Environmental Assessment Sourcebook
UPDATE

Environment Department
The World Bank

August 1995
Number 11

Environmental Auditing

Mounting public concern over the quality of the environment and stricter environmental legislation have led to a demand for reliable environmental information on industries and other types of enterprises. In recent years, environmental auditing has come to be seen as a tool for generating such information and for assessing enterprises for the potential environmental risks they may cause, their environmental liabilities, and their degree of compliance with environmental standards and legislation. Users of such information are the companies themselves, customers, commercial banks, other lending institutions, local and national governments, and the general public. Environmental audits help reduce environmental and public health risks, and assist in improving environmental management at the company level. The World Bank increasingly requests that environmental audits be done for certain types of projects. The audits are part of the overall environmental assessment (EA) process and may complement or substitute for normal EA studies, depending on the type of project.

This Update discusses the principles of environmental auditing, different types of audits, and how they can be used in the context of Bank projects.

Background

In the 1970s, some European and North American companies started to systematically evaluate their own compliance with environmental legislation. The practice in many ways resembled financial auditing and so it became known as environmental auditing. The use of environmental audits spread rapidly in industrialized countries due to stricter environmental legislation and the increasing exposure of the private sector to the risk of being held legally liable for environmental damage. As far as companies were concerned, this trend turned environmental problems into financial risks.

By the mid-1980s, the International Chamber of Commerce presented environmental auditing as an internal management tool to facilitate management control of operating practices and to assess compliance with company policies. Around 1990, many commercial banks in a number of industrialized countries started to use environmental audits as a tool to limit and manage credit risks related to the environmental performance of their borrowers. National standards for environmental management systems (EMS) and environmental auditing have also been introduced in some countries, (see boxes 1 and 2). The International Standards Organization (ISO) is presently developing a range of standards in the area of environmental management, including standards for environmental auditing (the ISO 14000 series).

Over the last few years, environmental audits have also begun to be promoted by multilateral development banks as environmental management tools. These institutions use environmental audits primarily to assess the past and current environmental performance of companies and utilities that they directly or indirectly finance. When an audit shows that a company or utility is failing to meet certain standards, or that there is a liability due to contamination, financing may be conditional on investments in pollution control or cleanup.

What is an environmental audit?

An environmental audit is a methodical examination of environmental information about an organization, a facility, or a site, to verify whether, or to what extent, they conform to specified audit criteria. The criteria may be based on local, national or international environmental standards, national laws and regulations, permits and concessions, internal management system specifications, corporate standards, or guidelines of organizations such as the World Bank. The reasons for undertaking an audit and the aims to be achieved will determine the audit criteria.

Box 1. Indonesia: Introducing an environmental audit policy

The Indonesian Government is introducing environmental auditing as a tool to help business and industry improve environmental management, reduce financial risk and compete on the world market. As the first developing country in East Asia to take such an initiative, Indonesia is preparing an environmental audit guideline in the form of a decree from the State Ministry for Environment. The guideline has the following main objectives:

(a) encourage the private sector to self-regulate its environmental policies and practices and to increase its responsibility to share-holders and society;
(b) create more opportunity for public participation in the light of increasing public awareness of environmental issues; and
(c) enhance competitiveness in the world market by introducing higher environmental business standards, in areas such as cleaner production, waste minimization and eco-labeling.

The policy is based on standard international definitions of environmental auditing and will be introduced on a voluntary basis. It will, however, become mandatory under certain specified conditions, for example, if an activity is suspected to endanger the public or public interest. In such cases, the State Ministry for Environment may require the parties to conduct an audit and submit the results to the authorities.

The policy is designed to complement already existing environmental assessment (AMDAL) regulations. By using AMDAL to assess the environmental impact of a proposed development and auditing to assess and monitor the impacts of the operational phase of that development, environmental stewardship can be provided from pre-feasibility to decommissioning stages.

Production of the audit guidelines, coordination of audit training, control and monitoring of the audit system, and development of protocols for implementation will be the responsibility of BAPEDAL, the Environmental Impact Management Agency, which is also responsible for the AMDAL system.

Box 2. Norway: Internal control regulation

Norway is one country where the government is promoting environmental audits to improve environmental performance in both the public and private sector, and to supplement traditional inspection work in industry.

