LEARNING OBJECTIVES

After completing this Unit, you should be able to:

- discuss the objectives of an environmental audit;
- describe the basic steps and elements of an environmental audit;
- explain waste audits and pollution prevention assessments;
- discuss liability, industrial and EMS audits;
- discuss the potential of environmental audit as a tool for environmental management to identify, assess and address environmental concerns;
- conduct/co-ordinate an environmental audit and critically evaluate its outcomes.

INTRODUCTION TO ENVIRONMENTAL AUDITING (EA)

An environmental audit (EA) is a systematic, independent internal review to check whether the results of environmental work tally with the targets. It studies whether the methods or means used to achieve the goals or ends are effective. EA involves studying documents and reports, interviewing key people in the organisation, etc., to assess the level of deviations between targets and results.

It is defined as a systematic and documented verification process of objectively obtaining and evaluating evidence to determine whether an organisation's EMS conforms with audit criteria set by the organisation, and for communicating the results of this process to management (ISO 14001).

Environmental audits are being used as a tool and an aid to test the effectiveness of environmental efforts at local level. They can be carried out for a number of reasons including the following:

- To verify compliance.
- To review implementation of policies.
- To identify liabilities.
- To review management systems.
- To identify needs, strengths and weaknesses.
- To assess environmental performance
- To promote environmental awareness.

Objectives and scope

The objectives of an environmental audit are to evaluate the efficiency and efficacy of resource utilisation (i.e., people, machines and materials), to identify the areas of risk, environmental liabilities, weakness in management systems and problems in complying with regulatory requirements and to ensure the control on waste/pollutant generation.

The areas an environmental audit deals with can be categorised as under:

- **Design specification and layout:** While setting up an industry, adequate provisions are made in the design specification and layout to augment the production capacity but corresponding provisions to meet the environmental criteria are often overlooked. Adequate provisions are, therefore, necessary to upgrade pollution control measures to meet the future environmental standards that are getting stringent day by day. The audit will help in identifying specific areas of concern to meet the future requirements of environmental measures.
- **Resource management:** The resources include air, water, energy and other raw materials. The audit will provide data to the management on the efficient use of the resources per unit production, and, thereby, help reduce resource consumption and waste minimisation.
- **Pollution control systems and procedures:** The audit helps ensure that the systems and procedures governing the environmental activities/operations of pollution control equipments are rightly followed and determine the efficiency of the system in identifying conditions and inviting corrective actions in a timely and effective manner.

- **Emergency plans and response/safety system:** As the emergency plans more often than not remain in the safe custody of senior management, staff may not have immediate access to the right action during an emergency. The problem becomes acute when new persons are employed/deployed. The review of the emergency response system will ensure adequate knowledge, alertness and readiness of the staff concerned to effectively face an emergency.
- **Medical and health facilities/industrial hygiene and occupational health:** The productive element of an industry is dependent on the health of its human resources. The primary facilities to suit the occupational needs of the industry are, therefore, vital. Audit in this regard will provide an insight into the actual requirements to warn suitable orientation of existing facilities.
- **Confirmation to regulatory requirement:** The regulatory mechanism of environmental compliance is gradually becoming more and more comprehensive. New regulations and standards are being stipulated at such a pace that they render the existing systems archaic. Factory managers may not be fully aware of the latest requirements and this will make the top management/owners vulnerable for prosecution under various environmental acts. An audit helps compare the existing status with the stipulation and standards prescribed by various agencies and ensure compliance.

Scope

The scope of an environmental audit can fall under either of the following two options:

(i) To limit scope of the audit to an assessment only of the degree of compliance with policies, requirements-type documents and procedures.

(ii) To assess the adequacy of the policies, requirements-type documents and procedures to begin with and, given their adequacies, to assess the degree to which compliance with these documents is achieved.

