ENVIRONMENT CANADA

DEVELOPMENT GUIDE

VOLUME 1: PRINCIPLES OF EFFECTIVE ENVIRONMENTAL AUDITING

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EXECUTIVE SUMMARY

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2. Environment Canada encourages the use of environmental audits to maintain compliance with environmental regulations and to protect the well-being of Canada's population and resources.

3. There are tangible benefits to investing in an organized environmental management system which addresses compliance, the identification and reduction of risks, and the efficient performance of all environmental functions.

4. The environmental management system requires a mechanism for analysis, documentation, communication, and action directed toward monitoring and evaluation of environmental performance.

5. Performing an environmental audit provides a mechanism to understand and treat environmental problems, not just the symptoms.

6. The scope of an environmental audit program must be planned according to the needs of the organization.

7. The audit can provide significant cost savings information and reduce future environmental liabilities.

8. The Canadian Environmental Protection Act is the primary federal environmental legislation in Canada, with provincial/territorial and municipal regulations applying where CEPA regulations are not yet formulated.

9. Compliance is expected 100% of the time, assisted by government programs to encourage compliance.

10. Through specific regulations developed under CEPA, federal facilities should examine their environmental practices and provide leadership to Canada in environmental protection.

11. An effective environmental audit program requires standards to be formulated so that audit results can be applied.

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12. Government regulations, internal management policies, and best management practices should be used to formulate environmental standards.

13. Best management practices consider aspects of facility operation such as good housekeeping, preventative maintenance, risk identification, and reporting, among others.

14. Environmental control performance measures are necessary to compare facility operations with developed standards.

15. An environmental audit program, and the implementation of audit recommendations, are effective means of limiting environmental liability concerns through a due diligence defence.

16. Corporations, government departments, and associated management and employees, can limit their recourse to a due diligence defense if found to neglect recommendations derived from an environmental audit, without due cause.

17. Regulatory provisions are in place to protect disclosure of confidential business information derived from the audit, unless public health, safety, or protection of the environment are at issue.

18. The environmental audit program should provide assurance to management, identify and assess risks, and optimize environmental resources.

19. Through the audit program, management requires accurate information, employee support, legal guidance, strong communications, and a realistic budget.

20. Long-term and short-term environmental goals should be defined as part of audit program scope.

21. Senior management is responsible to the organization for providing direction, setting goals, and supporting environmental protection programs.

22. All levels of management, including the legal department, are accountable to one another for actively pursuing, reporting on, and following up on the organization's environmental concerns.

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23. An environmental audit includes more than a surface assessment of environmental systems.

24. The audit should include top management support, line management involvement, auditor independence, a comprehensive methodology, verification of evidence, relevant standards, consistency, and integration into the environmental management system.

25. The audit can be divided into three stages: pre-audit activities, on-site investigation, and audit analysis and reporting.

26. Pre-audit activities are conducted to prepare for and maximize the usage of time needed for the on-site work.

27. The on-site investigation is used to collect and verify information on environmental control performance.

28. The audit analysis and reporting determines recommendations and communicates them to the proper personnel.

29. The audit report is a vital link in the auditing process, and should include well-defined objectives addressing an organization's management policies.

30. The content of the audit report should be appropriate to the need of the target audience and should contain accurate information and prioritized recommendations.

31. In order to ensure that audit recommendations are acted on, audit follow-up procedures should be used to manage the implications of the recommendations.

32. Audit recommendations must be prioritized consistent with policy and best management practices.

33. Action plans are important elements for implementing audit recommendations.

34. Audit follow-up procedures should be documented and reported to appropriate management groups to maximize protection from potential legal prosecution.

1.0 INTRODUCTION

Since the 1980's there has been an unparalleled increase in environmental legislation and associated regulatory controls. These legislative changes, coupled with a shift in emphasis toward increased enforcement, have substantial public support. As a result, the legal framework within which industry and governmental facilities conduct their business is quite complex and is likely to become more so as new legislation and public pressure develops in response to existing and emerging environmental issues.

In response to this increase in legislation, Environment Canada strongly encourages the use of environmental audits, as outlined in the Canadian Environmental Protection Act (CEPA) Enforcement and Compliance Policy. The environmental audit is a powerful tool which provides management with the data and other information on which environmental planning and capital spending decisions can be based.

The purpose of environmental auditing and reporting, in the broadest sense, is to maintain an organization's compliance with regulatory requirements and internal policies and standards on an ongoing basis. More specifically, an environmental audit is designed to produce the following benefits:

(i) increased environmental management effectiveness;

(ii) increased confidence in facility compliance with environmental regulation, codes, and guidelines and the associated systems to take corrective action if needed; and,

(iii) the increased ability to monitor activities and anticipate and prevent problems, issues or potential risks by initiating proactive programs.

