

## **ELEMENTS OF AUDIT PROCESS**

In this Section, we will discuss how to plan an environmental audit. In planning an environmental audit, it is important to decide about the scope of the audit within an organisation (given that an audit need not necessarily cover the entire organisation), audit team, objective of audit and audit methodology.

### **What to audit?**

An audit can cover anything from environmentally-related decisions to the function and maintenance of an individual piece of environmental protection equipment. In other words, concerning what should be audited; many definitions permit a rather broad approach to organisational, administrative and technical matters.

A typical result of preliminary audits is that some sort of organisational structure is created within the firm, or just at the production site and that some procedures for dealing with environmental problems are established. An obvious result of these actions is that future audits ought to evaluate whether the organisation and the procedures function in the ways that they were intended. A natural turn of these developments is that environmental audits become more and more management systems-oriented as a firm's environmentally-related activities become increasingly formalised and systematised.

For instance, in the management context, the transition from problem solving to quality assurance mechanisms, which attempt to prevent problems, is a natural development. The process seems to be no different in the environmental management context as well. The pattern of transition, in fact, is reminiscent of financial audit where a distinction can be made between records investigation and internal control evaluation. As methods of internal control are developed, for example, audits can concentrate increasingly on verifying those organisations, practices, procedures, the divisions of work and responsibility and other features which function as they were intended. Increasingly, in the same way, quality environmental audit is being equated with the audit of quality management systems, even where there are other types of quality audits, which are more technically-oriented towards processes and products. In short commonly recognised elements that needs auditing include policy, principles, systems, procedures, practice and performance of the particular organisation.

## **Who should audit?**

The question of who should conduct an audit remains open. A clear strategy on the part of industry has been to try to reserve the use of this tool for industry itself. On the other hand, regulatory agencies have seen the possibilities of audit in their efforts to improve their insight into the environmental impacts of production. These ambitions need not be in opposition with each other, rather, they should serve as complements. The questionnaires and checklists, which companies have developed prior to conducting an internal audit often show similarities to those that the regulatory agencies use during their periodic inspections and general evaluations.

In addition to environment regulatory agencies and firms themselves, there are many other actors in society who have an interest in how the environmental issues are dealt with in companies. These actors can use the tools and methodology of environmental audits to seek objective information. Increasing environmental consciousness among consumers, efforts to improve quality and development towards greater standardisation are the three factors that have led to the inclusion of environmental relations in quality parameters. In the future, it may become commonplace for various interested parties to examine not only production and product quality, but also environmental quality, to estimate the viability of the firm in the marketplace. Environmental audit may, therefore, be used by many parties to secure their interests. Thus, it should not be defined in a manner that limits its use to a particular group.

## **Why an audit?**

The definition of the primary purpose for conducting an environmental audit is often a reflection of priorities and interests. Industries, on the one hand, see environmental audits as means of reducing their own environmental risk taking. On the other hand, environmental groups and organisations emphasise that it is the risks to the environment that are to be minimised through environmental audit. A reduced risk of legal action against a firm, as the result of excessive emissions or accidents, may also spare the environment from certain types of pollution and waste.

There are also differences inherent in these perspectives about the purpose of environmental audits. For example, potential risks may be identified based on fulfilling legal requirements or from a purely environmental perspective. To consider everything that is not specifically forbidden by law as permissible could be a defensible position, which some firms do, provided that

environmental regulations expressed some sort of optimal level of pollution. Yet, it is becoming more commonly understood that this is not the case. Pollution and waste always represent a loss of materials and an environmental burden, which also always entails costs for the firm and the environment.

A certain broad agreement on continued efforts and goals for environmental protection is developing. Concerned regulatory authorities, political parties, businessmen, unions, researchers, environmental organisations and increasingly environmentally aware consumers are tending to agree on the idea that sustainable development must be based on a strategy of preventive environmental protection. This strategy can be expressed in many ways, including the definition of the purposes of environmental audits.

## **How to audit?**

Finally, when it comes to how to conduct an environmental audit, it is natural to relate this to the methodology and practices used within financial and quality audits. There is no advantage to have environmental audits depart radically from established procedures in related areas.

Common to both financial and quality audits is the demand to be systematic, objective and independent. This means that competent individuals who do not have direct responsibility for the areas that are to be investigated conduct the audit. Yet, to ensure that the audit process is not associated with direct methods of control and supervision, the audit should be conducted with co-operation from the personnel who work in the area under investigation. An additional advantage of involving personnel in the audit procedure is that this may lead to a better understanding of why improvements and corrective actions are necessary.

