

Environmental Auditing for Sustainable Development of Indian Industries

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Abstract: Environmental auditing is a process whereby an organization's environmental performance is tested against its environmental policies and objectives. Current environmental legislation, marketing requirements and community expectations reflect an increased awareness of the need to protect the environment that requires all aspects of the mining and allied industries to be undertaken in an environmentally responsible way. Environmental audits can help the industry to become environmentally responsible and demonstrate this responsibility to the community. Environmental auditing refers to the statement of assessment of environmental impact of an existing industry. It is a tool to assess the environmental management system, policy and equipment. The need to conduct an environmental audit varies for different organizations, as per the objectives of auditing. It is not available in the form of a readymade package, applicable to all situations. Thus, the procedure of environmental audit should be planned as per the objectives of auditing. It should be incorporated with other effective environmental tools like Environmental Impact Assessment (EIA) and Environmental Management System (EMS) for better results. Effective implementation of environmental auditing helps in minimization of environmental risks at low cost.

This paper discusses in detail the concepts and types of environmental audits, the different stages of audit processes and methodology for ensuring sustainable development of Indian industrial sectors. This also emphasizes on EA skills and audit protocols along with discussions on key audit techniques and their applicability in a developing country like India.

Key words: Environmental audit, sustainable development, mining.

Introduction

Current environmental legislation, marketing requirements and community expectations reflect an increased awareness of the need to protect the environment that requires all aspects of the mining and allied industries to be undertaken in an environmentally responsible way. Environmental audits can help the industry to become environmentally responsible and demonstrate this responsibility to the community. Environmental audits help in assuring the accuracy and relevance of environmental monitoring. They also measure an organization's environmental performance and can encourage continual improvement.

For today's industry, regulations, financial reporting requirements, market competition and community expectations require environmental performance to be assessed and reported. This has led both industry and government to adopt the environmental audit process. With increased awareness of the need for environment protection, the mining industry will need to rely increasingly on environmental audits (EA). EA is a structured and comprehensive mechanism for ensuring that the mining/industrial activities do not adversely affect the environmental quality and economy, but improves processes and energy effectively. The need to carry out an environmental audit will vary depending upon the type of organisation and the objectives of the audit. The

principal aims of an environmental audit are to identify and evaluate potential liabilities, risks and hazards. This in turn will assist in assessing the viability of operations after including the cost of reducing environmental risks and liability to acceptable levels. There is no single environmental audit procedure applicable to all situations. An audit can take different forms to achieve different objectives. The reason for undertaking an audit and the agreed outcomes are the deciding factors. It deserves to be adopted as a pre-requisite for sustainable development and environmental management of Indian mining and allied industries. Current environmental legislation, marketing requirements and community expectations reflect an increased awareness of the need to protect the environment that requires all aspects of the mining and allied industry to be undertaken in an environmentally responsible way. Environmental audits can help the industry to become environmentally responsible and demonstrate this responsibility to the community.

In their most basic application, environmental audits help mining/other companies demonstrate to regulatory authorities that they comply with legislation, regulations and the conditions contained in pollution control approvals, discharge licences and mining leases. Identifying issues through the audit process may also lead to more efficient operations that go well beyond regulatory requirements. Most environmental audits currently undertaken in the mining industry are voluntary (initiated by the company). However, there is an increasing trend toward statutory audits (required by legislation) and mandatory audits (required as a condition of an approval, licence or lease). All of these may be undertaken either by the company and presented to regulators, or undertaken by regulators at company or public expense. Environmental auditing is an evolving technique. It has had a relatively short history of about five to ten years in most major mining companies. Most mining companies now accept that environmental auditing is necessary in all mining operations, both large and small. Environmental auditing is essential to continual improvement in environmental performance as the mining industry moves towards ecologically sustainable development.

The Concept of Environmental Auditing

There is no or little agreement on the meaning of environmental auditing, procedure to be followed and standards to be applied in conducting environmental auditing. The scope, objective and protocols required of

environmental auditing have not been standardized (Deturbide, 1996).

Environmental auditing is an established management tool which provides a periodic, formalized check against an established set of criteria to assess the current situation of a company with respect to their obligation on several fronts – meeting environmental management system (EMS) objectives; compliance with laws and regulations; and conformance with corporate code or policy and industry and association codes or policies (Thompson et al., 1999). Environmental audits are one tool that can be used by an organization, in the context of its environmental management system, to help determine its environmental performance.