In the mid 1980s a governmental working group found that the results of the authorities' attempts to improve company performance in the areas of safety, occupational health and environmental protection were not commensurate with their efforts. It was concluded that the traditional command and control instruments like regulations and enforcement needed to be complemented with a systems approach on the part of both enforcement bodies and companies. With the advent of the Internal Control regulation companies are required to provide assurance that they have systems in place enabling them to meet all applicable legislative requirements, i.e. the burden of proof for environmental compliance is reversed. In this way the regulation underscores that the responsibilities for the environmental performance clearly rests with the company and not with the authorities.

The regulation specified the necessary elements of a quality assurance system in the areas of safety, health and the environment. Consequently, it is not enough to be in compliance with all aspects of legislation. Companies must now demonstrate their ability to stay in compliance. The regulation has placed the responsibility for safety, environment and health issues with company top management and has created greater awareness of the need for good management systems in these areas. Enforcement bodies are also increasingly carrying out audits of compliance at sites evaluating documentation, procedures, and log books rather than inspecting and measuring at the end of the pipe.

The environmental audit can be viewed as a "snapshot"of the environmental situation at a given site. It does not, like most environmental assessments, attempt to predict the potential impacts of planned investments (although environmental risks associated with an existing operation or a planned expansion are often identified). However, environmental audits can be useful to assess the implementation of a project against requirements derived from an environmental assessment. Audits may also serve as a source of baseline information for an environmental assessment study whenever a rehabilitation or expansion is planned at an industrial facility.

To understand what constitutes an environmental audit it is useful to compare it with financial auditing. Both environmental and financial audits should be conducted by qualified auditors, according to systematic procedures, and encompass an examination to verify that the issues under consideration conform to specified or planned arrangements. They rely on auditor objectivity, professional judgment, and verification of reported findings. However, environmental audits are less structured and usually lack legal backing and generally accepted accreditation procedures. Nonetheless, this is changing. The United Kingdom (UK) Environmental Auditors Registration Association (EARA) Scheme is the only scheme operating interna-

tionally to accredit environmental auditors as individuals. There are three levels of accreditation, based mostly on professional experience, and to some extent training and professional qualifications: associate, environmental auditor, and principal environmental auditor. The EARA international register of auditors is publicly available. International procedures for various audits are moving towards standardization, particularly as a result of the work of ISO. The European Union has also developed audit procedures, which include qualification criteria for auditors (see box 3).

The environmental audit primarily uses existing documentation of the company being audited, interviews with managers and personnel, and observation of practices at the facility. Spot checks in the form of tests and samples are often included in the audit assignment to verify that a company is in compliance and that information provided by the company is correct.

General principles of environmental auditing

A prerequisite to successful implementation of any aspect or type of environmental audit is the commitment of management to maintain or move toward sound environmental practices. This shows itself through the operations of the company, facility or site, management attitudes to environmental matters, and the level of commitment shown by staff.

As a systematic process of obtaining and evaluating information about the environmental aspects of an operation, an organization or a site, the environmental audit will generally require:

- sufficient and appropriate information about the operation, organization or site;
- adequate resources available to support the audit process;
- adequate cooperation from the company or other entity that is being audited (auditee); and
- an audit protocol (e.g., a checklist or questionnaire).

An environmental audit is undertaken by auditors and is based on objectives defined by the client, who might also be the auditee. The audit criteria should be agreed upon between the auditors and the client and communicated to the auditee along with the aims and scope of the audit. The auditors should be objective and independent of the site or activity being audited, although they may sometimes be part of the same company. Information gathered during the audit should always be treated as confidential. It is presumed that the auditors will follow systematic procedures (e.g., by using an audit protocol), so that a similar audit performed by different auditors would yield consistent results. Different types of audits will use different methodologies and different ways to obtain and evaluate information about the subject matter of the audit.

Based on the audit criteria, auditors collect information and documents evidence to determine whether audit criteria have been met. These findings are the basis of the report to the client. An audit takes place during a short period of time and with limited resources. It is thus important to assess the reliability of audit conclusions, and keep the inherent uncertainties in mind when using the audit results.

Types of environmental audits

Environmental audits are often classified according to who requests them. Audits can be internal, an example being an in-house evaluation of the adequacy of controls to ensure regulatory compliance. Audits done by a customer to check environmental quality,

Box 3. Environmental audits in the European Union

The Eco Management and Audit Scheme of the European Union (EU), or EMAS, came into force in April 1995. The objective of this voluntary program is to improve environmental performance of participating industrial companies through the use of environmental management systems, regular environmental auditing and public disclosure of environmental statements. The advantage of EMAS participation, besides facilitating good environmental management practices, is that a special logo may be used in advertisements for the company. It is hoped that participation in the scheme will add credibility to an organization's environmental activities and that it provides a competitive edge in a society where increasing attention is paid to environmental concerns.

