the necessary capabilities and support mechanisms. This involves a well-structured organizational process where job responsibilities and authorities are well defined, documented and communicated. Resources needed to implement the program must be provided and management must be involved to ensure system viability and assess the performance of the program. A major aspect of implementation and operation of the environmental program is training awareness and competence. Competence may be developed through education and training.

It is important that trainees are aware of the requirements of the system and potential consequences of departure. Thus, appropriate training should be available. Communication is also an important aspect of implementation. The firm should have procedures for responding to relevant communications from external interest groups; and procedures for both internal and external communications. Like in many of the ISO standards, documentation is very important and could be either in paper or in an electronic form. However, there must be full document control procedures. Implementation must also deal with operational control of activities that are done under specified conditions. Suppliers and contractors should also be made aware of the procedures of the firm. The firm should have procedures to respond to emergency situations. This involves plan to respond to emergencies and procedures for accident prevention. These plans should be revised when an incident occurs and should be periodically tested.

***Checking and Corrective Actions***

This step requires the firm to be able to measure, monitor and evaluate its environmental activities. This requires the firm to be able to monitor and measure key measures of performance, track operational performance, operational controls and objectives and targets. The monitoring process is only effective if the program complies with laws and regulations. Corrective and preventive actions may also be necessary when there is non-conformance. Auditing is conducted to assess conformance and proper implementation of procedures. A report is made available to management for review.

***Management Review***

This requires the firm to review and continually improve its environmental management system in order to improve the overall environmental performance. Periodic review by management will ensure suitability, adequacy and effectiveness; address the need for policy changes or any other changes of the environmental management system; and documentation of the review.

It's important to bear in mind that these benefits are unlikely to be achieved if you just have an environmental policy in place. If you set up an environmental management system (EMS) this requires you to implement a program to systematically deliver your policy in a strategic way.

External certification of your EMS will help you demonstrate to customers, investors, regulators and other stakeholders that the environmental claims you make in your policy are credible, reliable and have been independently checked.

If you don't choose to set up a formal EMS, it's a good idea to at least apply some of the steps to ensure your policy is effective. This can include assessing the environmental impact of your business, developing appropriate key performance indicators, setting objectives and targets and reviewing these regularly.

1. ***Procedure of creation of ecological politics***

An environment policy is an agreed written statement that summarises an organisation's stance towards the environment in which it operates. This is the cornerstone of an organization’s intent to improve it’s impacts on the environment, including areas such as reducing it’s carbon footprint, improving recycling rates, reducing packaging, minimising waste etc.

There is no standard format for writing an environmental policy, but to give it the best chance of success, it's important you plan it carefully. For your policy to be successful you need to get buy-in from management, by emphasising the key benefits such as cost reduction, improved risk management and marketing.

Once you have secured this commitment, it's a good idea to assess where your business currently stands in terms of environmental management. This could include drawing up an environmental history of your business, its impact and the risks faced by it.

You could also carry out a benchmarking exercise to establish how you compare against similar businesses.

It's important to tailor your environmental policy to reflect your business and its culture. A good starting point is to collect and review examples of policies written by other businesses and select the format and style most appropriate to your own business. However, avoid copying someone else's policy.

There are a few basic rules to follow:

* keep the statement short - if it's longer than a sheet of 8 ½ X 11, then it's probably too long;
* the statement is meant for everyone to see, so make sure it's easy to read and understand;
* the statement must be realistic, achievable and relevant to your company's activities and practices;
* demonstrate commitment to making the policy work and get the statement signed, dated and endorsed by the owner, managing director or other senior manager;
* make the policy available on your website;
* ask new employees and suppliers to read a copy of the policy.

Your policy should be personal to your business, and as such reflect the activities, priorities and concerns most relevant to it.

Before you write your policy you should assess which aspects of your business affect the environment and what the potential impacts are. There are a number of techniques that you could use when carrying out the assessment.

The content of your policy should be based on the results of your assessment, which should have identified the key issues that apply to your business.

*Your policy should contain brief statements on the following criteria:*

1. The business mission and information about its operations. Bear in mind that if your business activities or operations change significantly, the policy may need to be amended.
2. A commitment to continually improve your environmental performance.
3. A commitment to effectively manage your significant environmental impacts.
4. The expectations that your business has in relation to external parties such as suppliers and contractors.
5. Recognition that you will comply with relevant environmental legislation as a minimum level of performance.
6. Education and training of employees in environmental issues and the environmental effects of their activities.
7. Monitoring progress and reviewing environmental performance against targets and objectives on a regular basis (usually annually or in the first six months initially).
8. A commitment to communicate your business' environmental aims and objectives to all staff, as well as to customers, investors and other external stakeholders.

Additional issues relevant to your business, and which you may wish to address in your environmental policy, could include:

transport;

recycling of packaging materials;

minimising waste;

efficient use of water and energy;

use of biodegradable chemicals;

minimising use of solvents and lead-based paints;

use of timber or wood products from sustainable (managed) forests;

procedures to minimise noise disturbance to neighbours;

phasing out of chlorofluorocarbons (CFCs) and other ozone-depleting substances.

If your business is linked closely to key customers through the supply chain, obtain a copy of their environmental policy, so that your statements can reflect their requirements and needs.

Your policy should demonstrate commitment by senior management and is usually signed by the chairman or chief executive.

You may want to integrate your environmental policy with other policies on health and safety, quality management, corporate social responsibility or sustainability.

The next checklist below may help you to draft a policy appropriate to your business. You can choose examples of the statements that would apply to your business and make the statements as specific as possible for your operations:

* comply with environmental legislation and other requirements, such as approved codes of practice;
* importance of environmental issues to your business;
* assess the environmental impact of all historic, current and likely future operations;
* continually seek to improve environmental performance, e.g. by doing a regular walk-around survey of your business to see if you are using energy and water efficiently and whether measures to reduce waste and pollution are effective;
* reduce pollution, emissions and waste, e.g. emissions from transport, oil leaks and spills, excessive noise, heat or vibration generated by the activities of your business;
* reduce the use of all raw materials, energy and supplies;
* raise awareness, encourage participation and train employees in environmental matters;
* expect similar environmental standards from all suppliers and contractors;

assist customers to use products and services in an environmentally sensitive way liaise with the local community;

* participate in discussions about environmental issues;
* communicate environmental aims and objectives to employees and external stakeholders;
* agree to commit to environmental principles and continual improvement at the highest level in your business.

To check that your company's current activities still comply with your environmental policy, it's a good idea to carry out a regular review - usually on an annual basis, or in the first six months initially. These are key to ensuring that there is continual improvement in environmental performance and that more specific environmental targets are set on a yearly basis. Bear in mind that if your business activities or operations change significantly, the policy may need to be amended.

If your policy is not kept up to date, and it is not backed up with some form of environmental improvement (such as a formal environmental management system or less formal program of improvements), other organisations may think that you're not taking your environmental responsibilities seriously. Consequently, they may decide to take their business elsewhere.

Similarly, if your policy says that you are taking your environmental responsibilities seriously but you fail to back this up, you may face questions over the quality of operations in other parts of your business. This could tarnish your reputation with customers and suppliers.

It's a good idea to involve employees in the reviewing process. If employees are expected to deliver on environmental policy commitments, they may be a good source of ideas for improvements. The environmental policy should be available for all new employees to read and to all existing employees if it changes significantly.

So, an environmental policy should not be a static document. It should be reviewed and updated periodically to ensure that it remains relevant as the business grows and changes over the years.

***example of sample of environmental policy***

**Sample Environmental Policy**

Company name recognizes environmental protection as one of our guiding principles and a key component of sound business performance. We are committed to providing a quality \_\_\_\_\_\_\_\_\_\_\_\_\_ ( product, service etc.) in a manner that ensures a safe and healthy workplace for our employees and minimizes our potential impact on the environment. We will operate in compliance will all relevant federal provincial and municipal environmental legislation and we will strive to use pollution prevention and environmental best practices in all we do.