To sum up, environmental auditing is a valuable environmental management tool as it can:

- provide information for management review (audit findings and recommendations);
- raise corporate image with respect to environmental concerns;
- provide competitive advantage by raising corporate profile with respect to environmental issues, especially through ISO 14001 certification;
- save money by preventing incidents due to the proactive nature of auditing;
- prove corporate environmental claims to meet purchasing guidelines of customers;
- facilitate evaluating the integration of the corporate EMS into the operation being audited;
- improve management control and the general level of stakeholder assurance;
- allow checking and corrective action in the light of increasing complexity of environmental legislation;
- help establish due diligence (to avoid personal and corporate liability);
- provide protection with respect to civil lawsuits;
- identify potential environmental problems and current environmental impacts, in addition to gathering basic information about the facility being audited;
- verify compliance with regulations;
- verify conformance with voluntary commitments and contracts; and
- provide assurance to management that systems and processes are in place in order to prevent, detect and correct non-conformance with audit criteria (Thompson et al., 1999; Wilson, 1999).

Definitions of Environmental Auditing

A systematic, documented, periodic and objective review by a regulated entity of facility operations and practices

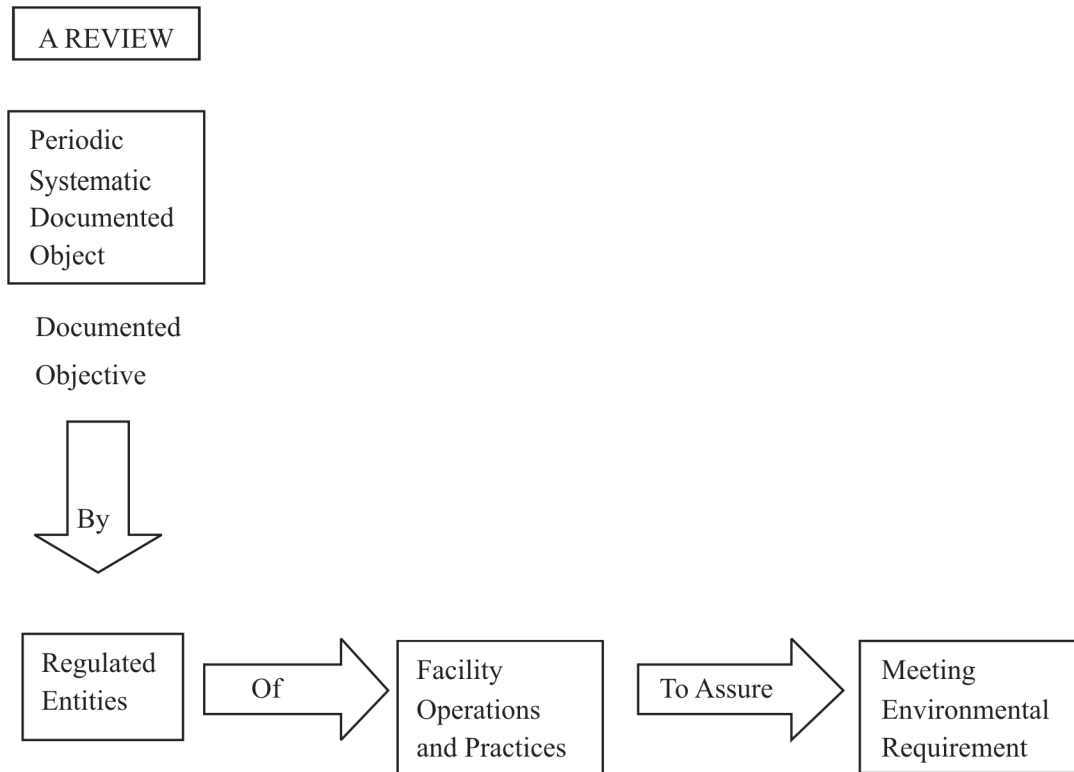


Figure 1: EPA definition of Environmental Auditing.

related to meeting environmental requirements (USEPA). Figure 1 depicts EPA's definition of environmental auditing. The policy identifies several objectives for environmental audits.

- Verifying compliance with environmental requirements;
- Evaluating the effectiveness of in-place environmental management system, and
- Assessing risks from regulated and unregulated materials and practices.

Environmental auditing is a process whereby an organisation's environmental performance is tested against its environmental policies and objectives. These policies and objectives need to be clearly defined and documented.

Environmental audit may be defined as "a pragmatic management tool compressing a systematic, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of helping to regulate the environment by (i) facilitating management control of environmental practices, (ii) assessing compliance with industry policies, which would include meeting regulatory requirements (International Chamber of Commerce [ICC, 1991]).

A similar approach is reflected in the definition proposed by the Paris based International Chamber of Commerce (ICC) which runs as follows:

Environmental management system has been defined as 'the part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy' where the environmental policy itself is defined as 'statement by the organization of its intentions and principles in relation to its overall environmental performance which provides a framework for action and for the setting of its environmental objectives and targets' (CSA-ISO 14001, 1996a, p. 2).