1.1 Objectives of the Manual

The purpose of this manual is to present a thorough discussion of environmental auditing and its application as a comprehensive tool for examining a facility's environmental management systems. For those individuals who are familiar with the background of environmental auditing, it is possible to begin using this manual from Workshop #1 (pg. 42), and continue onto the discussions of the environmental auditing process in Part 2 of this document.

Two comprehensive manuals and two supporting documents are presented in order to assist government agencies and candidate companies of any size to understand the practice of environmental auditing and to help them develop specific programs, procedures and protocols tailored to their operations in Canada. Management is encouraged to invest the time required to understand the content of these manuals, in order that they can implement an effective environmental management system. This proactive strategy for improved environmental performance will result in more efficient facility operations overall.

The manuals are:

1. Principles of Effective Environmental Auditing (Volume 1)
2. Environmental Audit Protocol (Volume 2)
   - Environmental Auditing Legal Issues (Appendix Document A)
   - Bibliography of Environmental Auditing References (Appendix Document B)

The first volume is divided into two parts, one which provides an introduction to environmental auditing and the second which describes the auditing program as a means of providing the organizational and communicative framework which gives auditing its applicability. The second volume is comprised of the general environmental audit protocol with detailed instructions on how to tailor the document to a site and to specific environmental goals and objectives. The protocol and associated detail guidelines on how to conduct an effective environmental audit become the tools for a successive environmental auditing program.

Two supplementary documents are also available as part of the Environment Canada auditing series. Appendix Document A gives a detailed discussion related to environmental auditing, on legal issues which may have a bearing on industry and government departments and agencies across Canada. A summarized version of this document appears in Volume 1, "Principles of Effective Environmental Auditing". Appendix Document B is a bibliography of environmental auditing related material to reference for further information.

This series on environmental auditing was prepared by ALTECH Environmental Consulting Ltd. of Toronto, Ontario on behalf of Environment Canada Industrial Programs Branch, Hull, Quebec, except for Appendix Document A, which was prepared by Baker & McKenzie, Barristers and Solicitors, also of Toronto. The summarized version of Appendix A was prepared by ALTECH using the Baker & McKenzie manuscript as reference, and appears as Section 7 of Part 1 in the "Principles of Effective Environmental Auditing" volume. References for Section 7 are given in Appendix Document A.

1.2 CEPA and the Enforcement and Compliance Policy

The Canadian Environmental Protection Act (CEPA) is clearly titled as "An Act respecting the protection of the environment and human life and health". Also, the Declaration of CEPA states that "the protection of the environment is essential to the well-being of Canada", underscoring the importance placed by the Government of Canada on the concept of environmental protection.

The purpose of the Enforcement and Compliance Policy for CEPA is to facilitate compliance with the Act. This policy establishes the principles for fair and consistent enforcement and tells everyone who shares a responsibility for the protection of the environment - government, industry, organized labour and individuals - what is expected of them. It also lets everyone know what to expect from Environment Canada and the officials who enforce CEPA and its regulations.

1.3 Environment Canada's Program and Initiatives

A major objective of Environment Canada's Environmental Protection Program is to promote the use of sound environmental management practices, and the proactive applications of environmental auditing. Environment Canada recognizes the power and effectiveness of environmental audits as a self-assessment tool for management and endorses their use by industry and government facilities through the Enforcement and Compliance Policy of CEPA.

As a leader in the advance of environmental auditing in Canada, Environment Canada has proposed a Program Plan to:

- raise the level of awareness of environmental audits and their value among industry and governments in Canada,
- present the state of the art for environmental auditing in Canada, the United States and elsewhere,
- promote and encourage the use of audits for industry and all levels of government, and
- more clearly define government and industry roles in the audit process.

These objectives will be achieved by a combination of means such as seminars, workshops, guidance documents and other training aids and programs. Industry and government commitment to environmental auditing and Environment Canada's initiatives are vital to ensure the protection of Canada's environment.

2.0 AN INTRODUCTION TO ENVIRONMENTAL AUDITING

MANAGEMENT'S MESSAGE

1. The environmental audit is a management tool utilizing thorough analysis techniques for evaluating an organization's environmental performance.

2. Environment Canada encourages the use of environmental audits to maintain compliance with environmental regulations and to protect the well-being of Canada's population and resources.

2.1 Definition of the Environmental Audit

How good is environmental control at your facility? Do you have the confidence and secure feeling that the activities of your organization comply with today's environmental standards? The International Chamber of Commerce (ICC) defines environmental auditing as:

> "A management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organization, management systems and equipment are performing with the aim of:
>
> (1) facilitating management control of environmental practices.
>
> (2) assessing compliance with company policies, including meeting regulation requirements".

Environment Canada confirms this definition in the CEPA Enforcement and Compliance Policy and encourages environmental audit practices for Canadian companies and government agencies.