Documentation and periodicity, i.e., the frequency of reports or analyses, is a general requirement in definitions of environmental audits, even if they may seem to be redundant. The need for documentation of the audit procedure and its results should be obvious, while periodicity is a function of the purpose of the audit. If the primary purpose, for example, is to ensure that a dynamic process continues in the direction of diminishing environmental **bidets**, then a high frequency of audits may be required.

This last aspect of audits raises the question of the auditor's freedom to provide advice or recommendations to the organisation that is the object of scrutiny. An advisory capacity is often thought to be in conflict with the requirement of objectivity, because the auditor runs the risk of examining his or her own proposals in a future audit. Yet, this has not hindered the making of recommendations by those involved with financial or quality audits. The audit process assumes that the competent and experienced auditor recommends improvements in an objective and independent way. This means that it must be clear to all parties involved in an audit that the process of environmental audit does not assume any part of the operative responsibility for environmental protection that is the prerogative of management.

## **WASTE AUDITS AND POLLUTION PREVENTION ASSESSMENTS**

As mentioned earlier, waste audits are intended to identify the possibilities for improvement. The recommendations contained in waste audits are not based on objective comparisons between expectation and results, but instead are based on technical and economic evaluation of various waste minimisation alternatives.

The origin of the term *waste audit* can be traced to the amendment of the Resource Conservation and Recovery Act

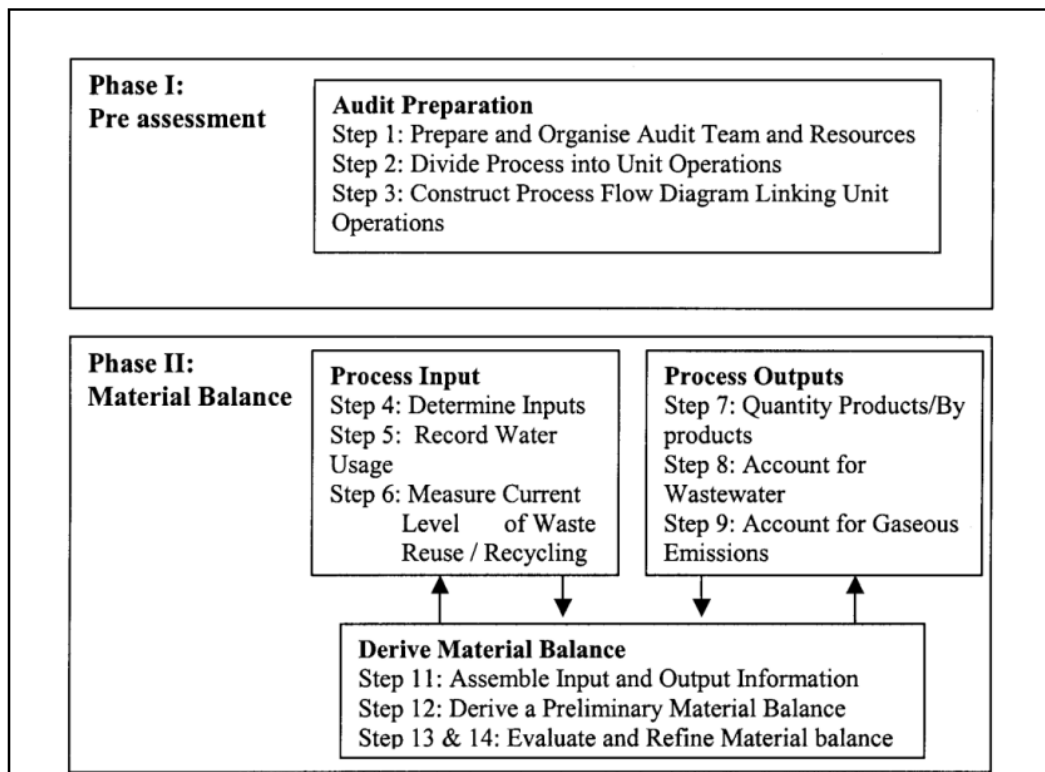
(RCRA) enacted in the USA during the early 1980s. The RCRA was revised because of the problems involved in the handling and land filling of hazardous wastes. The work on revising the RCRA resulted in the Hazardous and Solid Waste Amendment of 1984, in which the US Congress declared the highest priority to be preventive measures.