This approach to environmental auditing appears to have been more prevalent in Canadian business prior to the implementation of stringent environmental regulation. Many companies had implemented in-house auditing programmes designed primarily as a tool for management excellence rather than protection from liability (Deturbide, 1996, p. 21).

An environmental audit is a tool that a company can use to identify the full extent of its environmental impacts, determine whether or not the company is in compliance with applicable laws, regulations, and the expectations

of its stakeholders, and gain an understanding on how it can sustain or improve its environmental performance going forward.

The International Organisation for Standardization (ISO) defined an environmental audit as “a systematic, documented verification process of objectively obtaining and evaluating audit evidence to determine whether specified environmental activities, events, conditions, management systems, or information about these matters conform with audit criteria, and communicating the results of this process to the client” (CSA/ISO 14010, 1996b, p. 1).

Private sector environmental auditing has been variously defined as:

“a management tool comprising a systematic, documented, periodic and objective evaluation of the performance of the organisation, management system and processes designed to protect the environment with the aim of: (i) facilitating management control of practices which may have impact on the environment, and (ii) assessing compliance with company policies” (CEC, 1993)

or

“the systematic examination of the interaction between any business operation and its surrounding. This includes all emissions to air, land and water legal constraints; the effects on the neighbouring community, landscape and ecology; and the public’s perception of the operating company in the local area” (CBI, 1990).

The United Nations Environment Programme (UNEP) defines environmental auditing as “a management tool used by industry to evaluate its environmental performance” (UNEP, 1989). It emphasizes a point that environmental auditing can be a means for a company to assess its environmental performance and to improve the effectiveness of its environmental policies. The above approach has been supported by environmental management professionals. They argue that the environmental audit must relate to a corporate management plan, which is typically guided by a policy to protect and enhance the environment through planning and prudent use of resources and technology. It should also provide regulatory agencies and the public with complete and accurate information relevant to environmental decisions.

Differing Types of Environmental Audits

There are many different types of environmental audit that may be carried out on an individual facility, operation or site. It is very important when commissioning an

environmental audit of a mining operation or site to ensure that the objectives of that audit are clearly defined. This clear definition of objectives will determine the protocol to be used by the auditors, the qualifications needed by the auditor, or the audit team, and whether or not legal input should be included in the environmental auditing process.

There are several types of environmental audits carried out by companies (ERM, 1996; Thompson and Therivel, 1991) as mentioned below:

- Environmental Management Audits
- Environmental Compliance Audits
- Environmental Assessment Audit (Environmental Impact Audits)
- Waste Audit
- Environmental Due Diligence Audit
- Supplier Audits
- Environmental Management Systems Audits
 - o First Party Audit
 - o Second Party Audit
 - o Third Party Audit

Environmental Management Systems
BS7750

- The British Standard for Environmental Management Systems, issued in 1992, was revised in 1994. It has been adopted by some Australian mining companies as a standard ‘in principle’, i.e., one that may be followed but need not be taken to full certification.

European Communities Environmental Management and Audit Scheme (EMAS)

- Published as the Environmental Management and Audit Regulation (1993), this voluntary system establishes a standard of environmental performance that is independently verified by a registered ‘auditor’.

ISO14000 Series

The International Standard for Environmental Management is planned for release in mid-1996. It consists of a number of sections:

- ISO14001 — EMS: Specification with Guidance for use
- ISO14004 — EMS: General Guidelines
- ISO14010 — Environmental Auditing: General Principles
- ISO14011 — Environmental Auditing: Auditing of EMS
- ISO14012 — Environmental Auditing: Auditor’s Qualifications
- ISO14014-14015 — Environmental Auditing: Related Investigations
- ISO14020-14024 — Environmental Labelling
- ISO14031 — Environmental Performance Evaluation
- ISO14041-14044 — Life Cycle Analysis

ISO14060 — Environmental Aspects of Products Standards.

- Treatment, storage, and disposal facility audits
- Functional/issues audit
- Health and safety audit
- Site audit
- Corporate audit
- Activity or operational audit
- Product or life cycle audit
- Environmental Impairment Liability Audits
- Environmental Marketing Audits
- Technical or Process Audit
- Phase One Audit
- In the public sector, local authorities have led the way in environmental auditing. Two forms have been defined (LGMB, 1991):
 - External audit
 - Internal audit

The Benefits of Environmental Auditing

While environmental audits are designed to identify environmental problems, there may be widely differing reasons for undertaking them: compliance with legislation, pressure from suppliers and customers, requirements from insurers or for capital projects, or to demonstrate environmental activities to the public. The benefits of environmental auditing include the following.