We will;

integrate the consideration of environmental concerns and impacts into all of our decision making and activities,

promote environmental awareness among our employees and encourage them to work in an environmentally responsible manner,

train, educate and inform our employees about environmental issues that may affect their work,

reduce waste through re-use and recycling and by purchasing recycled, recyclable or re-furbished products and materials where these alternatives are available, economical and suitable,

promote efficient use of materials and resources throughout our facility including water, electricity, raw materials and other resources, particularly those that are non-renewable,

avoid unnecessary use of hazardous materials and products, seek substitutions when feasible, and take all reasonable steps to protect human health and the environment when such materials must be used, stored and disposed of,

purchase and use environmentally responsible products that have been selected based on criteria including low toxicity or environmental hazard, durability, use of recycled materials, reduced energy and/or water consumption reduced packaging and ability to be recycled, refilled or refurbished at end of life,

where required by legislation or where significant health, safety or environmental hazards exist, develop and maintain appropriate emergency and spill response programs,

regularly communicate our environmental program to our clients, customers and the public and encourage them to support it,

strive to continually improve our environmental performance by periodically reviewing our environmental policy in light of our current and planned future activities.

Signature (Note: Signature of Person Responsible forPolicy e.g., CEO, President or Owner/Principal):

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***example of environmental policy of company***

**Environmental Policy of Walt Disney Company**

The Walt Disney Company seeks to establish and sustain a positive environmental legacy for Disney and for future generations. In doing so, the company is committed to minimizing its overall impact on the environment while encouraging and activating environmentally responsible behavior on the part of cast members and employees, guests and business associates throughout the world.

Specifically, Disney aims to conserve water, energy and ecosystems; to reduce greenhouse gas emissions; to minimize waste and to inspire public consciousness in support of environmental sustainability. The company seeks to identify, measure and understand the direct and indirect impact of its operations and develop innovative and realistic solutions for mitigating those impacts. It also complies with, and in some cases exceeds environmental laws and regulations.

Finally, the company is committed to communicating regularly its progress in implementing the policies and achieving the targets that it has established.

*Environmental Focus Areas*

*Water and Energy Conservation*

Improve water and energy efficiencies in existing operations. Invest in new technologies and systems that enhance water and energy conservation. Include water and energy management as an integral part of planning for future projects to reduce the consumption of water and energy.

*Greenhouse Gas Emissions Reduction*

Reduce harmful GHG emissions by identifying the sources and implementing solutions, including source elimination, efficiency improvement, minimizing transportation and other fuels, and increasing the use of clean fuels. Examine the supply chain to achieve improvement.

*Waste Minimization*

Minimize waste in our operations and business activities. Dispose of waste conscientiously and creatively by making "reduce/reuse/recycle" the standard operating procedure. Incorporate waste reduction into the design of products, programs, and facilities; reducing waste through innovative product development, supply chain management, and end-of-life recycling.

*Ecosystem Conservation*

Promote wildlife and habitat conservation through cooperative efforts with the scientific and academic communities and organizations committed to preserving the earth's biodiversity and ecosystem functions. Effectively plan and manage conservation lands for the preservation of native plant and animal species. Integrate natural resource conservation in future planning, development and operations activities.

*Inspire Action*

Engage and inspire employees, guests, viewers, interested parties and business associates to make positive impacts on the environment. Integrate environmental messaging into products, guest experiences and media platforms worldwide.

**LECTURE 4. ENVIRONMENTAL CERTIFICATION AND ECOLOGICAL PASSPORT OF ENTERPRISE**

*1. The essence of environmental certification*

*2. Effects of the implementation of environmental certification*

*3. Ecological passport of enterprise*

*4. Environmental labeling (Eco-labels)*

1. ***The essence of environmental certification***

*Environmental certification* is a form of environmental regulation and development where a company can voluntarily choose to comply with predefined processes or objectives set forth by the certification service. Most certification services have a logo (commonly known as an ecolabel) which can be applied to products certified under their standards. This is seen as a form of corporate social responsibility allowing companies to address their obligation to minimize the harmful impacts to the environment by voluntarily following a set of externally set and measured objectives.

The primary motivations for many companies who choose to implement environmental certification schemes are, to provide an ethical product for the consumers, increase sustainable development, improve the image of the company, gain a better relationship with stakeholders and to make a higher profit.

Many companies believe that the implementation of environmental certification programmes can lead to an improved company image and generate competitive advantage. This is usually achieved through the use of ecolabels which can be used on the company’s products, allowing the product to stand out as being produced in an environmentally sound way. The ecolabels associated with environmental certification inform consumers that the product in question has been verified by a third party auditor as originating from an environmentally well managed company. Therefore the certificate gives an indication of good practice and provides the company a better image. This approach allows consumers to steer their purchasing behaviour in a more environmentally sound direction. This also means that if environmental marketing strategies such as environmental certification are to work there must be consumers willing to purchase the resulting green products.

There are also ethical motivations for a company to improve its environmental performance and move towards achieving sustainable development. All environmental certification schemes attempt to provide organizations with an effective environmental management system to help them to achieve environmental and economic goals. The current high levels of consumption and economic growth often leads to the degradation of land and pollution of the natural environment. The aim of the move towards sustainable development is to ensure the availability of natural resources for future generations. Within environmental certification the life cycle approach is often adopted, where the life cycle of the product from its production to its disposal are followed to ensure that it is produced, used and disposed of in a sustainable and environmentally sound way.

There is increasing pressure on companies to respond to environmental pressure from stakeholders, therefore increasing the use of voluntary environmental regulations such as certification to achieve sufficient social legitimacy and to protect their profits. This is a relational motivation as the company feels that environmentally conscious management will help to prevent stakeholder pressures and to form a good relationship with the socio-economic environment. There are also operational motivations which are the belief that environmental certification can help to reduce costs and increase productivity and commercial motivations which are the belief that it can help to increase sales and improve the market position.

1. ***Effects of the implementation of environmental certification***

*Positive:*

The most obvious benefit of environmental certification is that it is used as in instrument to allow actors to make important improvements to the way the environment is managed and in achieving sustainable development. They are usually used as an indicator of the environmental commitment of the organization thus allowing the organizations involved to have the advantages attributed to environmental proactivity such as gaining a competitive advantage or environmental productivity. Therefore the environmental certification generally satisfies the ethical and competitive expectations that lead the company to initiate the certification process. The general scope of the certification process can be looked at by the size of the area that is influences, either directly or through demonstration or spill-over effects. For example the FSC since it was established in 1993 has overseen the certification of forests in sixty countries, totalling nearly 50 million ha, and equivalent to perhaps 1.5 percent of the world’s total forest area 2, thus making it a large and inclusive certification process with a wide scope. The benefit of environmental certification for consumers is that they can purchase products with the knowledge of the company’s environmental standards and procedures therefore giving the general public the option to consume in an ethical way. As a result of the ethical production, consumers may be willing to pay an additional price as a way of promoting and sustaining ethical production.

Certification has become a differentiating factor that is valued by industrial and final markets, partly due to its recognition by influential companies in some industries. As a result of this certification can act as a catalyst for competitive advantage and lead to economic benefits for producers through more efficient production systems, easier market access and price premiums.

Environmental certification is most likely to benefit companies that already have an environmental management system, even if the environmental variable is not effectively integrated into the overall process of strategic planning, and firms that are introducing and/or modifying it, or have to develop it in order to respond to the expected evolution of the external context. It may help them to organise or reorganise a well structured environmental system which will enable them to establish and access the effectiveness of existing operating procedures, achieve conformance with them and demonstrate conformance to external actors. Therefore environmental certification may help these firms to reduce expenses and efforts and develop autonomously an environmental management system which will help them to improve their green image. Certification can also be used by actors in a commodity network to validate their activities. Therefore the ethical environmental values linked to environmental certification can be tracked at all stages along the commodity network from the producer to the retailer.

*Negative:*

There are various negative aspects associated with environmental certification one of which is the perception from markets that it is a reactive rather than a proactive investment, meaning that the certification as a standard is initiated as a response to institutional pressure rather than a self-regulation standard showing a desire to move towards a more environmentally sound system. Usually only the best performing operators become certified and approaches operating at the management level cannot always properly address concerns about biodiversity. Also tropical deforestation is usually a result of conversion of land from forest to other land uses, leaving it outside the influence of forest management certification.

At an organizational level, firms with no environmental management system and no interest in introducing one will have little incentive to join an environmental certification scheme, therefore leaving any environmental areas affected by these companies unprotected and liable to degradation. Also if the customer base of the company is not prepared to pay extra for environmentally friendly product there can be no incentive for a company to implement environmental certification.

The implementation of environmental certification is expensive, the burden of which is usually felt by the supplier rather than the retailer who must pay for the certification fees and the increased cost of production. In many cases the profit a supplier can expect to gain for their product does not compensate for the implementation cost. Many certification costs are fixed therefore large produces gain an advantage on their smaller competitors through economies of scale.