The EMAS covers all relevant environmental aspects of an industrial company, including: assessment, control and reduction of environmental impact; energy, water, raw materials, waste, and hazardous chemicals management; air quality; noise; product planning; environmental performance of contractors and suppliers; environmental accidents; staff information and training; and external information. Participation in EMAS requires companies to be in full compliance with all environmental laws and regulations at EU and national levels.

Validation or verification of the environmental statement for the public is performed by accredited environmental inspectors. Their task is basically to verify that the public environmental statement gives a fair picture of the company's environmental performance and that all relevant issues have been addressed. The analogy to a financial audit is apparent.

or audits conducted for a lender to assess the environmental risks of an investment are examples of external audits. If an external audit is done by an independent entity it is sometimes called a third party audit.

For purposes of Bank projects, different audit categories are more usefully distinguished by the scope and objectives of the audit, and how the audit results are to be used. An overview of different audit types and their use are given below. It should be noted that the divisions are not very sharp between the various types. Objectives and scope are often a combination of several audit types and are usually defined on a case by case basis. Many organizations have developed audit programs to fit their particular needs.

Characteristics of the compliance audit

The compliance audit is the type of audit that most directly assesses compliance against criteria derived from laws and regulations, applicable standards, permits and concessions, or guidelines from organizations such as the World Bank. The auditors need a good understanding of the operations involved to pinpoint where environmental effects regulated by standards or regulations occur. Actual measurements in stacks and effluent streams would normally be limited to spot checks for verifying the correctness of data provided by the company.

The compliance audit will seek assurance that the company is carrying out all activities which affect the compliance issue under controlled conditions. The better this is documented and implemented, the greater the level of assurance that the company not only meets, but will continue to meet, applicable requirements. When evaluating the discharges from a sewage treatment plant, for example, the auditor should check that the concentrations of key pollutants are correctly measured and analyzed; that the procedures for sampling and the treatment of samples, are adequately described and adhered to; that results are reported in a log; and that the appropriate personnel know what corrective actions to implement. An interview with the responsible person for the treatment plant should provide information on knowledge of requirements and all the aspects of running the plant. Verification can be done by interviews with selected operators, reviewing the treatment plant log and the laboratory results, site inspection, and discussions with the appropriate regulatory authorities responsible for monitoring the effluent discharge and the quality of the receiving water body. Local authorities and community representatives are also a good source of information.

In many developing countries, companies may have limited information about actual levels of discharges and other aspects of their environmental performance. In such cases, it may be necessary to conduct actual measurements as part of the audit. However, there are a number of aspects that can be assessed through site inspection, such as handling of waste, labeling of containers, and use of protective equipment. By site inspection the auditor can also notice the presence of high quantities of dust or certain air pollutants (e.g., NOx or VOC).

Characteristics of liability audits

With the advent of stringent legislation on liabilities for contaminated soil and groundwater there has been a growing demand for information on the environmental state of properties and the potential for on and off-site pollution migration. In the Netherlands alone, 10,000 sites have been classified as contaminated and there are more than 100,000 suspected sites. Differently defined, in the United States 100,000 sites have been labeled contaminated of which 10,000 have been described as priority cases. Contaminated land is also fairly common in Central and Eastern Europe and in industrialized regions in many developing countries. Often the costs of investigations and remediation measures exceed the value of the property.

Investigations to identify actual or potential site contamination are often called site, due diligence, or liability audits. At other times they are referred to as environmental site assessments. While these terms are often used interchangeably for the same activities, the World Bank, like many other institutions, prefers the term “liability audit”and distinguishes between audit phases depending on the scope of the investigations. Thus, the term “Phase 1 liability audit”is used for investigations that involve collecting information from interviews, by studying available historical information, and by performing visual inspections of sites (see box 4). “Phase 2 liability audit”is used for investigations that involve detailed physical sampling and testing of contaminants in laboratories. A Phase 1 audit will usually cost from US$3,000–10,000, whereas a Phase 2 audit can cost anything in the range from US$15,000 to a few hundred thousand US dollars, depending on a number of factors such as the type of operation, its size, and characteristics of the surrounding environment.