- Provides assurance of compliance with environmental regulations, standards, etc.
- Facilitates the development of environmental management systems and improvement in environmental performance.
- Increases management and employee awareness of environmental issues.
- Increases sharing of information.
- Reduces the potential for liability with potential.
- Cost savings and improved efficiency.
- Promotes 'Good Practice'.
- Enabling environmental problems and risks to be anticipated and responses planned;
- To demonstrate that an organisation is aware of its impact upon the environment through providing feedback;
- Increased awareness amongst stakeholders;
- More efficient resource use and financial savings; and
- Providing better PR and public image and 'security' to top management.

Environmental Auditing Practice and Procedures

The more specific type of environmental audit involves the collection, collation, analysis, interpretation, and presentation of information which is used to:

- assess performance against a set of requirements or targets, related to specific issues;
- evaluate compliance with environmental legislation and corporate policies; and
- measure performance against the requirements of an environmental management system standard.

The systematic, periodic, documented and objective aspects of environmental auditing are fundamental to effectiveness. It is fast developing as an important and powerful tool in the corporate environmental assessment and management toolkit. The requirement of periodical repeat audits ensure that there is an ongoing commitment and a systematic process to improve environmental performance (Grayson, 1992). The scope of repeat audits can also broaden to become more comprehensive as experience and expertise are accrued or as new issues or legislation emerge.

Phases in Environmental Audit

An environmental audit is conducted basically in three major parts or phases including: (1) pre-audit activities; (2) on-site activities; and (3) post-site activities. Figure 2 provides a schematic overview of the audit process. Although accurately defining the objectives and scope of the audit are critical to its success and determining the depth of the investigation, it is important to understand that the numerous activities of the audit are not restricted to only a site visit. Careful planning prior to the on-site investigation and appropriate verification of audit findings and observations are just as critical to the success of the audit as the proper conductance of a site visit and related inspections.

An environmental audit is typically undertaken in the following three phases.

- Pre-audit
- On-site audit
- Post-audit

Each of these phases comprises a number of clearly defined objectives, each objective to be achieved through specific actions, and these yielding results in the form of outputs at the end of each phase. Below is a flowchart (Figure 3) provided by the Hong Kong Environmental Protection Department depicting all the steps of conducting and environmental audit.