2.2 How Did Environmental Auditing Develop

During the past decade, the scope of environmental legislation in industrialized nations has been broadened, and, coupled with increased enforcement, has resulted in a realization that a specific methodology is required to effectively manage environmental concerns. The concept of environmental auditing was borrowed and diversified from financial auditing as a means of assessing the environmental risks associated with producing a product or providing a service.

At first, only facilities which were highly visible to government or the public developed auditing procedures voluntarily. These included oil companies, electrical utilities, large chemical and equipment producers, and large consumer goods manufacturers. Other companies who had already experienced uncontrolled environmental discharges of significant impact also adopted environmental auditing.

The routine checking of a facility's operation for regulatory compliance, soon extended to development of systems to monitor future trends toward new legislation. Forward looking, or proactive response, has become more common. The growing philosophy is that compliance is only a small part of managing for overall environmental assurance. The entire system, including its organization, monitoring, and feedback mechanisms, must be evaluated and maintained.

Currently, environmental audits can be developed to assess environmental risks associated with process technology and organization of management systems. The relationship of the facility with government and society can also be considered. Benefits of the system include increased operational efficiency and lower costs attributed to environmental control. Managing for environmental assurance is becoming a more common, if not essential, practice, of which the environmental audit is an integral component.

2.3 Environmental Auditing in Canada

In recent years, environmental issues have gained greater importance on a global scale, with much directed media and public attention. Companies have been pressured to comply with government regulations, and insurance companies have given preferential rates to organizations which reduce risks via environmental assessment programs. Many Canadian organizations, both large and small, are seeking long-term management solutions to their environmental problems, using the environmental audit as a powerful management tool.

The environmental audit should be used as a means of monitoring environmental issues and regulations affecting any facility. Even small business and government offices have tailored audit plans to their sites. Knowing that environmental risks are minimized is becoming a viable means of operating a secure and profitable business for the future.

Environment Canada has had a directive to promote environmental protection since their conception. A 1984 Environment Canada study (see Figure 2.1) gauges the extent of use and awareness of auditing in Canadian industry, and found that environmental auditing is a practice which was increasingly being used by a wide variety of companies. With an increased emphasis since 1984 toward environmental control worldwide, environmental auditing is becoming a standard management procedure.

Audits for industry and government agencies in Canada should reflect some of the unique aspects of the country. Depending on the location of the facility, the audit should consider:

- scientific requirements associated with specific climate and geography;
- government regulations applicable to the province, territory, region, or municipality; and,
- multicultural nature of the workforce and public, including immigrants, English and French official languages, and native peoples in the north.

FIGURE 2.1

AWARENESS AND USE OF ENVIRONMENTAL AUDITS

SECTORS	NUMBER OF RESPONSES	HEARD OF ENVIR. AUDITS	CONDUCT "REAL" ENVIR. AUDITS
Utilities	9	100%	11%
Automotive	2	100%	100%
Chemical	15	93%	50%
Petroleum	8	100%	37%
Tire Manufacturing	3	100%	33%
Equipment, Technology	5	100%	20%
Mining	10	80%	20%
Pulp and Paper	12	91%	13%
Food, Beverage	8	63%	12%
Other (Steel, Aggregate)	5	100%	not determined

TOTAL RESPONSES: 77
TOTAL REQUESTED: 116

NOTE: 1984 Study

From: Reed, J.W. "Environmental Aduiting, A Review of Current Practice" for Environment Canada, Manuscript IP-17, August 1984.

Specifically, communication within the audit system should be designed to accommodate language and cultural barriers of employees and management, while specific sections of the audit must deal with the needs of the local people. Auditing at a gas plant in the Arctic near an Inuit village would have a different emphasis from an audit at a gas plant outside Calgary. Technology in remote communities may not be developed as in built-up areas, thus necessitating a different focus to the environmental audit.

3.0 MANAGING FOR ENVIRONMENTAL ASSURANCE

MANAGEMENT'S MESSAGE

1. There are tangible benefits to investing in an organized environmental management system which addresses compliance, the identification and reduction of risks, and the efficient performance of all environmental functions.

2. The environmental management system requires a mechanism for analysis, documentation, communication, and action directed toward monitoring and evaluation of environmental performance.

3.1 Concepts of Environmental Assurance

The concept of managing the environmental risks inherent in any process can be equated to managing for environmental assurance. This view combines the requirements for compliance with the opportunity to add superior performance and value to a facility's operations. Essentially, managing environmental risks can uncover potential environmental problems before they become liabilities. We've all heard:

- "If company ABC down the road isn't doing it, why should we?
- "If we look for problems, we might find them."
- "If it isn't broken, don't fix it."

Any of these statements might arise in the absence of an environmental assurance program. Environmental assurance requires management to be proactive, focusing on building an environmental management system that identifies and anticipates hazards as well as manages consequences.