In practice it is indeed often necessary to take a phased approach, with a Phase 2 audit following from a Phase 1 audit. Phase 1 audits, which are relatively inexpensive and quick, can help screen out those sites that do not require further investigation, thereby reducing the uncertainty of potential environmental liabilities. The audits should also identify needs for, and possibly the scope of, more thorough investigations in the form of a Phase 2 audit. The findings to be reported in the Phase 1 audit should either state that no contamination is suspected, that contamination is

suspected or likely, or even observed. This approach can limit the need for drilling, sampling and analysis to those sites where it is necessary, thereby reducing costs. A Phase 1 audit should also place the site-specific findings into the context of the surrounding environment. This will help determine the need for additional investigations or remediation.

If contamination is identified through this process, the question of remediation and clean up will be dictated by a number of factors such as legislation, future land use, risks of contaminant spreading, and possible impacts on human health and the environment. If necessary, a remediation plan is developed as part of, or as follow-up to, the Phase 2 audit. Investigations conducted in the context of Bank projects have often proceeded through all these phases, resulting in a final "audit"report which is more detailed and comprehensive than most normal liability audits (see below). The remediation activities are sometimes termed the "Phase 3"of the process.

It is important to strike a balance between the time and costs of investigations, and the need for additional information, to reduce uncertainties about possible contamination. The uncertainties inherent in site investigations make it crucial to document observations, findings and how conclusions have been formed. It is also important to use the information obtained in one part of an audit (for example, the site inspection) to confirm or invalidate observations from other parts (for example, record reviews or interview sessions). The audit recommendations can be prioritized to assist in the determination and relevance of strict, joint and several, and retrospective liabilities (i.e., the allocation of environmental responsibilities between different parties—see also *Update* no. 6*: Privatization and Environmental Assessment: Issues and Approaches).*

Box 4. Terms of Reference (TOR) for a liability audit

The following TOR, prepared by the International Finance Corporation (IFC) for an audit of an industrial facility in the Czech Republic, is a good example of an audit TOR. While focusing primarily on liability concerns, issues of compliance are also included, illustrating how audit types often overlap.

Initial meeting. An initial briefing meeting at the company's facilities between the consultant, an IFC Environment Unit representative and appropriate company staff.

Environmental legislation review. A review of relevant environmental and occupational health and safety legislation in the Czech Republic, the European Union (EU), and the World Bank.

Review of existing documentation. With the assistance of the company, (a) gather all existing relevant in-house documentation pertinent to all of their facilities; (b) collect all other documentation (local government, Czech Republic, etc.) related to the environmental and occupational health and safety aspects of the facilities; and (c) review the aforementioned documentation in detail.

Site inspections. All buildings and properties in which significant manufacturing, laboratory, or chemical storage / disposal operations are conducted are to be included in the audit.

Setting priorities. The following steps are to be carried out:

1. Identify all environmental and occupational health and safety concerns related to both past and ongoing activities.
2. Prepare a prioritized list (i.e. high, medium, and low) of concerns related to past activities.
3. Prepare a prioritized list (i.e. high, medium, and low) of concerns related to ongoing activities.
4. For both past and ongoing environmental concerns provide recommendations and estimated costs on what additional work on remediation measures is required. Recommendations and cost estimates should be presented separately for past and ongoing activities, and in relation to both EU and Czech standards.

Reporting. The following steps are required:

1. Prepare six copies of a draft audit report within 6 weeks after contract award for comment and approval by IFC and six copies of a final report within 8 weeks after contract award. The final report should also be accompanied by a disc on WordPerfect 5.1 and a camera-ready copy. A meeting with IFC in Washington, D.C. to discuss the draft is required.
2. The audit report will be finalized only after IFC and company approval. The contents of the audit report could be used by IFC for inclusion in external IFC publications.
3. The audit report will: (i) identify all relevant environmental and occupational health and safety legislation; (ii) identify all environmental and occupational health and safety concerns; (iii) prioritize all past concerns; (iv) prioritize all ongoing concerns; (v) recommend what further action is required along with a cost estimate for such actions for both past and ongoing activities; and (vi) include an executive summary highlighting the key findings, the remaining unknowns, and a statement summarizing the consultant's main conclusions relating to environmental and occupational health and safety practices at the facilities.

Box 5. The Energy Deregulation and Privatization Project in Jamaica

This project supports an expansion of power generating capacity in new and existing power facilities, working with both public utilities and new private investors. One of the two major project components supports private investment in the power sector while the other supports public sector power expansion. The EA process included both conventional environmental assessments and environmental audits.