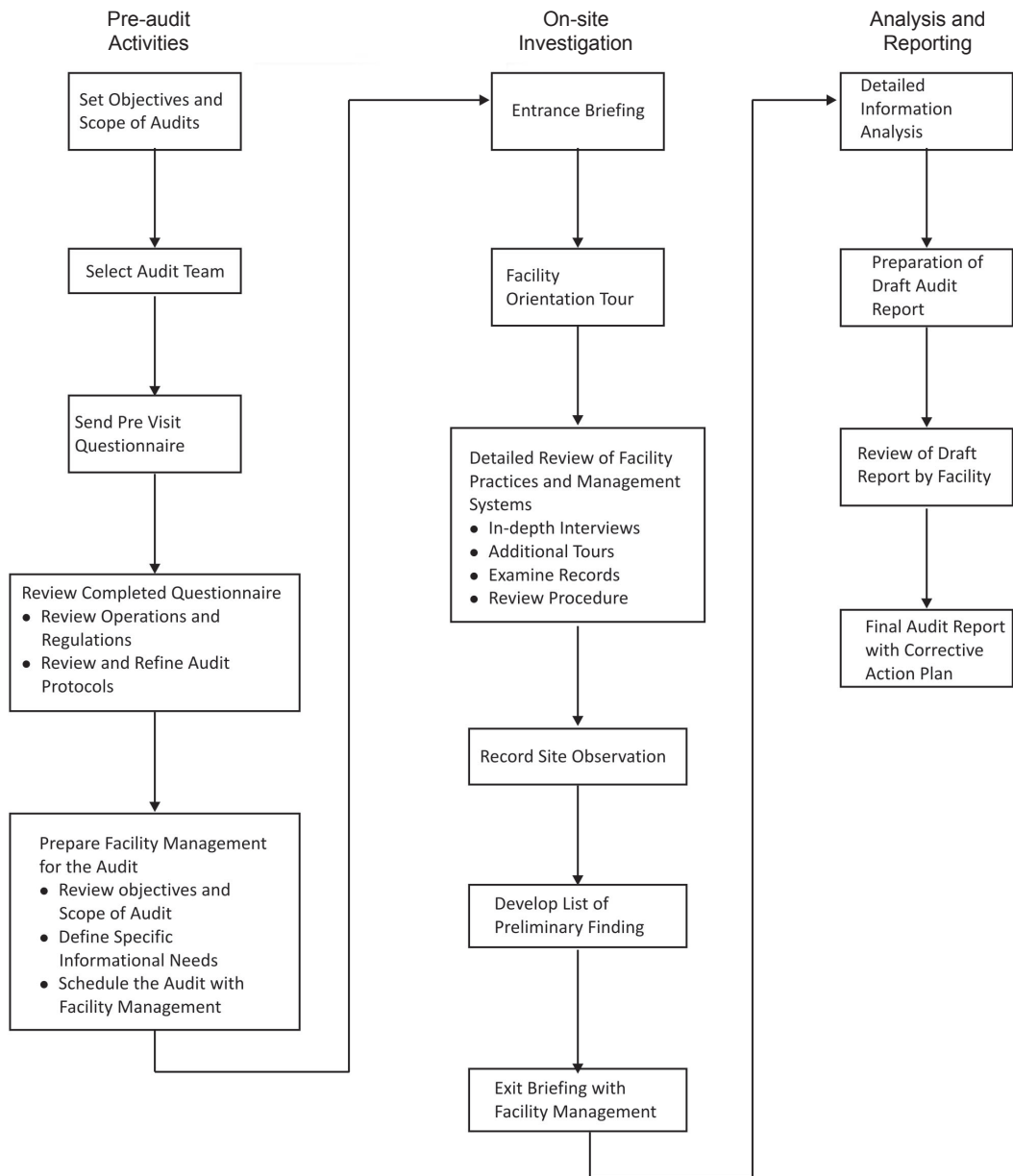


Figure 2: Schematic overview of the Audit Process.

Environmental Audit Approach

Environmental Audit involves typically five distinct yet interrelated steps as given below.

- Understanding internal management system and procedure
- Assessing the soundness of a facilities internal control
- Gathering audit evidence
- Evaluating audit findings and exceptions
- Reporting audit findings and exceptions. These are schematically illustrated in Figure 4.

EA for Mining Industry

EA conducted for a mine focuses itself:

- to control any water coming out of mines, whether it be mine seepage or waste water in the form of processing;
- to regenerate degraded land through proper rehabilitation schemes;
- to suppress common dust to minimize nuisance for men and machinery which takes care of noise pollution;
- to utilize solid waste from mines;