The challenge, then, is twofold in a high-performing organization managing for environmental assurance:

- to identify compliance situations and risks of non-compliance; and,
- to have the confidence that the corporate systems are in place and operating effectively and that all employees know and understand their roles and responsibilities.

In setting up and operating an environmental assurance program, specific organizational goals must be attainable, and within management's control. It is important to pinpoint systems that can address specific environmental needs. A study of existing pollution control equipment should be a prerequisite to buying additional equipment, and analysis of existing production processes should be done before deciding that a by-product is not recyclable or reusable. This study of in-house and familiar technology reduces the development costs associated with new equipment or systems. The end result is increased knowledge of existing operations, and more expertise to anticipate crisis situations.

Commitment to environmental excellence and organizational objectives must be at all levels from the president, directors and executives through to all operations staff if the environmental assurance program is to achieve maximum success. An attitude that everyone must work together to achieve this goal should exist. A culture of volunteered disclosure should prevail, which stresses that having a problem with a process is not an employee's fault. Corrective action to the problem is the goal, not punishment of the individual who found the problem in the first place.

3.2 Functional Elements of Environmental Assurance

The functional elements of an environmental assurance program are outlined in Figure 3.1. The degree to which each element is utilized is part of defining the program scope and emphasis. An in-depth discussion of Figure 3.1 will help management set up an auditing program and tailor environmental assurance to their own facility.

POLICY

First and foremost, management and staff must have direction by means of corporate policies. General statements directed towards the future prosperity of the organization will lead to more specific goals for environmental excellence.

ORGANIZATION

Organization of the program is important in order that detailed and useful information is derived from the environmental audit, and that this information is communicated and used in an efficient manner. The organization of a new environmental program will develop as the other functional elements are assembled.

REGULATORY COMPLIANCE

The concept of environmental auditing for regulatory compliance is the foundation of an environmental assurance program. Even though compliance auditing is the minimum program that should be undertaken, it is the key to further investigative procedures that uncover a large array of potential environmental risks. If management is committed to acquiring a more complete understanding of environmental compliance issues, then a natural extension is to include compliance as one element of an environmental assurance program.

FACILITY AND EQUIPMENT

The program must be directed toward a particular facility and to the specific equipment used there. Multi-facility operations should take local environmental considerations into account. Equipment should be well-suited and correctly sized to its application, and be regularly maintained through a facility-wide preventive maintenance program.

FIGURE 3.1

ENVIRONMENTAL ASSURANCE PROGRAM ELEMENTS

- POLICY
- ORGANIZATION
- REGULATION COMPLIANCE
- FACILITY AND EQUIPMENT
- TRAINING
- COMMUNICATION
- RISK ASSESSMENT
- OPERATIONS PROGRAMS AND PROCEDURES
- MAINTENANCE PROGRAM
- MONITORING PROGRAM
- RECORDKEEPING
- EMERGENCY/CONTINGENCY PLANS
- ENVIRONMENTAL IMPACT STUDIES

PLUS DIRECTED PROGRAMS TO AIR, WATER, WASTE, SPILLS AND IMPACT ON LAND.

TRAINING

Training of all affected personnel, both those auditing and those running the facility, is vital to maintain the elements of an environmental assurance program intact. All personnel must react properly when a possible environmental non-compliance or emergency situation arises. In addition, conscientious training confirms to employees that management is committed to proper environmental protection and staff well-being.

COMMUNICATION

The communication network must be established (and recorded) both horizontally and vertically up and down throughout the system. This includes feedback mechanisms to ensure that recommendations are fully considered and acted upon.

RISK ASSESSMENT

Management of risks must provide for a means of assessing the nature and probability of occurrence. A program which identifies risks and determines their likelihood is an integral component of environmental assurance. Both the facility itself and the management practices should be assessed to determine current versus potential risk situations.

PROGRAMS AND PROCEDURES, RECORDKEEPING

Specific documentation of facility programs and procedures is vital if these programs are to be thoroughly analyzed during an audit. These programs include operations, maintenance, process monitoring, and the recordkeeping that is associated with having control of these functions. The assurance program must target the existence of, and the feedback generated from these important areas.

EMERGENCY PLANS

The thoroughness and impact of emergency and contingency plans should be assessed. Again, the degree of development in this area depends on the risks involved, but employee and public safety, along with containment of environmental events, should be stressed. Specific plans should be developed for each directed area including air emissions, water emissions, spills, and hazardous waste contact, and simulations of emergency occurrences performed to test training and assigned duties.

ENVIRONMENTAL IMPACT STUDIES

Environmental impact studies are a means of assessing the environmental risks involved in operating a particular facility. They are inter-related to the direction of facility policy and the actual manner in which day-to-day operations are performed.