The argument for limiting the audit scope only to the assessment of compliance is that the policies, requirements-type documents, and procedures have been developed and approved by the key affected technical and managerial personnel. The audit objectives, however, should be both to assess the degree of compliance with policies, requirement documents, and procedures and to assess their adequacy as well, with the following constraints:

- When a function, process or area is subject to frequent, periodic audit, it need not address the adequacy of the environmental programme. The large majority of the audits should address only the degree of implementation compliance with, and the adequacy of the programme. When the adequacy of the programme is to be addressed, there should be a higher-level overview by the management of the auditing organisation, i.e., an overview of any findings related to programmatic inadequacy. The purpose of this overview should be to assure that either each issue is fresh or each issue warrants a revisit before putting other units of the organisation through the perturbation of addressing the issues

Note that a company's motivation for carrying out an environmental audit will determine the type of audit it chooses to implement. We will discuss the types of audits in Subsection

Following below

Types of environmental audits

In this Subsection, we will discuss the two main types of environmental audits, i.e., objective-based and client-driven.

Objective-based types

As mentioned earlier, environmental audit covers assessment of any activity that impinges on the environment. The scope and objectives of the audit more usefully distinguish different audit categories and how the audit results are to be used. However, you must note that objectives and scope are often a combination of several audit types and are usually defined on a case-by-case basis. Organisations have developed audit programmes to fit their particular needs. Based on objectives, environmental audits can be categorised as under:

(i) **Liabilities audit:** Compliance audit, operational risk audit, acquisition audit and health and safety audit form liabilities audit. These are often conducted as a prelude to gaining insurance cover and as a means of demonstrating the regulatory compliance. Compliance auditing is probably the most common form of environmental audits; it is a verification process whereby the facility establishes the extent to which it is complying with environmental legislations, regulations, emission limits, etc. Operational risk concentrates on the potential frequency and consequences of environmentally damaging activities in the raw material and product storage/handling and manufacturing process. Compliance with regulations does not necessarily reduce liability due to operational risks.

Acquisition audits assess the liability due to contaminated land and building remediation costs. Health and safety audits normally form part of health, safety and environment (HSE) audit and involve assessment of adequacy of personal protective equipment (e.g., safety shoes, goggles, helmets, etc.), emergency preparedness and disaster management plans.

(ii) **Management audit:** Corporate audit, system audit, policy audit and issues audit form management audit. These pay considerable attention to management systems as they guide the efficient and effective running of the operations. A corporate audit is initiated by the main Board of a parent company and is concerned with organisation structure, roles and responsibilities, policy implementation, awareness and communications with a subsidiary. This is carried out as a reassurance to the main Board that its aims and objectives are being implemented throughout the corporate structure. Management system audits are carried out to check the systems against the policy and standards such as British Standard 7750 or ISO 14001

Policy audit is carried out to review and reassess the relevance of policy in light of developments (legal, technical, financial) within the organisation and outside. Issues audit is carried out to establish environmental management plan and targets.

(iii) **Activities audit:** Site audit, waste audit, product audit and cross-boundary audit form activities audit. These cover auditing of select technical and management issues. Environmental site audit examines all aspects of the facilities performance with respect to the environment. It combines most of the elements of other types of EA and, when undertaken in depth, involve considerable time and cost. The waste audits are of two types. The first identifies and quantifies waste streams and is a precursor to waste minimisation programmes. The second type assesses waste management practices and procedures. Product audits cover several aspects of their environmental impacts through design, manufacture, use and disposal. Such audits are pre-requisites for identifying environmentally friendly products for "Green Labelling" Cross boundary audits assess activities, which cut across departments or business units (e.g., transport and supply chain audits).

Fig below illustrates the objectives based audit types

Environmental Audit Categories

Environmental Audit Types		
↓	↓	↓
Liabilities Audits	**Management Audits**	**Activities Audits**
Compliance Audit	Corporate Audit	Site Audit
Operational Risk Audit	Systems Audit	Waste Audit
Acquisition Audit	Policy Audit	Product Audit
Health & Safety Audit	Issues Audit	Cross-boundary Audit

Client-driven types

The different types of audits are based on the client, who has commissioned or ordered the audit procedure:

(i) **Regulatory external audit:** This often entails an examination carried out by or for an environmental regulatory agency, with the goal of ensuring that a facility is meeting the relevant legislation and regulations. The regulatory agency can use the methodology of audit as a tool to systematically enhance its overview, including the possibility of verifying the accuracy of any reports, which a company is required to submit to the authority.

(ii) **Independent external audit:** This is conducted by external auditors entitled to perform audits. As the environmental factors have gained importance for a firm's market relations, shareholders such as banks and investment funds, insurance companies, environmental groups, potential buyers, customers, local government and environmentally-aware citizens are demanding independent external audits to assess how the firm deals with environmental issues.