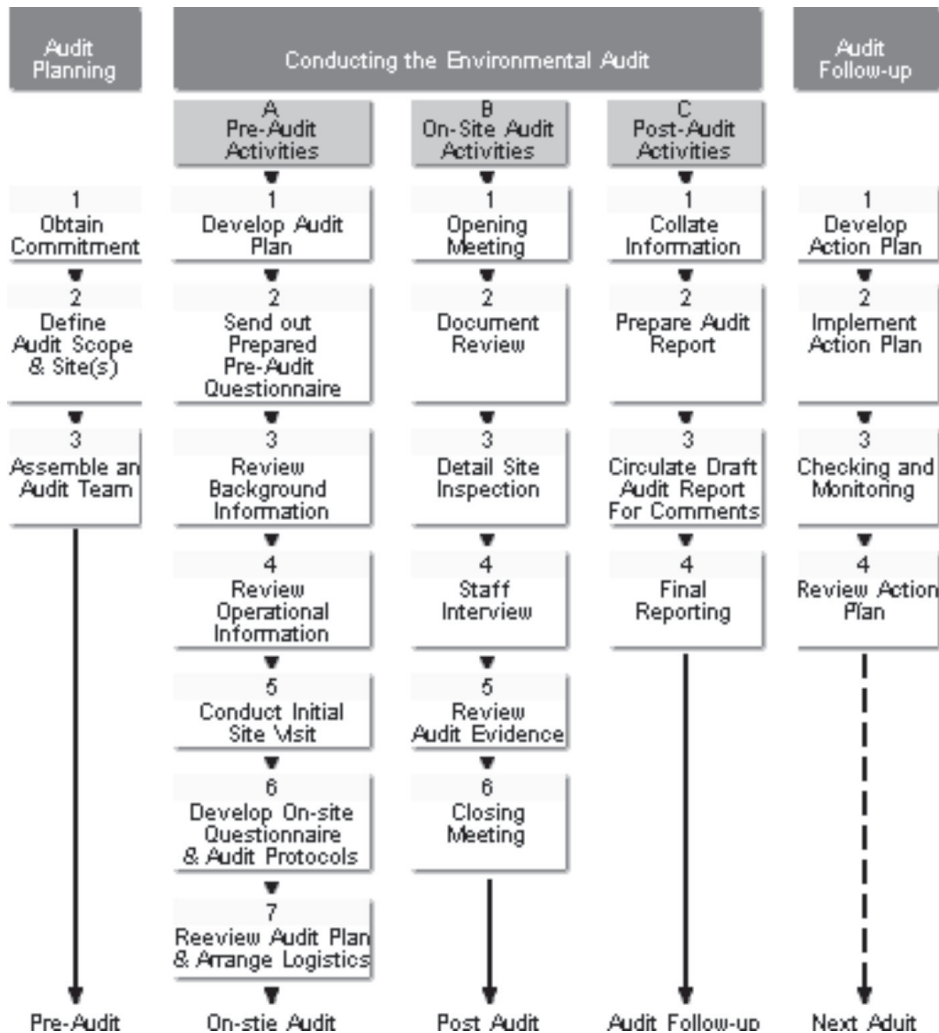


Figure 3: Flowchart depicting Environmental Audit Process.

- to conduct health and safety audit including safety precautions to be adhered to while transporting coal in order to improve the working conditions of miners;
- to review the various mining and environmental acts and regulations in force in India.

An EA enables to take a comprehensive look at the mining site and EA for a mining sector is required to be conducted through various steps as presented in Figure 5.

Environmental Audit Procedure for Mines in Australia

The outlines of audit activities for large and small mining operations are shown in Figures 6 and 7, respectively. (Best Practice Environmental Management In Australia, Environmental Auditing, EPA, Australia).

Conclusion

Current environmental legislation, marketing requirements and community expectations reflect an increased awareness of the need to protect the environment that requires all aspects of the mining industry to be undertaken in an environmentally responsible way. Environmental audits can help the industry to become environmentally responsible and demonstrate this responsibility to the community. Environmental audits help in assuring the accuracy and relevance of environmental monitoring. They also measure an organisation's environmental performance and can encourage continual improvement.