DIRECTED PROGRAMS

The most visible and typical areas treated in environmental programs are the specific procedures for dealing with daily process waste streams. Programs for air quality management and control, waste and process water treatment, hazardous and non-hazardous waste management, spill control, and impacts on land, form the body of the environmental management system. Other directions can also be pursued, such as transport of dangerous goods, hazardous materials management, health and safety issues, and the like. The environmental management system is used to assess the efficiency of the directed programs.

Consider then, the building blocks of a sound environmental assurance program:

- A comprehensive set of program elements tailored to the organization and the particular facility; and
- An effective environmental management system as the mechanism to implement the program.

3.3 The Value of Environmental Management Systems

"System" (definition)*:

> A set of facts, principles, rules etc. classified or arranged in a regular, orderly form so as to show a logical plan linking the various parts. Methodical planning of one's way of proceeding.

As the mechanism for achieving environmental assurance, the environmental management system is the combination of policies, directives, operational guidelines, and procedures that is the key to good performance. In a general context, good performance is achieved by maintaining all elements of facility operations. Therefore, a component of comprehensive management should also be managing environmental control. An environmental management system should be constructed to identify and anticipate hazards, and manage the consequences which might arise.

Figure 3.2 outlines the environmental management system as a system designed to manage proactively and ensure that preparations, emergency plans, etc. are already in place and widely circulated, so that threats to non-compliance are resolved before a crisis actually occurs. The challenge is to identify all applicable regulations, permits and guidelines in order that the compliance system can be set up. Because it is sometimes difficult to know where to look for these regulations (ie. which questions to ask), the environmental audit and management system should highlight these concerns.

The definition of roles and responsibilities for involved personnel is another result of the environmental management system. The people involved must understand their functions and be able to perform their tasks correctly. In this respect, training may also be required, as well as a commitment to the assignment.

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* Webster's New World Dictionary
2nd ed. 1970

FIGURE 3.2

ENVIRONMENTAL MANAGEMENT SYSTEM

AN ENVIRONMENTAL MANAGEMENT SYSTEM:

- MANAGES FOR COMPLIANCE 100% OF THE TIME
- ENSURES ALL REGULATIONS, PERMITS, GUIDELINES ARE IDENTIFIED AND COMPLIED WITH
- DEFINES ROLES AND RESPONSIBILITIES INCLUDING ENVIRONMENTAL STEWARDSHIP
- IMPLEMENTS PROCESS DOCUMENTATION, ANALYTICAL RESULTS AND RECORDKEEPING TO MONITOR PERFORMANCE
- DEFINES AND IMPLEMENTS DIRECTED PROGRAMS FOR AIR, WATER, LAND, WASTE, SPILL CONTROL, ETC.

Maintaining a system entails that all applicable aspects of processes and procedures, quality testing, and performance appraisals must be documented in some manner. Documentation addresses the systematic nature of reducing environmental risks, and keeping personnel informed and aware. The entire management system relies on this exchange of information. Results must be actively sought by all personnel to enable the communication network to remain intact.

Finally, the environmental management system defines and implements the programs required to control air, water, waste, and spill procedures, specifically tailored to an individual facility.

A comprehensive system for environmental management hinges on many different personnel. This system could be considered to be decentralized within an organization. Many people are involved: operators, technical support staff, lab management and technicians (whether on or off-site), shipping and receiving department, purchasing staff, accounting (tracking costs), management, and clerical staff. Virtually every department has at least a small support function. All the varied contributions together act as one large co-ordinated effort to maintain the management strategy.

An outline of the operational mechanism of an environmental management system is shown in Figure 3.3. The mechanism is very interactive, entailing feedback to and from different operational centres for optimal performance. The entire process should be perceived, approached, and addressed using good management principles. The system enables facility management to have good control over environmental risks, as opposed to the risks controlling environmental impacts.