The use of forest certification can marginalise small and community forest managers as the costs are shifted onto them without any means for them to make the money back. Therefore forest certification tends to be most prevalent in extensive and well documented forests in the global north rather than small or community forests in the global south where they would be more likely to gain more significant benefits. The dominance of eco-labelling markets in western developed economies may result in smaller producers and suppliers finding it increasingly difficult to enter the market without environmental certification. As a result of this it has been argued that certification is a means of changing the actions of producers in the global south to serve the interests and alleviate some of the anxieties of consumers in the global north.

Currently consumption is central to economic and human development therefore many of the efforts to minimise the threats that consumption poses to the environment and the sustainability of the worlds resources have focused on reducing the impact of producing the goods and services rather than addressing and trying to reduce the level of consumption. This is true for environmental certification as this primarily focuses on reducing the impact that the production of goods has on the environment. When the possible rebound effect of even increasing levels of "ethical consumption" are taken into consideration, the net result might be detrimental for the environment.

1. ***Ecological passport of enterprise***

Procedure for creation of the ecological passport for objects of economic and other activities (further - the Procedure) establishes requirements to registration and contents of the ecological passport for objects of economic and other activities, for the purpose of determination of influence of objects of economic and other activities on environment and control of observance of nature protection regulations by them and rules in the course of their activities.

***An ecological passport*** - a normative and technical document which includes enterprise’s data, information about an enterprise’s use of resources (natural, secondary and others). Ecological passport of the enterprise belongs to the basic design - technical documentation. Along with the technological regulations it should be in every enterprise.

The ecological passport is used for assessment of influence of the enterprise’s activity on the environment.

The ecological passport contains information about the ecological status of the enterprise.

Instructions on drawing up of the ecological passport for small and average enterprises set requirements for registration and contents of the ecological passport for small and average enterprises for assessment of their influence on environment and control of their observance of environment protection norms and rules in their daily activity.

Terms of working out of an Ecological Passport vary from 10 days till 3 months (depending on the project’s complexity)

Coordination term is about 3 months (depending on the project’s complexity).

Environmental passport includes 3 parts.

In the first part of the passport provides general information about the company, the raw materials used, the description of technological development schemes of major products, schemes sewage and air emissions, their characteristics after cleaning, data and other solid waste, as well as information on the availability of the world's technology provide the best specific indicators for the protection of nature.

Ecological characteristics of enterprises involves the assessment of progressive technology, full use of raw materials and fuel used estimation schemes sewage and air emissions, water flow characteristics and gas waste; assessment alienated territory, the overall economic assessment of the damage is now applied to the environment and detail this assessment by defects of products and technologies.

In ecological passport must be presented indicators of impacts to the environment , such as:

Environmentally friendly of products ( the proportion of improved environmental performance , production of environmentally friendly products ).

Impact on water resources ( volume of water abstracted to various sources , the use of water for production purposes , the volume of water supplied to other businesses and organizations , dumped wastewater , the proportion of contaminated wastewater , the concentration of pollutants in contaminated wastewater , the amount of harmful substances in water entering the treatment facilities , the degree of wastewater treatment) .

Impact on air resources (the volume of air used , the amount of pollutants emitted , by type and source, the proportion of harmful substances captured and neutralized the total amount of pollutants that enter the atmosphere , changing the volume and quality of emissions to the atmosphere after purification by type compared to the previous period ).

Impact on material resources and waste production (volume of recyclable hazardous substances extracted from wastewater , the amount of pollutants that are recycled , recovered from the exhaust gases , the amount of solid waste generated , the amount of recyclable solid waste)

Impact on land (the ratio of core, support and service areas , the value of production space per worker , unit equipment unit , the total area or length of communications, railways , water supply , sewerage , electricity , land area to be allocated under the cultural residential and residential construction , the proportion of area occupied by the sanitary protection zone , the area of reclaimed land).

The second part of the passport contains a list of planned activities aimed at reducing the burden on the environment, specifying terms of cost per unit and total emissions before and after the implementation of each activity.

The program of measures to reduce the burden on the environment should provide a promising strategy and a plan indicating the term of implementation and amount of costs required to achieve emissions reductions to their concentration at which reduction achieved environmental damage.

The second part driven indicators of organizational and technical level of environmental performance of the enterprise. As indicators of organizational and technical level of environmental performance are:

1. Equipment of sources of pollution cleaning devices (number of emission sources, the number of fugitive emission sources ).
2. Propuskna capacity of existing treatment plants ( number and capacity of the main process equipment , the operation of which is accompanied by certain types of pollution , the proportion of a certain type of pollution that will occur in the production unit of primary products , the number and capacity of environmental equipment designed to clean specific types of pollution ).
3. Progressivity applicable cleaning equipment.

4. Monitoring the operation of cleaning equipment (level of provision cleaning equipment test equipment , the coefficient of the actual use test equipment , the proportion of advanced devices in total used test equipment , part of sewage treatment facilities that are under the control of advanced equipment , part cleaning equipment working under the centralized control of emissions, the total number of the equipment , running the control).

5. The rationality of the existing organizational structure of environmental performance (availability of environmental services and departments , the level of centralization of management environmental management , environmental management efficiency services and departments in decision-making , environmental services and equipment of the department computer technology , information provision of environmental services and departments , the degree of economic independence and environmental services departments).

6. Other indicators ( ratio of benefits to conservation of value of fixed assets , the ratio of benefits to costs of environmental cleaning equipment, environmental performance ratio of benefits to costs of materials used in its course , the result of environmental activities related to the total number of employees and number of employees engaged in environmental activities).

In the third part of environmental passports to analyze the ecological status in the company and the environment in the region, compared techno - and ecological - economic data with other companies, which are characterized by the best conservation measures. At the same time can be estimated and the effectiveness of the technology, full use of raw materials and fuel efficiency technologies sewage and emissions and recycling waste. You can also make ecological - economic assessment of the damage caused to nature in general and in particular , to determine the degree of removal of the major components of raw materials, fuel efficiency and power.

Environmental passports can also developed for rare species of plants and animals.

Basic indicators of manufacture, the passport of gas and water treatment constructions, forms of the state statistical reporting and other standard and normative and technical documents serve as a basis for working out of the ecological passport. Data of the ecological passport should be constantly updated.

Create of ecological passport shall consist of the following stages:

- The appointment of a working group and the publication of the order of assembly of ecological passport;

- Development of the work plan and allocation of functions between the performers ;

- Collection of normative and technical records;

- Create of carrying scheme of production , the quantitative and qualitative analysis of material flows , identifying sources of environmental pollution ;

- Verification of emissions;

- Check water and sanitation ;

- Check the nature and definition of quantitative measures of raw materials, energy production and species specific rates per unit of output ;

- Inspection of waste and quantification of indicators of waste by type of product;

- Check the used land resources;

- Form filling ecological passport.

Passport approved by the head of the company, which is responsible for its design and reliability of the data contained there in.

Environmental certificate approved after agreement with the Environment Conservation authorities. After carrying out and obtaining of positive approval of the state ecological expertise the developed ecological passport is coordinated by the territorial body of environment protection.

In case of reshaping or change of the technologies, replacement of equipment or raw materials, reductions or increases in quantity of sources of harmful influence on the surrounding environment, capacity and ownership changes a user of natural resources should make additions or updating of the ecological passport in coordination with territorial state bodies of the environment protection.

1. ***Environmental labeling (Eco-labels)***

Environmental labeling informs consumers about the environmental impacts of a product or service to guide them during their purchasing and allow them to make an intelligent choice.

To inform and eco-design, companies evaluate the environmental impacts of the product and / or services all along its life cycle (manufacturing - distribution - use - end of life), on the basis of a common approach.

Eco-labels and Green Stickers are labeling systems for food and consumer products. Ecolabels are voluntary, but green stickers are mandated by law; for example, in North America major appliances and automobiles use Energy Star. They are a form of sustainability measurement directed at consumers, intended to make it easy to take environmental concerns into account when shopping. Some labels quantify pollution or energy consumption by way of index scores or units of measurement, while others assert compliance with a set of practices or minimum requirements for sustainability or reduction of harm to the environment. Many ecolabels are focused on minimizing the negative ecological impacts of primary production or resource extraction in a given sector or commodity through a set of good practices that are captured in a sustainability standard.

*Eco-labeling has a number of major benefits*:

1. Informing consumer choice

Eco-labeling is an effective way of informing customers about the environmental impacts of selected products, and the choices they can make. It empowers people to discriminate between products that are harmful to the environment and those more compatible with environmental objectives. An eco-label makes the customer more aware of the benefits of certain products, for example, recycled paper or toxic-free cleaning agents. It also promotes energy efficiency, waste minimization and product stewardship.