Environmental audits can 'add value' to the

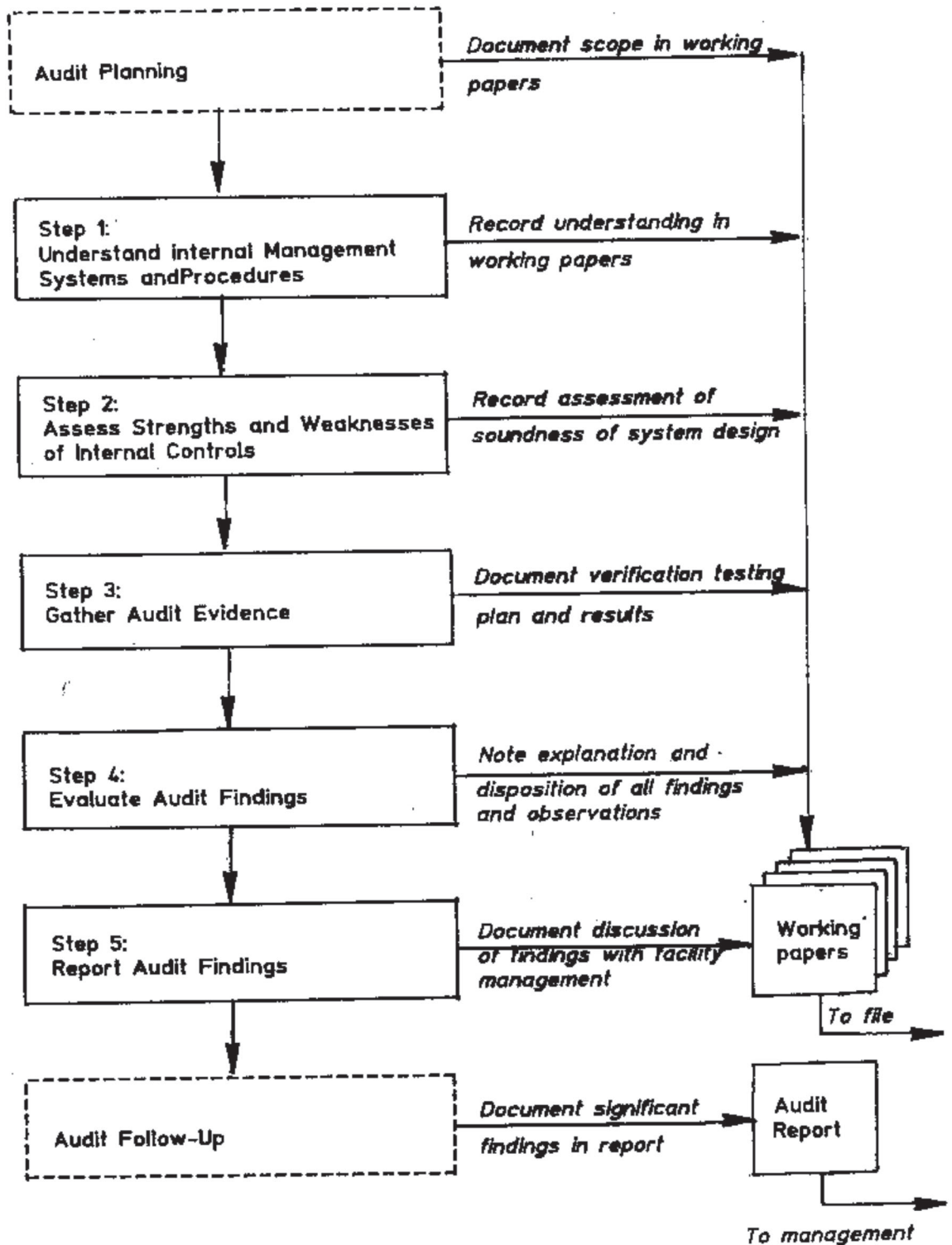


Figure 4: Environmental Audit approach.

management approaches being adopted by companies and can be means of identifying, evaluating and managing environmental risks (known and unknown). The environmental audit assists in the process of testing

performance in the environmental arena and is fast becoming an indispensable aid to business decision making.

Environmental auditing has become an essential

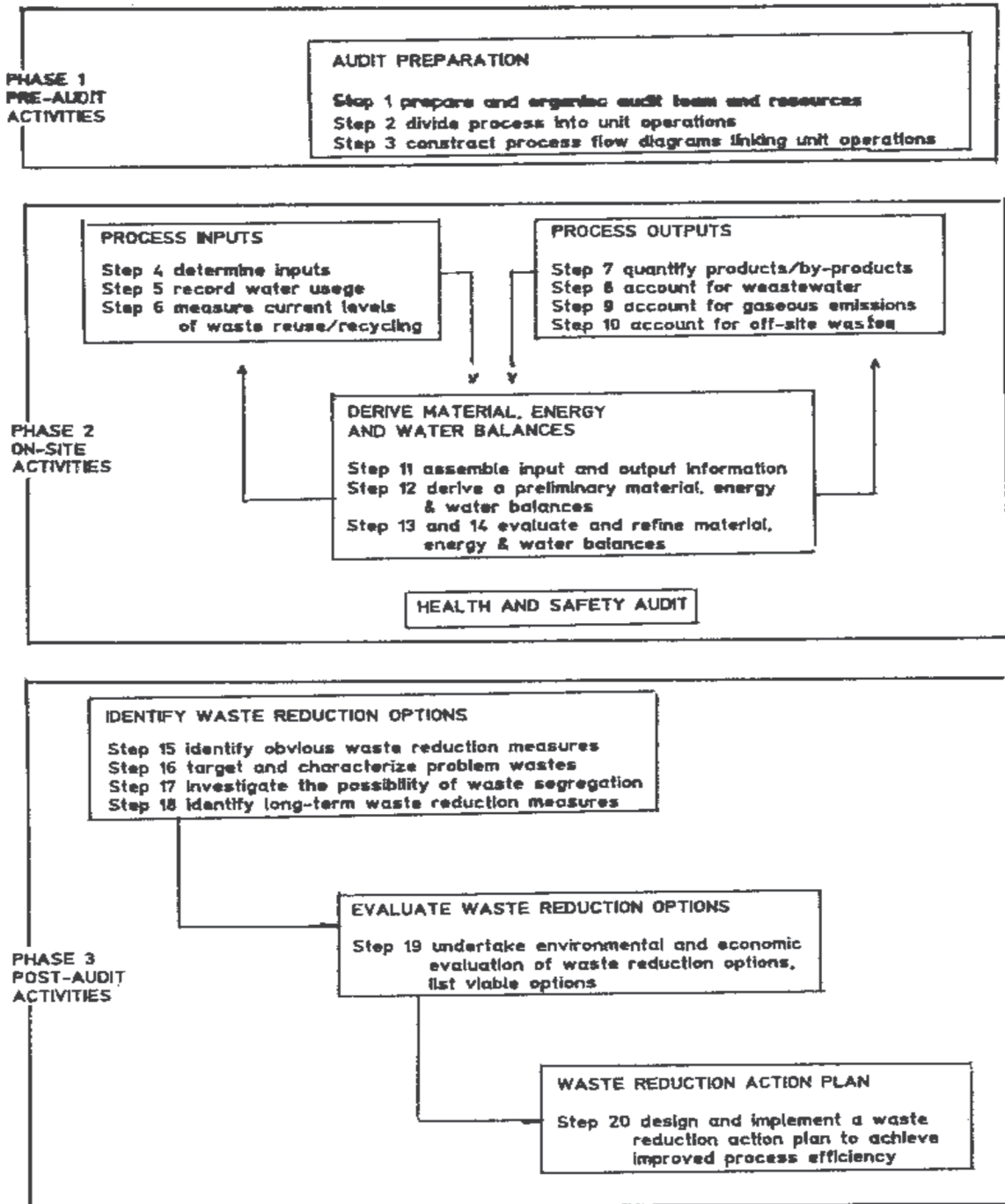


Figure 5: Environmental Audit methodology for the Mining Industry (Badrinath and Raman, 1995).