(iii) **Internal environmental audit:** This often involves an inquiry commissioned by management. In practice, such audits are commonly ordered by senior management located at some distance, in both physical and operational senses, from the factory or site of environmental concern. In such cases, the environmental audits are internal in that the results will remain within the organisation. However, for the facility under investigation, the internal audit will have the same effect as an external audit. One reason why firms conduct internal environmental audits is to diminish their liability to pay fines, damages or clean-up costs as the result of breaking the law (e.g., releasing more emissions than permitted).

(iv) **Third party audits:** These represent the audits certifying organisations carry out to verify as to whether internal/ external audits meet the standards set.

The following table will illustrate the client-driven audit types

Environmental Audit Types: Client-driven

Category of Audit	Ordered By	Desired Result
Regulatory External	Regulatory Authority	Enhanced oversight
Independent External	Buyer, bank, customer, insurance firm, etc.	Objective information
Internal	Top management, Members of Board	Reduced risk
Third Party	Top management, Members of Board	Certified environmental protection system

GENERAL AUDIT METHODOLOGY

What the foregoing discussion suggests is that the focus of environmental audit differs, depending on the specific requirements of the clients. In other words, audit methods and tools are tailored to suit the purpose for which they are intended. However, any audit programme must conform to the basic framework. We will explain the basic structure of, and the steps involved in, an audit programme

Basic structure of EA

Though different production facilities and activities, audit orders and types of audits place different requirements on the structure of an audit, there are certain elements, which should be present in any effective environmental audit programme. These common elements include:

(i) Explicit top management support for environmental audit and commitment to follow-up on audit findings.

(ii) An environmental audit function independent of audited activities.

(iii) Adequate team staffing and auditor training.

(iv) Explicit audit programme objectives, scope, resources and frequency.

(v) A process, which collects, analyses, interprets and documents information sufficient to achieve audit objectives.

(vi) A process, which includes specific procedures to promptly prepare candid, clear and appropriate written reports on audit findings, corrective actions and schedules for implementation.

(vii) A process, which includes quality assurance procedures to assure the accuracy and thoroughness of environmental audits.

EA steps

The four general steps involved in an audit procedure are:

(i) **Audit preparation:** This includes choice of auditor/audit group, collection of background material and planning of the audit orientation. Audit preparation is crucial in determining the methodology, practical tools and materials that will be required for the completion of the audit. In many cases, the available materials such as manuals, questionnaires, etc., may not be well suited to the type of activity that is to be audited, or the type of audit that is performed. This means that part of the preparatory activities may have to involve development of audit-specific tools or further development of existing materials and tools. In such cases, this may require a preliminary review of the facility or activities to map out specific details and requirements to be observed in the development of the particular tools.

(ii) **A systematic scrutiny or review of a facility:** Depending on the orientation and goals of the audit, the focus of the scrutiny differs. For example, an environmental audit can be conducted without dealing with the processes involved in production. However, an audit, which is considered part of a programme of preventive environmental protection, needs to

deal with the production processes and material flows. Common to all audits is an analysis and evaluation of the information that has been obtained and an analysis of the outcome vis-a-vis the goals and expectations of the initiator of the audit. This helps in identifying the areas of improvement.