The Government of Jamaica and the Bank agreed that environmental audits were needed to examine the environmental conditions and determine the need for cleanup and other remediation measures at existing power facilities scheduled for privatization. They also agreed to use strict international standards as audit criteria, since most international investors are accustomed to such standards. The information generated by the audits helped establish the value of the facilities and prepared the ground for emediation activities. The project represented the first time that a public enterprise or utility in Jamaica was inve stigated for environmental contamination problems, and was subsequently subject to a large-scale remediation effort.

The environmental assessments projected the potential environmental impacts of planned power expansion investments, and recommended detailed measures to minimize and mitigate such impacts. They also included monitoring plans to ensure the effectiveness of the mitigatory measures. The environmental audits were an important part of the baseline information used in the environmental assessments.

Environmental management systems

The principles of quality management and the widely used ISO 9000 standards for quality systems have led to the development of specifications for environmental management systems (EMS). An EMS is the organizational structure, responsibilities, practices, and procedures of an organization to fulfill its environmental goals and control its environmental impacts.

A documented management system, with feedback mechanisms like an internal audit function, will provide assurance to company management and all stakeholders that the company will meet, now and in the future, legislative and policy requirements. Such a system enables an organization to establish: environmental policy, objectives at different levels of the organization, controls commensurate with risks and external requirements, records for documenting performance, and feedback mechanisms at appropriate levels of the organization.

An audit as part of an EMS is a systematic examination to determine the extent to which the EMS corresponds to planned arrangements, (or documented EMS criteria), and if it is implemented effectively, to achieve stated policies and objectives. The EMS audit requires that the company has documented its environmental policies and goals, the significant environmental effects of its operation, and the controls established to deal with these.

Examples of issues that an auditor could consider when evaluating the performance of a management system are:

- Are the environmental policy and corresponding objectives documented, communicated, known, and adhered to?
- Are all applicable legislative and policy requirements recorded, and is the responsibility for keeping the company up-to-date on such requirements allocated?
- Are training needs systematically assessed, and is the necessary training given to all employees?
- Are internal audit programs implemented, containing auditor qualification criteria, audit plans, systems for corrective actions and regular follow-up?
- Is an emergency response plan based on a comprehensive hazard assessment developed and regularly reviewed, and are emergency drills conducted?

Auditing of company environmental statements

Leading industrial companies and financial institutions in Europe and North America have started to develop environmental reports describing the environmental impacts of their operations and how these are controlled. In a few countries, companies listed on the stock exchange include the environmental aspects of operations in their annual reports. This trend indicates that society is concerned about the environmental performance of companies, that financial markets are beginning to take environmental information into account when assessing companies, and that leading companies see this reporting as a way of communicating their performance to the public.

The auditing of such reports or environmental statements is analogous to auditing of financial statements. Indeed, the European Union initiative on Eco-Auditing has set up accreditation requirements for the auditors who will verify the environmental statements produced by participating companies. The reason for having independent verifiers is to provide assurance to the public that the statement gives a fair representation of the actual environmental performance of a company.

Specialized audits

There are additional, specialized forms of environmental audits such as risk and hazard assessments, waste minimization and energy audits. Future Updates will discuss these audit types in detail.

Environmental audits in Bank projects

The World Bank sees environmental assessment as a process of identifying and addressing environmental issues and impacts associated with a project. Environmental audits are one of several tools that can be used as part of this process. The Bank increasingly requires environmental audits in connection with the preparation or implementation of certain projects.

Relevant project contexts

The most relevant project contexts are:

- rehabilitation and expansion projects, e.g., for power utilities, oil and gas production sites, refineries, or industrial companies (see box 5);
- privatization programs involving industrial enterprises with a pollution history (see box 6); and
- lending to industry through financial intermediaries concerned about their environmental risk.

In the first case, the audit will normally be conducted as part of project preparation, feeding into the overall appraisal of the project. In the latter two instances, the audits are more likely to be performed during project implementation, as enterprises are being prepared for divestiture or seek credit from the Bank's financial intermediaries.

Scope of audits for Bank projects

For Bank projects, a set of national or international standards and regulations may be used as audit criteria. As specific Bank guidance on industrial pollution prevention and abatement for different industries and substances is becoming available (see p. 10), this guidance may be used to develop audit criteria in the absence of suitable national or local environmental standards.