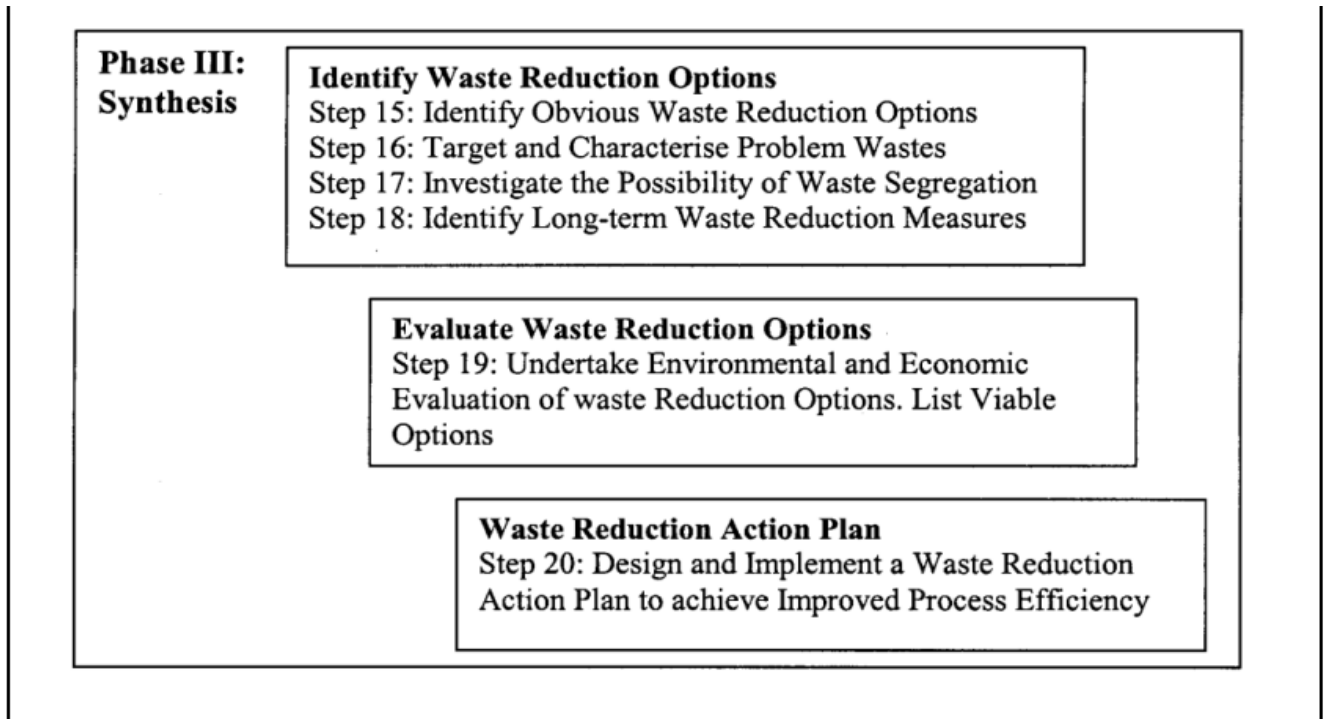
The amendments required all large producers of hazardous wastes to put a programme in place to reduce the volume and toxicity of wastes. Further, waste producers were required by law to submit biennial reports to the environmental authorities on the results of efforts to reduce waste volume and toxicity.

This legislation led to a widespread introduction of waste minimisation programmes within industries to identify the potential for reducing wastes at source. These minimisation programmes required systematic procedures to localise and characterise all types of waste streams, and this led to the creation of formal methodologies for waste minimisation audits. The US Congress Office of Technology Assessment (OTA) defines waste audit as a systematic, periodic internal review of a company's processes and operations, designed to identify and provide information about opportunities to reduce wastes (OTA, 1986).

Note that waste audit encompasses the term *waste* but does not refer to merely hazardous and other solid waste; it refers to all by-products of production, including emissions to the air and water. UNEP and UNIDO are promoting waste audits as an operational management tool. Figure 5.3 shows a schematic presentation of their recommended work procedure:

### Waste Audit: A Guide





Audits, which contain an explicit pollution prevention approach, are considered to be pollution prevention audits. This classification is used regardless of whether the audit is conducted

independently, or the pollution prevention approach is integrated into compliance, management, and/or risk audits, as represented

**The Pollution Prevention Approach**



Note that pollution prevention audits are operative in the sense that they include the creation and analysis of correction and improvement alternatives. In formal environmental audit, this is a task reserved for management. Furthermore, pollution prevention audits and similar audits require the active involvement of management in information gathering and proposals for change. For reasons such as these, in this context, the term *assessment* is considered to be more appropriate than audit.

The term environmental audit covers a wide range of activities based on formal performance evaluation of an organisation or a facility in relation to environmental objectives.