2. Promoting economic efficiency

Eco-labeling is generally cheaper than regulatory controls. By empowering customers and manufacturers to make environmentally supportive decisions, the need for regulation is kept to a minimum. This is beneficial to both government and industry.

3. Stimulating market development

When customers choose eco-labeled products, they have a direct impact on supply and demand in the marketplace. This is a signal which guides the market towards greater environmental awareness.

4. Encouraging continuous improvement

A dynamic market for eco-labeled products encourages a corporate commitment to continuous environmental improvement. Customers can expect to see the environmental impacts of products decline over time.

5. Promoting certification

An environmental certification program is a seal of approval which shows that a product meets a certain eco-label standard. It provides customers with visible evidence of the product's desirability from an environmental perspective. Certification therefore has an educational role for customers, and promotes competition among manufacturers. Since certified products have a prominent logo to help inform customer choices, the product stands out more readily on store shelves. Coveting the logo may induce manufacturers to re-engineer products so that they are less harmful to the environment.

6. Assisting in monitoring

Another benefit of an official eco-labeling program is that environmental claims can be more easily monitored. Competitors and customers are in a better position to judge the validity of a claim, and will have an incentive to do so should a claim appear dubious.

**LECTURE 5. ENVIRONMENTAL EXPERTISE (EXAMINATION)**

*1. Purpose and tasks of environmental examination*

*2. Objects, subjects and types of environmental examination*

*3. The procedure of conducting of environmental expertise*

*4. Content conclusion of environmental expertise and offenses in the field of environmental expertise*

1. ***Purpose and tasks of environmental examination***

*Environmental examination (Expertise)* - a kind of scientific-practical activities specially authorized state bodies, environmental expert groups and associations , which based on intersectoral ecological research, analysis and evaluation of project which implementation and performance may adversely affect on the environment and human health , and aims to prepare conclusions about compliance activities planned standards and requirements of the legislation on environmental protection , rational use and reproduction of natural resources and environmental safety.

The Environmental Expertise is the determination of compliance of documents and (or) documentation that justify the projected economic and other activities related to the realization of the object of environmental expertise, with the ecological requirements, provided by the technical regulations and environment protection legislation with a view to preventing the negative impact of such activity on the environment.

Relationships in environmental impact assessment are governed by Law of Ukraine "On Environmental Protection" and other legislative acts of Ukraine.

The purpose of environmental examination is to prevent the negative impact of human activities on the environment and human health, also assessment of the degree environmental safety of economic activity and environmental situation in some areas and objects.

The main tasks of environmental examination are:

1. determine the extent of environmental risks and safety of planned or ongoing activities;

2. organization of integrated, evidence-based evaluation of objects of environmental examination;

3. installation of consistency of objects of examination by environmental law requirements, health standards, building codes and regulations ;

4. assessment impact activities of objects of environmental examination on the environment , human health and quality of natural resources;

5. evaluation of the effectiveness , completeness, reasonableness and adequacy of measures to protect the environment and human health;

6. training objective well-grounded conclusions of environmental examination.

The basic principles of environmental examination are:

1) provide a safe ecological environment for life and health of people;

2) balance environmental, economic, biomedical and social interests and consideration of public opinion:

3) scientific validity, independence, objectivity, complexity, variability, preventyvnist, publicity;

4) environmental security, territorial and sectoral economic feasibility expediency of implementation the objects of environmental examination;

5) government regulation;

6) legality.

1. ***Objects, subjects and types******of environmental examination***

The *objects* of environmental examination can be the draft laws and other normal-legal acts, pre-project materials, documentation on the introduction of new technology, techniques, materials, substances and products, that might lead to a breach of environmental legislation and the negative impact on the environment or threaten human health.

The object of environmental examination can be environmental situations that have developed in some areas and regions, as well as existing facilities and complexes that have a significant negative impact on the environment and human health.

The *subjects* of the environmental examination are:

1) The Ministry of Environmental Protection and Nuclear Safety of Ukraine , created by them local bodies, specialized agencies, organizations and environmental-expert commission;

2) The bodies and institutions of the Ministry of Health of Ukraine - in the part concerning the examination of objects that may adversely affect or impact on human health;

3) other government agencies, local councils of people's deputies and executive authority in the field in accordance with the law;

4) environmental community organizations or created by them specialized units;

5) other agencies , organizations and enterprises , including foreign legal and natural persons involved in carrying out environmental impact assessments;

6) individuals in the manner prescribed by this Law and other legislative acts.

*Publicity environmental review*

Customers ecological examination of objects which implementation could adversely affect the environment and human health, shall announce through the media about conduction of environmental expertise in a special statement on the environmental effects of activities.

Environmental-expert commissions after finishing the environmental expertize report about its conclusions through the media.

***Public participation in the environmental review***

In order to take into account public opinion of environmental review conducted public hearings or public meetings.

Public participation in environmental expertise may be performed by away appearances in the media, the submission of written comments, suggestions and recommendations, including members of the public in the expert committees or in groups which perform environmental expertise.

Preparation of conclusions of environmental expertise and decisions about further realization object of environmental impact assessment carried out on the basis of public opinion.

In Ukraine carried state, public and other types of environmental expertise.

The conclusion of state ecological expertise is mandatory. The deciding about further implementation of object of environmental expertise, the conclusion of state ecological expertise is very mandatory.

The conclusions of public and other environmental review are advisory and can be taken into account when carrying out state ecological expertise, as well as deciding on further implementation of object of environmental expertise.

*State ecological expertise* is organized and conducted environmental-expert divisions, specialized agencies, organizations or special committees created by the Ministry of Environmental Protection and Nuclear Safety of Ukraine, Ministry of Health of Ukraine, their bodies on the ground with the assistance of other public authorities.

To conduction the state ecological expertise may be involved experts from other institutions, organizations and enterprises, as well as experts of international organizations.

The state environmental expertise is required for activities and facilities of high environmental risk. The list of activities and facilities that are highly hazardous established by the Cabinet of Ministers of Ukraine on the proposal of the Ministry of Environmental Protection and Nuclear Safety of Ukraine and the Ministry of Health of Ukraine.

*Objects state ecological expertises are*:

1) public investment programs , projects of development of individual sectors of the economy ;

2) draft plans of settlements, regional planning schemes, plans of industrial components, circuits accommodation enterprises in industrial zones and areas for industrial development

3) investment projects on construction of new projects and expansion , reconstruction, modernization of existing businesses; documentation for conversion and elimination of existing businesses, individual shops, industries and other commercial facilities that may adversely affect the environment

4) draft laws and other legal acts which regulating relations in the sphere of environmental safety, environmental protection and natural resource activities that may adversely affect the environment and human health ;

5) documentation on the introduction of new techniques , technologies, materials and substances that could create a potential threat to the environment and human health.

*Public environmental expertise* can be carried out in any area of ​​activity, which requires environmental studies, initiated by public organizations or other civil society groups.

Public environmental expertise can be carried out simultaneously with the state environmental expertise by creating volunteer temporary or permanent environmental-expert groups of public organizations and other civil society groups.

*Other environmental examination* can be carried out on the initiative of interested businesses and individuals on a contractual basis with specialized environmental-expert bodies and groups.

Contract about granting of environmental-expert services approved by the Ministry of Environmental Protection and Nuclear Safety of Ukraine.

1. ***The procedure of conducting of environmental expertise***

The *expert* of environmental examination may be a specialist who has a high degree education, relevant specialty, skills and professional knowledge, has skills analysis of expert information and methodology of ecological-experts evaluation and also has practical experience in the relevant field for at least three years.

***The procedure of conducting of environmental expertise include:***

1) Check availability and completeness of necessary materials and details of the objects of environmental expertise and the creation of ecological-expert committees (groups ) as required by law *(preparatory stage);*

2) analytical studies of material of environmental expertise, conduction on their basis comparative analysis and partial estimates the degree of environmental safety, adequacy and effectiveness of environmental studies of the activities of objects of environmental expertise *(main stage);*

3) summarize some expert research, information about the effects of activities of objects of ecological expertise, training the conclusion of environmental expertise and submit it to interested bodies and individuals *(the final stage).*

*State environmental expertise conducted by:*

1) the analysis and evaluation of environmental expertise - teams of specialists of environmental-expert units or specialized agencies and organizations of the Ministry of Environmental Protection and Nuclear Safety of Ukraine , Ministry of Health of Ukraine;

2) environmental-expert studies and evaluation of objects of environmental expertise - specially created commissions involving practitioners and researchers of other institutions, organizations and enterprises;

3 ) the creation by the Ministry of Environmental Protection and Nuclear Safety of Ukraine jointly with other state executive bodies intersectory expert commissions ;

4 ) engaging on a contract basis other specialized organizations for prior expert review and prepare appropriate proposals.