Many aspects of environmental performance will have to be investigated (see box 7). The scope, objectives and criteria must be defined on a case-by-case basis, but the investigations should normally encompass an evaluation of all environmental, and health and safety, concerns in terms of past and current impacts and compliance with relevant standards.

To fulfill the planning aspect, the audit should include tests and measurements as well as sampling and laboratory testing. Also, corrective actions emerging from the audit investigations should normally be described in detail rather than having company management decide how non-conformities are to be corrected. An environmental mitigation plan or an environmental management plan should therefore usually form an important part of the audit report. Here, measures necessary for bringing the project up to an acceptable environmental standard, and their costs, should be discussed and prioritized. Further, measures needed to provide assurance that environmental issues will be controlled in an acceptable manner in the future should be addressed. Such aspects can include monitoring programs, environmental

Box 6. Bolivia: Environmental auditing in support of privatization

Bolivia is in the process of bringing private capital into the mining and energy sectors. The World Bank supports this process with technical assistance and financing of modernization efforts which include environmental remediation. Environmental audits have become an integral part of this restructuring process in three ways: (a) they help determine which facilities—particularly in the mining sector—are viable as commercial entities; (b) they help in setting sectoral priorities for environmental remediation, by determining the extent of environmental hazards at each facility; and (c) they help devise an environmental management program at each facility, and serve as a foundation for dividing clean-up responsibilities between the state and the new private investors. Since contamination and other environmental problems have major financial repercussions in some cases, the environmental audits are seen as vital by all parties.

Due to the complex environmental problems of most mining operations, the audits that have been prepared to date in this sector rely heavily upon sampling and laboratory analysis (Phase 2). They also include detailed plans for the remediation and mitigation of environmental problems and provide cost tables for these proposed investments. The Bank has helped develop a methodology for selecting priority remediation investments on a national basis, using risk of damage to human health and cost-effectiveness of the investments as the main selection criteria. Audit findings provide a key data input for applying this methodology. A credit currently under preparation will finance the prioritized remediation efforts.

In the energy sector, audits are being prepared for refineries, power plants, oil and gas well sites and fields, pipelines, and gas plants. For most facilities, a combination of a compliance and Phase 1 liability audit as described in this Update is undertaken, relying on interviews, review of documentation, visual inspections and limited testing and sampling. For those facilities where these audits determine that a major environmental risk exists, a Phase 2 audit is carried out, similar to the ones in the mining sector.

Box 7. Checklist of relevant audit activities

The following checklist describes audit activities that will be relevant in the context of many Bank projects:

1. *Verify compliance with host country laws and regulations, World Bank guidelines or accepted international standards for all important environmental impacts.*

   - Review relevant existing and pending environmental legislation, standards, and permits.
   - Evaluate knowledge and awareness of, and responsibility for, applicable legislation.
   - Examine compliance record with company management and with relevant government authorities.
   - Examine monitoring programs, procedures and controls in place. Assess the reliability of data by evaluating monitoring design, sampling strategy, calibration routines and quality control procedures.
   - Examine procedures for corrective action (including shut-down) if monitoring parameters are out of control limits. Examine if such incidents are to be, and actually are, reported, investigated, and followed up. Check if monitoring data are used for reporting to management or government agencies. Verify monitoring results or compliance by taking and analyzing representative samples.

2. *Examine significant risks including chemical use, waste management, risk of soil and ground water contamination, and fire and explosion risks.*

   - Examine areas for storage of dangerous substances, fuels, and gases. Check warning systems, fire fighting equipment, labeling of containers, spill protection, and compatibility of materials stored together.
   - Assess procedures and controls in areas where dangerous processes occur.
   - Check safety data sheets for spills and leakages, which should be available centrally and at all points of use.
   - Evaluate adequacy of emergency procedures and contingency plans.
   - Evaluate risk of natural hazards like floods, earthquakes, storms, landslides, etc.
   - Perform a tour of areas where practices of waste management, storage and the use of dangerous substances may have caused contamination.
   - Take samples for verifying the state of ground or ground water.