PLANNING

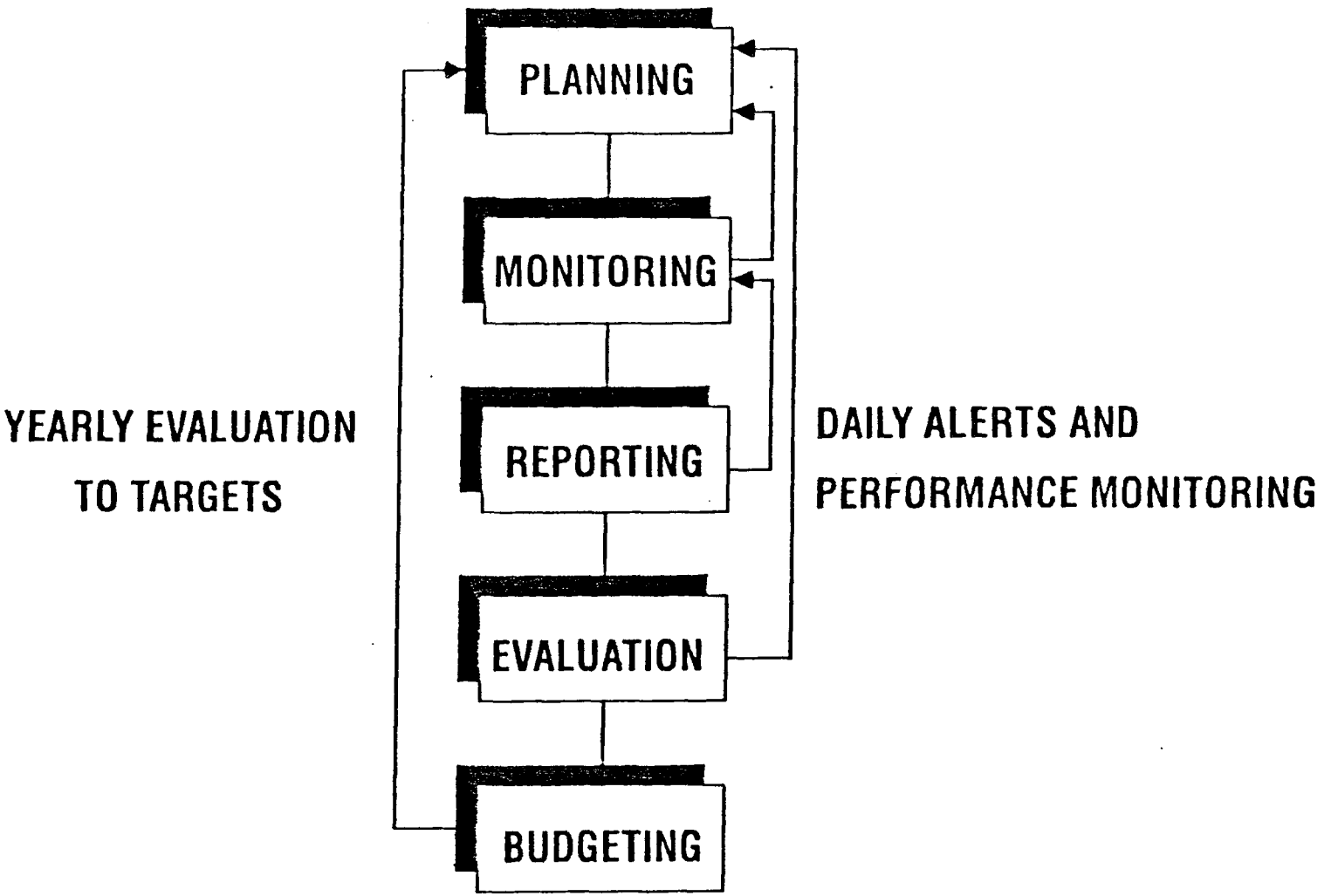
The management system begins with planning, as all other aspects of the system report back to the planning centre for optimization of procedures. The effectiveness of the environmental assurance program relies on the comprehensiveness of individual programs and policies and the setting of short-term operating targets concerned with efficiencies and costs. Roles and responsibilities of personnel are defined, as well as the directed programs for air, water, land, waste, and spill control. Scope and emphasis of the auditing program are also considered.

MONITORING

Monitoring the status of processes and organizational systems is central to obtaining facts about how a facility operates. Information is derived from designing systems and obtaining diagnostic equipment which directly measure useful aspects of a process, product, or material. The adequacy of such measurements must be assessed, as well as the practicality of the results generated. Actual testing procedures to obtain data are developed in conjunction with the planning processes for the management system. Examples of systems monitored include effluent specifications from pollution control equipment, incidence of equipment breakdown before and after addition of a preventive maintenance program, and a cost comparison of on-site versus off-site waste disposal.

FIGURE 3.3

MANAGEMENT SYSTEMS: OPERATIONAL MECHANISM



PERCEIVED, APPROACHED AND ADDRESSED USING GOOD BUSINESS PRINCIPLES

Questions arise with regard to measurements from sampling. As part of an environmental program, samples can be used for:

- establishing baseline data;
- developing an on-going historical record of process properties;
- investigating risks, by measuring new properties;
- providing confidence analysis of equipment operation; and,
- investigating perceptions of how processes operate.

REPORTING

Reporting is the primary feedback mechanism in the management system. By analyzing the data generated by monitoring, subjecting it to statistical analysis, and comparing it to standards, conclusions can be drawn regarding specific properties of the equipment or processes. It is important to have a system in place that addresses the time sensitivity of information; when the results of the monitoring are required, in order to be useful and environmentally responsible. Environmental assurance requires timely, proactive actions, for example, making sure out-of-compliance effluent gets held back before it goes to the sewer. A properly sized diversion holding tank would be required to achieve this.