The conclusions of state ecological examination should include evaluation of environmental acceptability and the possibility of making decisions about facility environmental review and consider the social-economic consequences.

Positive conclusions of state ecological examination after the approval of the Ministry of Environmental Protection and Nuclear Safety of Ukraine is the reason for opening the financing of projects , programs or activities .

Implementation of projects , programs or activities without a positive conclusion of the state ecological expertise is prohibited.

In the case of a negative assessment of objects of ecological examination client shall ensure their revision in accordance with requirements the environmental-expert сonclusion.

  The positive conclusion of the state ecological examination is valid for three years from the date of issue.

Subjects of public environmental expertise must announced through the media about the statement about conduction the public environmental expertise which shall provide information on the composition of public ecological-expert formation, list of professionals to participate in the examination, the object of environmental expertise, the timing of its implementation.

Statement about conduction of public environmental expertise shall be submitted to the relevant local councils, state executive body and state ecological expertise.

Conclusions public environmental expertise can be highlighted in the media and sent to the respective councils of people's deputies, executive bodies of local, body of state environmental expertise, agencies and other interested parties and customers of objects of environmental expertise.

Conclusions public environmental review may be considered when conducting state ecological expertise.

Financing of the state ecological expertise perform by its customer.

State ecological examination of objects which are implemented by public investment, financing from the state budget.

Financing of the public environmental expertise perform by the expense money of citizens' associations, environmental and other public funds, and targeted voluntary cash contributions of citizens, enterprises, institutions and organizations.

1. ***Content conclusion of environmental expertise and offenses in the field of environmental expertise***

*Content conclusion of environmental expertise*

Conclusions of environmental expertise consist of an introductory (protocol), recital (descriptive) and final (estimate-generalizing) parts.

The introduction contains information about the body that conducted the environmental expertise, the list experts, the time of conducting of environmental expertise, name of object of environmental expertise, its quantitative and qualitative indicators, information about those who performed and customers environmental expertise and the body that decides about realization the object of environmental expertise.

Recital part of conclusions of environmental expertise have brief description of the type of planned or ongoing activities and its impact on the environment, human health, the degree of environmental risk appropriate measures directed to prevent and neutralize this impact, ensuring environmental safety requirements, environmental protection, rational use and reproduction of natural resources.

In the final part of the conclusion contains generalized assessment of object of environmental expertise, comments and suggestions for improving its environmental impact, the conclusions about approval, return for revision or rejection of it from further environmental-expert review with reference to the relevant regulations and the possibility of deciding about further implementation of object of environmental expertise.

***Offenses in the field of environmental expertise are:***

1) violation of procedure of conducting of environmental expertise;

2) provision of false information about environmental impact of activity of object of environmental expertise;

3) granting permits on special financing and implementation projects or activities that may adversely affect the environment and human health;

4 ) implementation of environmental expertise incapable enterprises, institutions , organizations, civic associations and other units;

5) failure at the time realization the object of xamination requirements for environmental protection , use of natural resources;

6) unlawful interference anyone in the environmental expertise;

7) failure to provide required information and materials;

8) preparation of deliberately false conclusion of the state ecological expertise.

Persons which guilty of violating the legislation in the field of environmental expertise can be held disciplinary, administrative, civil or criminal responsible.

The legislation of Ukraine can be found liable for other offenses in the field of environmental impact assessment.

**LECTURE 6. ENVIRONMENTAL AUDIT**

*1. The concept of environmental audit*

*2. The Typical Audit Process*

*3. Types and benefits of environmental auditing*

*4. The auditor's report*

1. ***The concept of environmental audit***

*Environmental audit* is a general term that can reflect various types or evaluations intended to identify environmental compliance and management system implementation gaps, along with related corrective actions. In this way they perform an analogous (similar) function to financial audits. An audit is very important for the economy because it allows to reduce information and commercial risks associated with management decisions.

The word "audit" means an inspection, audit the books or documents relating to financial and business entities to determine the accuracy of their reporting, accounting, its completeness and compliance with applicable laws and established standards.

The essential purpose of an environmental audit is the systematic scrutiny of environmental performance throughout a company’s existing operations. At best, an audit is a comprehensive examination of management systems and facilities; at worst, it is a superficial review.

***The objects of environmental audit:***

• Enterprise objects , organizations, institutions,

• environmental situation prevailing in certain areas;

• individual objects of natural resources that are available or in use ;

• certain types of individuals and businesses ;

• investment and privatization projects , programs , proposals, loan agreements;

• Raw food products , processes , products ,

• air emissions , waste water , waste ;

• Safety and environmental passports businesses.

***Subjects of environmental audit:***

1) *customers:*

• physical and legal entities - for natural resources , I ki provided for their use ;

• owners of business objects or persons entitled to charge of the EA ;

• central and local authorities ;

• local authorities

2) *performers:*

• Audit organizations on environmental issues ;

• Lead Auditor for Environment ;

• auditors on environmental issues ;

• The audit team ;

• specialists of central executive bodies of Environment and Natural Resources , endowed with special powers.

The overall objective of environmental auditing is to help safeguard the environment and minimize risks to human health. The key tasks of an environmental audit therefore are to:

* determine how well the environmental management systems and equipment are performing;
* verify compliance with the relevant national, local or other laws and regulations;
* minimize human exposure to risks from environmental, health and safety problems.

As the prime objective of audits is to test the adequacy of existing management systems, they fulfil a fundamentally different role from the monitoring of environmental performance. Audits can address one topic, or a whole range of issues. The greater the scope of the audit, the greater will be the size of the audit team, the time spent onsite and the depth of investigation. Where international audits need to be carried out by a central team, there can be good reasons for covering more than one area while onsite to minimize costs.

In addition, the scope of an audit can vary from simple compliance testing to a more rigorous examination, depending on the perceived needs of the management. The technique is applied not only to operational environmental, health and safety management, but increasingly also to product safety and product quality management, and to areas such as loss prevention. If the intention of auditing is to help ensure that these broad areas are managed properly, then all of these individual topics must be reviewed. Items which may be addressed in audits, including environment, health, safety and product safety are shown in table 1.

Although some companies have a regular (often annual) audit cycle, audits are primarily determined by need and priority. Thus not all facilities or aspects of a company will be assessed at the same frequency or to the same extent.

*Table 1. Scope of environmental audit*

|  |  |  |  |
| --- | --- | --- | --- |
| ***Environmental*** | ***Safety*** | ***Occupational Health*** | ***Product Safety*** |
| -Site history  -Process / materials  -Storage of materials  above ground  below ground  - Air emissions  - Water discharges  - Liquid / hazardous wastes  - Asbestos  - Waste disposal  onsite  offsite  - Oil / chemical spill prevention  - Permits/licenses | - Safety policy / procedures  - Accident reporting  - Accident recording  - Accident investigation  - Permit to work systems  - Special procedures for confined space entry, work on electrical equipment, breaking into pipelines, etc.  - Emergency response  - Fire fighting  - Job safety analysis  - Safety training  - Safety communication / promotion  - Housekeeping  - Regulatory compliance | - Employee exposure to air contaminants  - Exposure to physical agents, e.g., noise, radiation, heat  - Measurements of employee exposure  - Exposure records  -Ventilation /engineering controls  - Personal protective equipment  - Information and training on health hazards  - Medical surveillance programme  - Hearing conservation  - First aid  - Regulatory requirements | - Product safety programme  - Product quality control  - Product packaging, storage and shipping  - Product recall/withdrawal procedures  - Customer information on product handling and quality  - Regulatory compliance  - Labelling  - Specifications for purchased materials/products/packaging  - Materials safety data  - Vendor qualification programme  - QA testing and inspections  - Record keeping  - Product literature  - Process control |

1. ***The Typical Audit Process***

An audit is usually conducted by a team of people who will assemble factual information prior to and during a site visit, analyse the facts and compare them with the criteria for the audit, draw conclusions and report their findings. These steps are usually conducted within some kind of formal structure (an audit protocol), such that the process can be repeated reliably at other facilities and quality can be maintained. To ensure that an audit is effective, a number of key steps must be included.