3. *Examine health and safety issues for both employees and the local community.*

   - Examine procedures and rules for employee protection and assess the level of compliance with company policies in the areas of noise, personal protective gear, hot work and other potentially harmful activities.
   - Evaluate accident/incident reporting, analysis, and follow-up.
   - Check if medical examinations for employees working in areas where they may be exposed to dangerous substances are available. Check if particular symptoms or diseases are monitored.
   - Examine the existence of asbestos in buildings and equipment and procedures for dealing with asbestos.
   - Evaluate the adequacy of training and emergency drills for employees.
   - Examine record of complaints from the local community and systems to follow these up.
   - Assess hazards or risks for the local community and the adequacy of procedures for warning and emergency responses.

4. *Assess adequacy of internal controls, management procedures and practices for dealing with the environmental, safety and health issues at hand.*

   - Assess management awareness and commitment to environmental issues.
   - Evaluate adequacy and clarity of policies, objectives, targets and plans in the context of legislative requirements.
   - Evaluate how well environmental goals are communicated, understood and implemented in the organization.
   - Examine responsibilities for environmental laws and regulations and the communication process with enforcement agencies. Evaluate the roles and responsibilities for environmental management functions.
   - Assess document control procedures and the quality and use of records, procedures, registers and instructions.
   - Examine feedback mechanisms in the form of corrective action systems, audit procedures and management reviews.

reporting requirements, training of personnel, or organizational aspects like the appointment of an environmental officer or the implementation of a formalized environmental management system.

In order to get a comprehensive view of the environmental situation at and around a site, and to help in setting mitigation priorities, auditors should consult with national and local regulatory authorities and, as appropriate, with local community representatives as part of the auditing process. Consultation with community representatives is particularly important when the Bank or auditors suspect that an operation represents a serious local health or safety haz-

Box 8. Environmental audits and the IFC

The International Finance Corporation (IFC) requires environmental audits for projects that involve expansion and modernization, privatization or a corporate investment program. The scope of these audits is similar to audits normally used for Bank (IBRD and IDA) projects:

"The purpose of an environmental audit is to determine the nature and extent of all environmental areas of concern (including occupational health and safety) at an existing facility or with corporate practices. The audit identifies and justifies the appropriate measures to mitigate the areas of concern, estimates the cost of the mitigation measures, and recommends a schedule for implementation of these mitigation measures (IFC: *Environmental Analysis and Review of Projects, Annex D*)."

ard. The Bank expects findings to this effect to be reported to authorities and disclosed to the public. However, when the audit is the property of a company or investor (normally the case for IFC financed projects, see box 8), this entity normally has full discretion in this regard.

In the future, environmental audits may be used as a vehicle for the Bank to follow up on environmental aspects of regular investment projects during implementation or following completion, to ensure that activities are in compliance with agreed standards as described in legal agreements. Utilized in this way, environment related agreements between the borrower and the Bank, actions listed in an environmental management plan, or national or other environmental standards, could be used as audit criteria. The scope of such audits would be more limited than those used in project planning.

Stages of an environmental audit

One may divide an audit into three stages: pre-audit, site, and post-audit activities. As a rule of thumb, a quarter of the time is spent before the site visit, approximately half the time on the site, and the rest, for reporting and follow up. The roles and responsibilities during these stages will be different for the auditor, the auditee and the client.

Pre-audit stage

The Terms of Reference (TOR) should describe the project, the scope, the objectives and the criteria of the audit, and provide relevant background information. It is important that the procedures for the audit are clearly specified: how investigations should be performed, their depth, and the amount of verification required. Timetables for all audit activities and reporting lines should be included along with responsibilities and communication lines. The TOR normally also includes a draft budget for the audit.

A lead auditor will be responsible for all stages of the audit. He or she will normally select one or more team members with relevant competence for the audit type as soon as resource needs have been identified. The audit team must possess the necessary auditing skills as well as knowledge of the environmental aspects of the organization, facility, or site under consideration. The lead auditor will communicate with the auditee to arrange all practical arrangements, including date and time for the visit, travel and lodging arrangements, contact person of the auditee, the agenda for the site visit, and any special rules to be obeyed, like safety precautions, or whether photographing is allowed. The auditor should normally receive background information from the client or auditee in order to become acquainted with processes, facilities, past environmental problems and other information deemed relevant for proper preparation of the audit team. These issues are sometimes discussed a few weeks before the actual site visit in an initial meeting between the auditee and the auditor.

The audit protocol is normally the auditor's primary vehicle for obtaining information covering all relevant aspects of the specified audit. During the pre-audit stage the protocol is prepared, or a standard "blueprint" protocol is modified to fit the specific site. The protocol provides a valuable framework within which to work, but it should not restrict the auditor from identifying and assessing aspects not covered in the protocol.