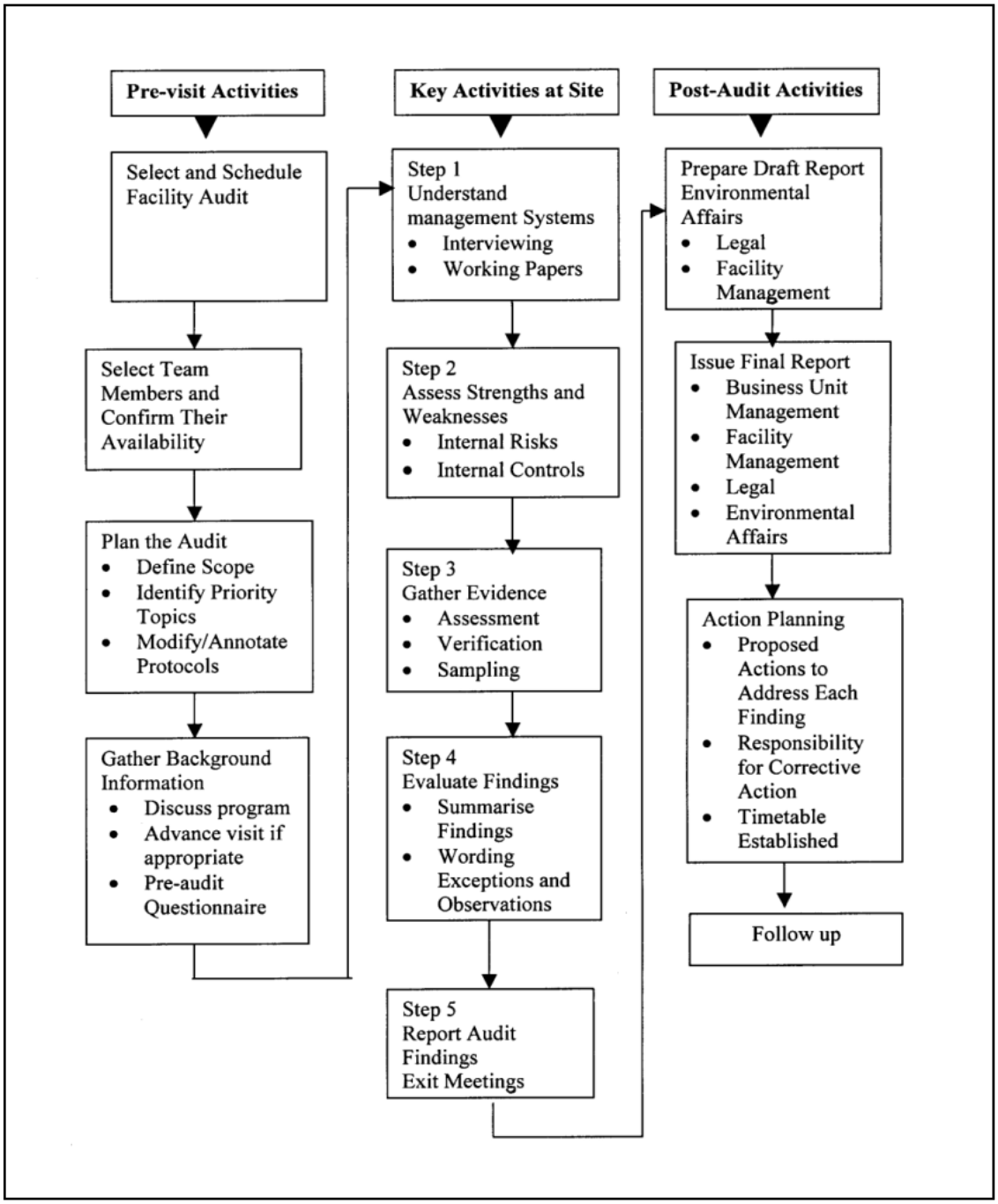
(iii) **Reporting:** This step involves reporting of observation of deficiencies and possible alternatives. It is important to be aware that an environmental audit by itself does not solve any problems. In fact, during the work on the audit, it may appear that the environmental problem is increasing because the audit process brings to attention the hitherto unknown problems or deficiencies. Audits often point to the need for the changes in organisation and improvements in education, increased environmental responsibility, and investments in new equipment and environmental protection technology. An important pre-condition for the success of an audit, especially if it is internally initiated, is that everyone is prepared to accept the consequences and take steps to solve the deficiencies and problems, which the audit may reveal. Thus, the persons whose areas of responsibility have been the object of scrutiny must make decisions and have plans in place to eliminate the problems.

(iv) **Follow up:** Following up of the results is an important part of the audit process. An evaluation of the results of the remedial actions is a logical step. This can be done either as part of the subsequent audit or as part of a continuing process of enhancing environmental protection procedures. However, we must note that mere following up on the results may result in a control routine and a stagnation in work on environmental problems. It is, therefore, important that a follow up process also analyses the methodology and

orientation of the previous audits to ensure that it remains a dynamic factor.

Figure 5.2 presents the basic steps in an audit procedure:

Figure 5.2
Typical Audit Procedure: Basic Steps



Having discussed the basics of an environmental audit, let us now look into the issues involved in planning an audit.