An essential step in establishing an audit programme is to decide the criteria against which the audit will be conducted and to ensure that management throughout the organization knows what these criteria are. Typically criteria used for audits are:

* company policies and procedures on environmental matters;
* applicable legislation and regulations;
* good environmental management practice.

***Basic Steps in Environmental Auditing:***

*Pre-audit steps*

Pre-audit steps include the administrative issues associated with planning the audit, selecting the personnel for the audit team (often from different parts of the company or from a specialized unit), preparing the audit protocol used by the organization and obtaining background information about the facility.

If auditing is new, the need for education of those involved in the audit process (the auditors or those being audited) should not be underestimated. This also applies to a multinational company extending an audit programme in its home country to subsidiaries abroad. In these situations, the time spent on explanation and education will pay dividends by ensuring that the audits are approached in a spirit of cooperation and are not seen as a threat by the local management.

When one major US company proposed extending its auditing programme to its operations in Europe, it was particularly concerned to ensure that the plants were properly briefed, that audit protocols were appropriate for European operations and that audit teams understood the relevant regulations. Pilot audits were conducted at selected plants. In addition, the audit process was introduced in a way that stressed the benefits of a cooperative rather than a “policing” approach.

Obtaining background information about a site and its processes can help to minimize the time spent onsite by the audit team and to focus its activities, thus saving resources.

The composition of the audit team will depend on the approach adopted by a particular organization. Where there is a lack of internal expertise, or where resources cannot be devoted to the audit activity, companies frequently use independent consultants to conduct the audits for them. Other companies employ a mix of in-house staff and external consultants on each team to ensure an “independent” view. Some large companies use only in-house staff for audits, and have environmental audit groups for this specific function. Many major companies have their own dedicated audit staff, but also include an independent consultant on many of the audits they carry out.

*Onsite steps (internal controls)*

Understanding the internal controls. As a first step, it is necessary to develop an understanding of the controls that are in place or are thought to be in place. These will include assessing formal procedures and practices; record keeping and monitoring; inspection and maintenance programmes and physical controls for containing spills. The audit team gathers information on the various controls by observation, interviewing staff and the use of detailed questionnaires.

Assessing strengths and weaknesses of internal controls. Evaluating the strengths and weaknesses of internal controls provides the rationale for conducting subsequent audit steps. Auditors will look for indicators such as clearly defined responsibilities, competence of personnel, appropriate documentation and records and systems of authorization. It is more important to determine whether the system is effective than whether it is sophisticated.

Gathering audit evidence. The audit team attempts to verify that the steps and controls work as intended. Evidence may be collected through inquiry, observation (e.g., watching specific activities and operations in progress) and testing (checking records to confirm compliance with regulations).

Recording audit findings. All the information obtained is recorded (usually on the audit protocol document and as working papers), and a comprehensive record of the audit and the state of the facility at the time is thus produced. Where a deficiency is found, it is noted as an audit “finding”.

Evaluating the audit findings. The audit team integrates and evaluates the findings of the individual team members. There may also be common findings. For some observations, an informal discussion with the plant manager may be sufficient; for others, inclusion in the formal report will be appropriate.

Reporting the audit findings. This usually is done at a meeting with the plant management at the end of the team’s visit. Each finding and its significance can be discussed with the plant personnel. Prior to leaving the site, the audit team will often provide a written summary of findings for the plant management, to ensure that there are no surprises in the final report.

*Post-audit steps*

Following the onsite work, the next step is to prepare a draft report, which is reviewed by the plant management to confirm its accuracy. It is then distributed to senior management according to the requirements of the company.

The other key step is to develop an action plan to address the deficiencies. Some companies ask for recommendations for corrective action to be included in the formal audit report. The plant will then base its plan on implementing these recommendations. Other companies require the audit report to state the facts and the deficiencies, with no reference to how they should be corrected. It is then the responsibility of the plant management to devise the means of remedying the failings.

Once an audit programme is in place, future audits will include past reports — and progress in the implementation of any recommendations made therein — as part of their evidence.

1. ***Types and benefits of environmental auditing***

Environmental audit should be focused on the individual needs of domestic enterprises in accordance with its established policies and objectives. In addition, it is important to clearly identify the goals and objectives of the company before determining what type of environmental audit it is necessary.

Although the most widespread use of environmental auditing is to assess the environmental performance of a company’s operations, there are variations on the theme. Other types of audit used in particular circumstances include the following:

Pre-acquisition audits. Concern about potential liabilities has promoted the dramatic increase in environmental auditing prior to acquisition. Pre-acquisition audits are a means of identifying actual or potential problems, and taking these into account in the final negotiations of the deal. Time scales are often very short. However, the information obtained on past operations (perhaps before the present owner), current activities, past incidents and so on can be invaluable.

Pre-sale audits. Less common than pre-acquisition audits, but becoming more popular, are audits conducted by the owner prior to selling a plant or a subsidiary company. A growing number of major organizations, such as the Dutch chemical company DSM and the Finnish conglomerate Neste, undertake pre-sale audits as part of corporate policy. The rationale is that the company will then know the status of environmental issues before the plant is sold, and can take action to remedy any problems if it feels that is appropriate. Equally important, it can present the results of an independent audit to a potential purchaser as confirmation of the situation. Should any environmental problems arise after the sale, a baseline has been established against which issues of liability can be decided.

Issues audits. Some organizations apply the audit technique to a specific issue that may have implications for the whole company, such as waste. The UK-based oil multinational BP has carried out audits examining the impact of ozone depletion and the implications of public concern about tropical deforestation.

Compliance audit - the most common type of audit consisting of checks against environmental legislation and company policy.

Health and safety audit - an assessment of risks and contingency planning (sometimes merged with environmental auditing because of the interconnected impacts of industrial processes and hazards);

Site audit - an audit of a particular site to examine actual or potential environmental problems.

Corporate audit - an audit of the whole company and its polices, structures, procedures and practices.

Due diligence audit - an assessment of potential environmental and financial risks and liabilities carried out before a company merger or site acquisition or divestiture (e.g. contaminated land remediation costs).

Activity or operational audit - an assessment of activities that may cross company departments or units (e.g. energy or waste management).

Product or life cycle audit - an analysis of environmental impacts of a product throughout all stages of its design, production, use and disposal, including its reuse and recycling (cradle to grave).

*An environmental audit is conducted at levels:*

• government agencies;

• transnational corporations;

• industry;

• area (region);

• enterprise.

An environmental audit was carried out with an interval of one - three years.

*Benefits of Environmental Auditing:*

If environmental auditing is implemented in a constructive way there are many benefits to be derived from the process:

* safeguard the environment;
* verify compliance with local and national laws;
* indicate current or potential future problems that need to be addressed;
* assess training programmes and provide data to assist in training;
* enable companies to build on good environmental performance, give credit where appropriate and highlight deficiencies;
* identify potential cost savings, such as from waste minimization;
* assist the exchange and comparison of information between different plants or subsidiary companies;
* demonstrate company commitment to environmental protection to employees, the public and the authorities.

So, audit is also an effective risk management tool for checking how effectively your business acts in accordance with environmental regulations.

An environmental audit assesses the nature and extent of harm to the environment caused by the activities, waste or noise from your business. Use the audit as a tool to help you:

* assess how you can manage or improve the condition of the environment;
* prioritise what actions you can take to reduce your impact on the environment;
* demonstrate accountability to third parties such as government, customers and shareholders.

Environmental audits must be independent, objective, credible and transparent in order to be successful. Audits should also be regular and ongoing, and conducted against a benchmark or initial assessment, generally detailed in your environmental plan.

1. ***The auditor's report***

The auditor's report drawn up by the established form and must have three parts: introduction , analytical and final .

**The introduction** should indicate the

• *to audit the organization:* - legal address and phone; the serial number , date of issue and the name of the authority issuing the license to carry out audit work and the duration of the license, registration certificate number, checking account number , name and patronymic of all auditors involved in the audit;

• *for auditors who work independently*: - surname, name , experience as an auditor , date of issue and name of the authority that issued the license to carry out audit work and the duration of the license , registration certificate number , checking account number.

**In the analytical part** are specified:

• name of the subject of environmental audit and the period of its activity for which the test is conducted ;

• The results of examination procedures;

• facts discovered during the audit of serious violations of environmental laws that have caused or may cause harm to the state and the public.

**In the final part** of the auditor's report contains a record of the confirmation of compliance with current environmental legislation , environmental regulations , standards , certifications, regulations, requirements.

Each page of the audit report signed by an auditor who carried out the test, and certify his personal seal.