## **EA IN INDUSTRIAL PROJECTS**

An environmental audit is a process for assessing the nature and extent of environmental concerns at an existing facility – an industrial plant, an abandoned site, a mine area or any other site, where industrial pollution problems are identified or anticipated (Pollution Prevention and Abatement Handbook, 1998). It is used to provide data on the extent of pollution in an industrial area, to quantify the scale of pollution at a particular site or to examine the causes and potential remedies of problems at a facility. This Section provides guidance on the uses of environmental audits in industrial pollution management and on the scope of a typical audit.

## ***Site audit***

A *site audit* is often the first step in obtaining a quantitative understanding of pollution problems. In many cases, the audit allows an evaluation of priorities, the extent and cost of control and remediation measures. This information then shapes all remediation actions and investments.

In an industrial context, the overall objective of a site audit is to understand the scale and sources of the pollution problems at a facility or in a defined area and to set out the options available for dealing with those problems. This is often a staged process of investigation in which each stage is narrower in scope but more detailed than the preceding one. An initial assessment can be relatively quick, drawing on readily available sources, including site interviews, and providing an overview of the actual or suspected sources of pollutants and the extent of their impact. This overview can be carried out during project definition or in the *scoping* stage and provides a basis for further detailed investigations or for defining priorities for action. An initial assessment also helps describe or indicate where site sampling and monitoring might be cost-effective.

A *full site audit* is detailed, requiring careful site inspections, (perhaps, including sampling and testing) and review of past and present production processes, as well as pollution emissions and control measures. The audit should also clarify the legal and

regulatory framework, licensing agreements, corporate policies, and management structures and priorities that affect the environmental performance of the plant. In many cases, relevant technical and environmental standards for performance may be ill defined or may not exist, and professional judgments will have to be made as the appropriate benchmarks. However, it is essential that the standards or emissions limits proposed for the plant be clearly defined and that the rationale for their selection be given. If plant requirements appear unachievable with the current plant, the audit should address what might be acceptable as realistic interim requirements.

## ***Audit purpose***

An audit should provide a list of recommended actions, in terms of increasing cost-effectiveness in addressing the critical environmental issues. This list should include interim and long-term targets and a timetable for achieving them, together with indication investments and other resources (e.g., human, information, and so on) that would be required.

The scale and cost of site audits can vary widely, depending, above all, on the extent of field data collection required. One or two people can carry out a scoping study in a couple of days, with cooperation from site personnel. A full site audit of a typical

industrial plant can be carried out within one to two months, of which perhaps one week is spent on the main fieldwork, usually followed by a shorter visit to verify initial findings.

## ***Terms of reference***

The terms of reference (TOR) of a site audit will obviously be site-specific. However, a typical TOR includes the following:

- Overall objective.
- Specific objectives.
- General scope of work.
- Baseline data.
- Principal sources of contamination.
- Area of impact.
- Technical approach.
- Work plan.
- Prevention, control, and mitigation.
- Recommended priority actions.
- Environmental management plan.
- Site-specific scope of work (by site).
- Laboratory services.
- Norms and standards.
- Pre-bid site visits.
- Client contacts and counterparts.
- Facilities provided by the client.
- Reporting and deliverables.

A site audit report may contain the following sections:

- Executive summary.
- Project description.
- Regulatory setting.
- Audit procedure.
- Mitigation.
- Costs and schedule.
- Annexure.

## ***Points of procedure***

The following points relate to the procedures for the execution of a site audit.

- (i) **Selection of auditors:** Various forms of certification of environmental auditors are under discussion in different countries. Although many of the skills required for a site assessment are general environmental or engineering skills, it is important that the audit team has personnel with detailed knowledge of the specific industry being addressed. The selection of auditors should follow the normal procedures for consultants, and arrangements should be made to allow bidders to become familiar with the site before the tender closure date.
  
- (ii) **Briefing and TOR:** It is essential that the consultants selected have a clear understanding of the objectives of the work, especially if the audit is to become part of the overall environmental assessment for the project. The TOR, therefore, needs to be as specific as possible.
  
- (iii) **Preparation phase:** An audit plan should contain a description of the information required, the site visit schedule and the site personnel to be involved or interviewed. A protocol may also be prepared defining the specific information that will be sought during the site visit. The protocol should be provided to the enterprise well in advance of the visit. Available file information on the facility should be obtained and reviewed before the visit, and the audit plan should then be refined, if necessary.
  
- (iv) **Execution of the audit:** Active cooperation of the plant owners and managers is essential for a good result and should be secured in advance. As effective coordination reduces delays and costs, site visits, interviews, and any sampling should be organised as early as possible. The site inspection should be carefully documented to support the

findings and recommendations and to provide a reference for future audits.

- (v) **Review of findings:** It is important that the management in place be allowed to comment on the findings and recommendations of the audit.