management tool for any mining or processing operation. It is not an end in itself, but the basis on which an environmental action plan can be developed to improve environmental performance. Also, in the event of a prosecution, it is important to have an environmental auditing programme in place to demonstrate due diligence in a court of law. Environmental audits should be part of

an ongoing environmental management and improvement program, that is, not a one-off event but a periodic reassessment of the environmental management system. They can be undertaken by internal or external auditors (or a combination of both), but to maintain credibility the auditors must be independent of the facility being audited. A credible environmental audit programme may



Figure 6: Review of Environmental Audit activities for a large operation.

make the difference in both retaining the loyalty of the consumer at the retail level and in soliciting valuable contracts for corporations that have made environmental considerations part of their purchasing and contracting practices.

Environmental audit has great potential for achieving increased productivity and improved environmental protection in India. The practice is effective in achieving a wide set of objectives comprising pollution control, conservation of resources, minimization of risks to health

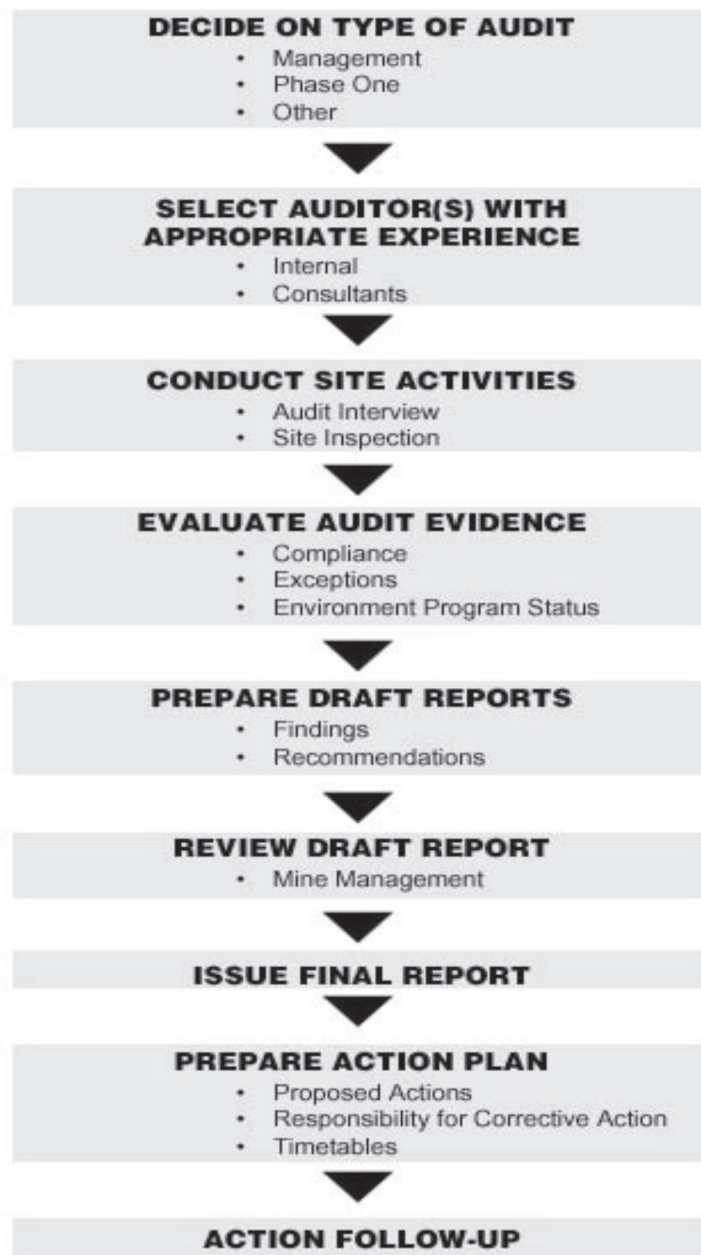


Figure 7: Overview of Environment Audit activities for a small mining operation.

and safety, and enhancement of productivity. An environmental audit can be the most valuable cost-reduction management tool, a radical departure from conventional end-of-the-pipe approaches.

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