If an audit is conducted audit firm, the audit report signed by the audit firm or other authorized official seal and certified by the auditing firm.

**LECTURE 7. THE ISO 14000 MODEL**

*1. The basic provisions of ISO 14000*

*2. Revisions of ISO 14001*

*3. Implementing ISO 14001*

*4. The consumer and ISO 14000*

1. ***The basic provisions of ISO 14000***

In this chapter, we shall discuss some of the most important standards for environmental management systems. Such standards are embodied in what is now known as ISO 14000 family of standards. These are set of standards and guidelines that could help businesses to develop more environmentally friendly products and services. ISO standards have received worldwide attention primarily because of the reputation of ISO (International Organization for Standardization) itself. The origins of ISO dates back to 1947 when it was formed as an NGO (non-governmental organization) with the purpose of promoting the development of standards to facilitate the international exchange of goods and services. ISO seeks international cooperation in scientific, technological and economic activities. Its membership has grown to over 100 countries that are represented by their national standards organization. The term ISO is derived from the Greek word 'isos' which means 'equal.' This can explain the goal of ISO to develop "equal" standards to guide the international exchange of goods and services. International standardization of goods and services protects the consumer and may also facilitate the transfer of technology and trade. Some of the benefits are in:

Enhanced product quality and reliability at reasonable price;

Improved health, safety and environmental protection and reduction

of waste;

Greater compatibility and interoperability of goods and services;

Simplification for improved usability;

Reduction in the number of models and thus reduction in costs;

Increased distribution efficiency and ease of maintenance.

In today's global economy, there is a need for standardization both in product quality and environmental content. With uniformity in standards among similar industries and technologies, companies can compete on a level playing field by removing some of the technical barriers to trade. However, achieving some of the standards may in the short-run become very costly and may make it difficult for some poorer nations to participate effectively in global markets.

The ISO successfully developed the international standards on quality assurance techniques and practices in the 1980s. These standards known, as ISO 9000 series of standards for product quality got worldwide acclaim and has fueled the development of a new set of standards for environmental management systems.

***ISO 14000 Series***

The ISO 14000 series of standards represent new sets of standards on environmental quality issues. They deal with guidelines and principles of environmental management systems to make businesses to focus on the growing need of environmental protection. The concept of ISO 14000 was introduced by a team of 50 business executives interested in sustainable development and known as the Business Charter for Sustainable Development (BCSD). By 1992, the world was increasingly concerned about the increasing pollution of the natural environment. The Earth Summit conference on Environment and Development was organized by the United Nations and held in Rio de Janeiro, Brazil in response to these concerns. ISO then formed the Strategic Advisory Group on the Environment (SAGE) and charged it with the evaluation of the international standards on environmental management systems. SAGE's recommendations in 1993 led to ISO 14000. Technical committee (TC) 207 was then formed to replace SAGE. This committee has the responsibility to develop standards for global environmental management systems and tool. The committee was to focus on the following areas of environmental management systems:

Environmental management systems (EMS);

Environmental auditing;

Environmental labeling;

Environmental performance evaluation (EPE);

Life cycle assessment;

Terms and definitions;

Environmental aspects in product standards (EAPS).

By the third quarter of 1996, the committee completed its work and published a series of standards to help firms manage and evaluate the environmental aspects of their operations. In Tables 1, we present the ISO 14000 family of standards and their applications.

Table 1: ISO 14000 Series Standards

|  |  |
| --- | --- |
| Standard number | Title |
| ISO 14000 | Environmental management systems — general guidelines on principles, systems and supporting techniques |
| ISO 14001 | Environmental management systems — specifications with guidance for use |
| ISO 14004 | Environmental management systems — general guidelines on principles, systems and supporting techniques |
| ISO 14010 | Guidelines for environmental auditing — general principles of environmental auditing |
| ISO 14011 | Guidelines for environmental auditing — audit procedures — part 1: auditing of environmental management systems |
| ISO 14012 | Guidelines for environmental auditing — qualification criteria for environmental auditors |
| ISO 14020 | General principles for all environmental labels and declarations |
| ISO 14021 | Environmental labels and declarations — self-declaration environmental claims — terms and definitions |
| ISO 14022 | Environmental labels and declarations — self-declaration environmental claims — symbols |
| ISO 14023 | Environmental labels and declarations — self-declaration environmental claims — testing and verification |
| ISO 14024 | Environmental labels and declarations — self-declaration environmental claims — type I guiding principles and procedures |
| ISO 14031 | Environmental management — environmental performance evaluation guideline |
| ISO 14040 | Life cycle assessment — principles and framework |
| ISO 14041 | Life cycle assessment — inventory analysis |
| ISO 14042 | Life cycle assessment — impact assessment |
| ISO 14043 | Life cycle assessment — interpretation |
| ISO 14050 | Terms and definitions |
| ISO 14060 | Guide for the inclusion of environmental aspects in product standards |

***2. Revisions of ISO 14001***

ISO 14001 which is the core of EMS was originally adopted in 1996 but was revised and adopted in 2004. The revision was intended to make ISO 14001 more user friendly by clarifying some of the statements in the 1996 document. It was also aimed to align ISO 14001 to the popular quality standards ISO 9001 and to establish clear association between the different segments of EMS, performance measurement, and the role of top management. This greater focus on alignment with ISO 9001 highlights the importance of quality imperative by emphasizing on Deming Plan-Do-Check-Act and continual improvement efforts. The revision also removed some of the vagueness in the original wordings of ISO 14001 by being specific on how some organizational environmental goals may be achieved. Munro and Harral [2006] classified these revisions into five "interpretative paradigm differences" as follows:

- ***Communication*** - This deals with getting everyone on board to achieve the organizational environmental goals. They note that the greatest challenge is the increased detail that must be communicated to top management. The inclusion of "internal" communication in addition to external communication is emphasized.

***- Documentation*** - There are changes in definitions, scope, and documentation requirements. Some of the definitions were borrowed from ISO 9001:2000. For example, organizations need to show that their auditors are competent. This concept of competence of auditors is derived from ISO 9001: 2000. Also, more succinct definitions of continual improvement and EMS audit are presented. Documentations have also been prepared to be easy to understand and also to demonstrate the significance of environmental aspects. There should also be documentation of results of periodic evaluations and monitoring of compliance.

***-Competence*** - The definition of competence is still a gray area. Competence may vary from situations and challenges but organizations need to demonstrate by defining measures of competence. This could play major role not only in environmental auditing but may have labor and legal implications since competence extends to anyone that performs a task for the organization or rather, the entire value chain of the organization. The need for independent auditors is also emphasized.

***- Performance focus and evidencing*** - The emphasis here is on measurement of objectives and targets and the need to see continual improvement as a "recurring" process and not a one-time thing. Resources must be readily available to support environmental goals.

***- Legal and other requirements*** - There is need for a new level of awareness and this would require additional resources. There should be added emphasis on policy, objectives, or targets with resources devoted to them.

***3.******Implementing ISO 14001***

As we mentioned above, ISO 14001 is the core standard and it is the only standard that a firm can be audited on for certification. We also listed and briefly discussed the four core elements of ISO 14001 as environmental policy, implementation and operation, checking and corrective action and management review. In order to implement ISO 14001, an organization must go through these elements in a step-by-step procedure. These core elements are actually motivated by the Shewhart Cycle popularized by Dr W. Edwards Deming and now widely known as the PDCA (plan-do-check-act) cycle. The PDCA cycle is commonly used in implementing quality management programs. We shall use this cycle to show how these core elements of ISO 14001 can be implemented.

***Plan*** — the planning stage requires the organization to develop an environmental policy. The environmental policy is akin to developing a mission statement that will detail the organization's roles, objectives, goals, and vision with regards to environmental performance. The objec¬tives and targets specified in this statement must be realistic and achiev¬able with the resources dedicated to attaining the environmental policy. Environmental policy is the motivating force of the organization's environmental management system. The organization however can only plan when it has relevant information. It needs to know its history, the nature of its business, and the mode of its interaction with the natural environment through its organizational activities. Thus, there is a need to have information and knowledge on 'environmental aspects.' The envi¬ronmental impact of the organization's activities on the natural environment should be estimated, considered and used in setting environmental objectives and goals. The business or organization must also know the legal and regulatory requirements that guide its operations and how it is expected to comply with them. With this knowledge base and top management commitment, achievable objectives and targets can be developed and appropriate resources devoted to their attainment.