EVALUATING

The evaluation process is another primary input to the planning centre. Judgements are made with respect to the adequacy of the programs in place, the data and feedback being generated, new parameters to be measured, modifications to existing systems, and additional systems to be implemented. The combination of monitoring (data acquisition), reporting (data analysis and communication), and evaluation (recommendations on performance) make up the short-term goal assessment mechanism for the management system.

BUDGETING

The feedback derived from an on-going comparison of facility performance to budgeted costs can be a valuable tool in the modification of existing programs. New opportunities in recycling, reuse, reduction, and resource recovery can be discovered using budget analysis, as well as major cost areas targeted for cost reduction and increased process efficiency. With this quality information, accurate budget programs can be developed for the next year's planning process.

A final consideration in the function of the environmental management system is the concept of internal quality assurance. This "self correction" process should, by means of internal checks, keep the information gathering process unbiased and the quality of data high. Thorough knowledge of the sensitivity of the process to outside variables is essential.

4.0 THE NATURE AND SCOPE OF ENVIRONMENTAL AUDITING

MANAGEMENT'S MESSAGE

1. Performing an environmental audit provides a mechanism to understand and treat environmental problems, not just the symptoms.
2. The scope of an environmental audit program must be planned according to the needs of the organization.
3. The audit can provide significant cost savings information and reduce future environmental liabilities.

4.1 What is Environmental Auditing: Theory and Concepts

The environmental audit, as a component of an environmental program and good environment management, is designed to investigate the effectiveness and efficiency of environmental management systems. It is important to realize that performing an environmental audit within an organization does not act as a substitute for the compliance procedures that are already in place. The audit is the tool that can be used to highlight the overall environmental needs of the facility. Measurement and information feedback via the audit are vital communications links between operations and management, and help provide the thorough overview and direction required for responsible environmental management.

The environmental audit is a formal, systematic and periodical examination of environmental management systems to determine their worth in achieving environmental objectives. This is accomplished through verification of compliance with applicable regulations and internal policies. It is the formal and periodic nature of this process that distinguishes it as an audit.

The audit is used to examine all procedures, processes and equipment for operating efficiency in an environmental context. The potential for unforeseen hazards or upsets is also assessed. Even though at present no regulated standards exist for performing an environmental audit, there are generally excepted methods for making a complete investigation. The key to a successful audit is a carefully developed program, methodology and protocol, generating specific, verifiable evidence regarding the environmental operations of the facility. Performing an environmental audit provides a mechanism with which to understand and treat actual problems, not just the associated symptoms.

4.2 Auditing as a Component of Environmental Management

The environmental audit is designed to give senior managers and executives confidence in their organization's environmental performance. The reasons for developing an environmental auditing program range from the desire to measure compliance with specific regulations, standards or policies, to the goal of identifying potentially hazardous conditions for which standards may not exist.

It is important to understand that the compliance assessment of the audit is relatively short and straightforward. However, as environmental compliance is generally event-oriented (ie. a spill event, or the discharge of a contaminant above standards, etc.), it is really the risk of this event occurring and causing a non-compliance situation that must be protected against. Since all personnel have some control over compliance and environmental performance, management must be assured that employees will react properly when an event occurs that could cause non-compliance.

While auditing may appear to serve the universal need of evaluating and verifying environmental compliance, in practice auditing programs are designed to meet a broad range of objectives, depending on management philosophy and the size of the organization. Figure 4.1 describes the role that the audit can perform in environmental management systems.

The main objective of the environmental audit is to give senior management the confidence that:

- the facility is being managed using best environmental management practices;
- equipment and management control systems are in place and operating;
- regulatory and ethical responsibilities are being fulfilled; and,
- environmental risks and liabilities are identified and managed.

It can also deliver much more. A good audit is a unique blend of technical, scientific and engineering methodologies, as well as management consulting principles. A thorough and comprehensive evaluation of process operations is a prerequisite to fully understanding the environmental discharge or impact. Significantly, an environmental discharge is often the result of a process problem, upset, or inappropriate procedures.