Audit stage

The investigations on site for an environmental audit may take from one to ten days, unless drilling and sampling are necessary, which may take one to several weeks to complete. The investigations should commence with an opening meeting attended by site management and all those directly involved in the audit. The purpose of the meeting is to introduce the audit team, describe the objectives, scope, criteria, and working procedures and agree on a work schedule. A contact person who will act as liaison to site management should be appointed. A tour of the site or areas subject to the audit is usually made to acquaint the auditors with the location and activities.

Care should be taken not to disrupt the activities on site. Information will be gathered in a short time, documents will be requested and personnel will be asked to answer the auditor's questions. The audit situation often places interviewees under stress, even in cases when the environmental performance is acceptable. The auditor should plan his activities well in order to

create a minimum of disturbance and ensure a friendly atmosphere during interview sessions. If the auditor comes across potentially dangerous situations, he or she should inform the company representative acting as liaison to site management and make a note of the finding for the report.

The investigations will depend on the type of audit. Most audits will rely heavily on interview sessions. Document reviews and physical examination of storage areas, treatment plants, etc. are used both to gather information about environmental performance and to verify information received or findings noted. Findings should always be substantiated by concrete evidence. The working papers of the auditors are the basis for the conclusions in the audit report, and should be diligently completed to enable auditors to review results and findings, and to recall how conclusions were reached.

The audit team should meet at the end of each day to discuss findings and preliminary conclusions and to plan the strategy for the next day. Observations which cannot be supported by evidence or which appear to be one-off cases should be investigated to determine if they are symptomatic of actual performance. Observations supported by evidence of practices that fail to meet the audit criteria are termed "non-conformities", and form the basis of the conclusions of the audit report. Non-verifiable observations or minor issues are often called "findings"and, if presented in the audit report, they should clearly be presented as such.

The activities at site conclude with a closing meeting attended by the same people as the opening meeting. The meeting should be brief and should present the results of the audit as they will appear in the audit report. If all non-conformities to the audit criteria are well documented and discussed prior to the closing meeting there will be little need for lengthy discussion of the conclusions. The auditor should stick to the conclusions of the team unless something is misunderstood. Observations not supported by evidence may be presented as opportunities for improvement. If suggestions for improvements or remedial action are included in the TOR these may also be outlined in the closing meeting. The lead auditor will notify management as to when a draft audit report will be submitted.

Post-audit stage

In the post-audit stage, the audit report is completed on the basis of the conclusions of the closing meeting. A draft report is usually submitted to the auditee and the client for comments. The audit report will state the audit objectives, scope and criteria, identify persons involved from both the auditor's and the auditee's side, the methodologies and procedures applied, and the main findings and conclusions of the audit, with a list of bodies consulted during the audit process. For Bank projects, the report should normally include prioritized recommendations for mitigatory and other actions, and their cost. The report should be an unbiased and objective evaluation, and neither the client nor the auditee should be allowed to change the main conclusions of the audit team.

For further reading

British Standards Institute BS 7750:1994 *Specification for Environmental Management Systems.*

Buckley, R. *Environmental Auditing.* Chapter 13 in Vanclay, F. and D.A. Bronstein. 1995. *Environmental and Social Impact Assessment.* New York: John Wiley & Sons.

Canadian Standards Association CAN/CSA-Z751-94 *Environmental Auditing.*

Canadian Standards Association CAN/CSA-Z768-94 *Phase 1 Environmental Site Assessment.*

Council of the European Communities Regulation No. 1836/93. *Allowing Voluntary Participation by Companies in the Industrial Sector in a Community Eco-management and Audit Scheme.*

World Bank. 1995. *Handbook on Industrial Pollution Prevention and Abatement.* Environment Department.

This *Update* was prepared by Tim Lund and Olav Kjørven. Based on Bank policy and procedures on environmental assessment (EA) (Operational Directive 4.01), the *EA SOURCEBOOK UPDATE* provides up-to-date guidance for conducting EAs of proposed projects. This publication should be used as a supplement to the *Environmental Assessment Sourcebook.* Please address comments and inquiries to Olav Kjørven, Managing Editor, EA Sourcebook Update, ENVLW, The World Bank, 1818 H St. NW, Washington, D.C., 20433, Room No. S-5123, (202) 473-1297. The Bank is thankful to the Government of Norway for financing the production of the *EA Sourcebook Update.*