***Do*** — this involves implementation and operation. Once the environmental policy is known, it is broken down into actions to be taken and responsibilities duly assigned to members of the organization. Necessary training is offered to sensitize and make members of the organization aware of the environmental policy, and to develop the needed competence on environmental management issues. They are also trained and made aware of the need to document their procedures. Emphasis is also placed on operational control and emergency prepared¬ness and response.

***Check—Act*** — the check stage involves monitoring the entire procedure and obtaining feedback. In the EMS document, it is referred to as checking and corrective action. The essence of this step is to evaluate outcomes of key performance measures and see if they meet expected standards or targets. The monitoring is done on a regular basis so that deviations from expected targets can be detected early. The targets or standards may be based on compliance required by existing legal and regulatory requirements. When the system is detected as not meeting these standards, corrective actions can be taken promptly. The com¬pliance requirements are part of the environmental policy so there is a target to aim for. The act stage is included in this step because actions are taken as the situation may warrant solving impending problems such as system's deviation from expected norm.

The fourth core element of ISO 14001 is management review. This requires top management to be involved as an active participant of environmental management system. This is necessary, because certain actions or decisions can be taken at the top management level. Top management is required to review the EMS to ensure its continuing suitability and effectiveness. This review may lead to changes in environmental policy. For example, the original policy may not be adequate given some organizational transformation or process changes that may have taken place or it may not have been effective. Management will then require a revision of the environmental policy or development of new environmental policy that will align with corporate objectives and goals. The environmental policy drives the EMS and the organization's overall environmental performance so it is important that top management takes charge of this step. Once this step is completed, the process continues.

The implementation process offered here is generic and does not relate to any specific industry. It is a stepwise procedure that has to be taken irrespective of the industry.

Important information to derive from this is that the ISO 14000 model relies on effective planning, performance measurement, and monitoring. It is an ongoing process that seeks continuous improvement to achieve environmental quality. The effective implementation of these guidelines is essential to achieving maximum benefits and this would require effective planning. You would also notice that environmental management systems auditing is now represented as ISO 19011. This new standard replaces the previous ISO 14010, 14011, and 14012 and deals with guidelines for quality and/or environmental management systems auditing and not just guidelines for environmental auditing as in the previous standards. Thus guidelines for quality and environmental management systems auditing are unified.

***4. The consumer and ISO 14000***

The issue of standardization is of interest to consumers worldwide. Standardization ensures best practices and consistency in the delivery of products and services. It eases conformance to established guidelines and helps the regulation of products and processes. Consumers are protected from inefficient products and processes that are unsustainable. The quality of the environment and earth's limited resources are efficiently utilized.

Sustainability is not just of importance to consumers but to all stakeholders such as suppliers, manufacturers and vendors. We shall itemize some of the benefits of sustainable practices:

• Safer, healthier and environmentally friendly products are needed to improve the quality of life and productivity. Productivity as a measure of the economic wellbeing of a nation is enhanced when employees are safe and healthy. Environmentally sound products help to achieve the goal of increased productivity. One of the problems facing industrialized nations today is the increasing cost of healthcare and health insurance. Some of the health-related problems are induced by environmental pollution. Briggs estimates that 8-9% of total disease burden may be associated to environmental pollution and this figure is even higher for developing nations. Yet, this percentage of total disease burden may be underestimated because of long latency times, difficulty in linking a pollutant to a single disease and multiple exposures to different pollutants. Major sources of environmental pollution include unsafe water, poor sanitation, poor hygiene and indoor air pollution. Why some of these may require basic hygiene practices however, industrial pollution contributes significantly in creating unsafe drinking water, poor sanitation, and poor air quality. For example, in many developing countries, there are few guidelines on factory locations and waste management. In such places, dumping of wastes and pollutants by manufacturers in streams and rivers and the lack of control on the emission of pollutants to the air pollute both the sources of drinking water and air. Standardization plays a role by specifying guidelines for best practices, sharing best practices worldwide, and educating regulators on standards to check for. The worldwide focus on best practices also compels manufacturers to carefully review and adopt ecologically friendly practices.

• In a global economy, it is important to have a level playing field. Consumers demand higher quality and quality extends to the role of the product on the environment. Consumers worldwide expect to get the same consistency of products and understand the need for safe and clean environment. They also participate in the green movement and would prefer manufacturers that are environmentally conscious. When a global company leaves its home base to compete in a new environment, it expects to meet exactly the same standards. By standardizing worldwide operations, the cost of operation and production is significantly reduced and high quality products that meet environmental needs can be delivered to customers at competitive prices. ISO standards facilitate international trade. By developing consistent standards, global companies can compete effectively by understanding the rules of the game. It would not matter if the company is based in Tokyo, Japan, or New Delhi, India, these companies do understand that there is a single world market that has to be catered for. Their products and services are evaluated using the same standards and their ability to compete effectively is dependent on their ability to satisfy these established standards and practices. So a sound business management practice would require knowledge of the guiding environmental management practices. The quest to meet and exceed these standards has made companies to become more innovative and find ways to turn environmental practices into profits. The cases of Kodak single use camera and Xerox remanufacturing practice show how corporations can be environmentally responsible and yet achieve high profitability.

• With the global economy, manufacturers are now dealing with global supply chain. Many manufacturers outsource part of their productions to other countries where cost of production is cheap, yet core competencies are available in such countries. Therefore, a manufacturer of aircrafts like Boeing may outsource the manufacture of wing flaps to Italy and expect to meet the same high quality and attain the same environmental standards. The attainment of these standards give consumers confidence that no laws are circumvented. In the past, multinational corporations relocated operations to countries where environmental laws were relaxed but today, they are joining in the effort to help such countries develop their environmental standards. Furthermore, with many of these countries as member nations of ISO, it becomes easier to develop consistent environmental standards worldwide. Using ISO 14000 standards and guidelines requires an evaluation of the value chain in order to support environmental protection and resource conservation efforts. This process helps in improving efficiencies and productivity. To effectively evaluate the value chain, the supply chain network becomes a critical component of this entire process. Many manufacturers have realigned their strategies with that of their supply chain to benefit from the global efficiencies these practices may lead to. So the issue is no longer being able to supply the cheapest cost but also being able to satisfy the standards and the reputation that the manufacturer wants. Thus the manufacturer and his team of suppliers work as team and share information on how to improve both product and environmental quality. Innovation is therefore critical in achieving both environmental performance and economic growth. Consumers in poorer countries stand to benefit from regulations since they could gain from the knowledge that exists in industrial nations. Poorer countries can benefit from this knowledge base without necessarily investing their resources on research and development to establish their own set of environmental laws. Green products create choices for consumers. Today's consumers are educated and have access to a wider range of information and database. They are able to make decisions that are rooted in their social and value systems. Consumers' perceptions of quality may be broader than the general definition of product quality and may focus on issues of social responsibility, integrity and trust [Madu and Kuei 1995]. Such focus on social and value systems are often associated to green issues. Consumers tend to perceive conformance to environmental standards as an aspect of organizational social responsibility function. Consumers today have a wide range of products and services to choose from and environmental issues are increasingly factored in making such decisions. Adhering to internationally accepted standards as outlined in ISO guidelines attest to an organizational conformity to established standards and elevates the organization above its competitors that may not demonstrate this mark of achievement. Companies that embark on environmental quality improvement efforts meet the needs of their stakeholders. They appropriately respond to the environmental challenges and develop a reputation of being stakeholder-focused. This will help create a business image and reputation that may transcend into increased market share and thereby higher profit margins.

The use of ISO 14000 encourages environmentally sensible and conscious practices. This would also help to minimize ecological debts. According to Claude Martin, chairman World Wildlife Fund (WWF), "We are running up an ecological debt which we won't be

able to pay off unless governments restore the balance between our consumption of natural resources and the Earth's ability to renew them," It is clear that a major problem is to be able to balance consumption of natural resources and the ability to renew the resources. While it is not always feasible to renew all resources, however, the use of ISO 14000 could help in responsible practices and in identifying sustainable practices that can extend the useful life of nonrenewable resources.

• In the past, different countries maintained different environmental standards. These standards were not universally accepted and were often contradictory. Such independent standards complicate international trade, regulation and monitoring, and do not protect global consumers. Today, the universal standards as achieved through ISO simplifies worldwide regulation, present the same view of environmental standards to all stakeholders, and assure consistency in achieving the standards. They facilitate international trade and ease entrance into new markets by foreign corporations. Consumers stand to benefit from competition, increased employment opportunities, and the quest by competing companies to be the best and produce world-class products and services.

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