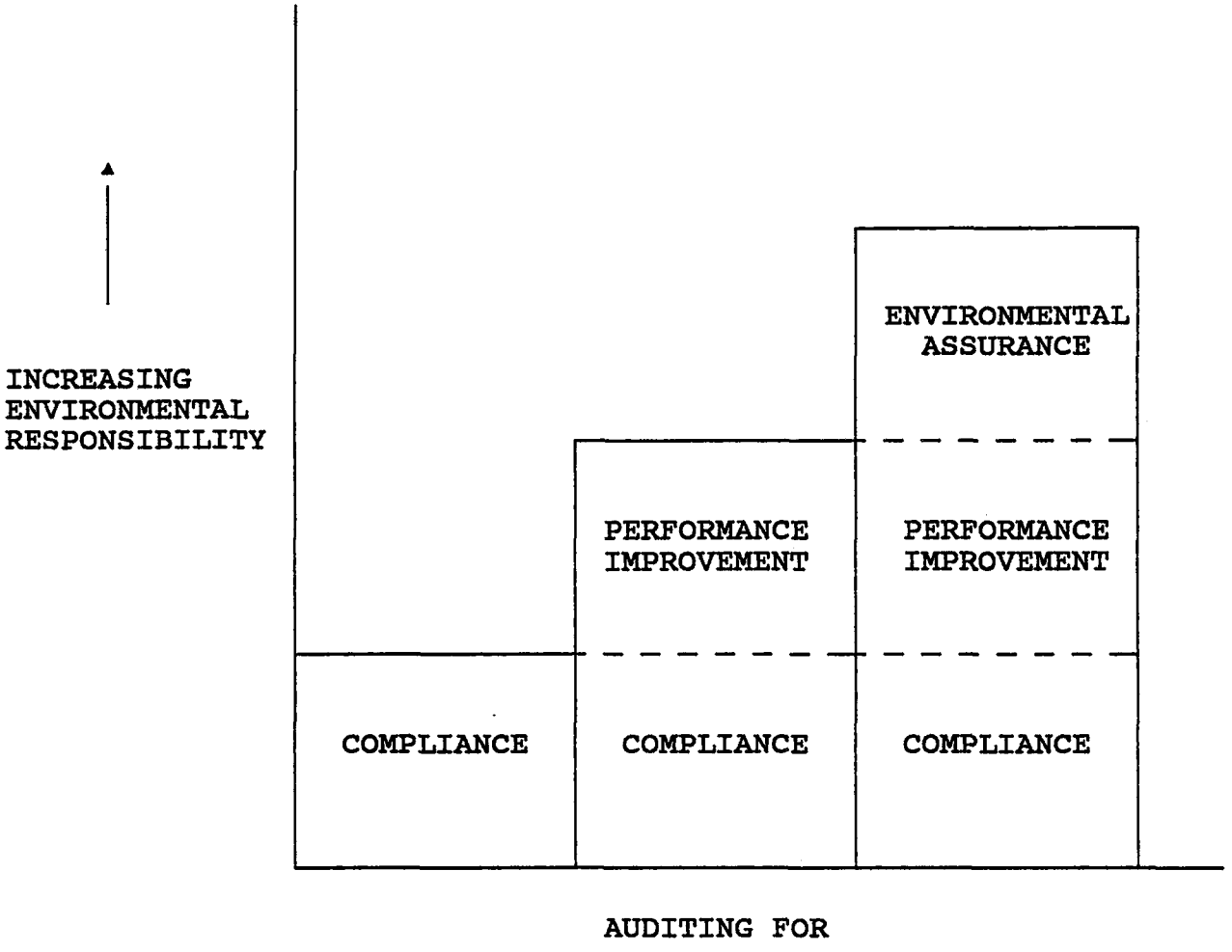
By remediating process-oriented problems, a facility can become much more efficient, and the threat of an unanticipated environmental discharge is reduced or eliminated. The audit, then, can provide significant cost savings information with respect to:

- resource recovery and more efficient use of raw materials;
- changes in practices;
- process efficiencies (ie. identifying process bottlenecks, unnecessary wastage); and,
- reduction of future liabilities and expensive remediation.

The environmental audit is an exciting and important tool because the range of outputs generated, both directly and indirectly, have a far reaching effect. Audit results are communicated to senior management, giving them, often for the first time, a comprehensive assessment or report card of environmental performance. The impact this has on the sensitization of upper management to environmental issues is irreversible and cannot be overstated.

FIGURE 4.1

DEGREE OF AUDIT INVOLVEMENT IN ENVIRONMENTAL MANAGEMENT



As well, in the process of auditing, there is a tremendous environmental awareness created among facility staff, which is of significant educational value. The results of theenvironmental audit can also act as a blueprint to develop an environmental management program tailored specifically to the facility.

The same mechanism that makes up the management system (see Figure 3.3) makes up an environmental audit program. An audit must be planned to cover all aspects required by regulations and other areas addressed by in-house directives. The audit is performed to measure the existence and effectiveness of required programs, and to report these findings to senior management. These results are evaluated and solutions to problems are formulated with respect to compliance, environmental goals and cost. An audit can be optimized by its monitoring and evaluation also.

Essentially, the environmental audit and its analysis provide insights into opportunities to improve overall operations. The resultant information transfer points directly to senior management accountability towards employees, the public, and the environment. Liabilities are defined and acted upon. Areas of potential risk are uncovered. Money is saved or more effectively allocated. Environmental management results in proactive solutions rather than reactive crises.

4.3 Cost and Benefits of Environmental Auditing

The costs and benefits associated with environmental auditing depend on the scope of the environmental audit program. Each company or government agency must spend the initial time (a cost) to develop an audit protocol (a benefit) which applies to their facilities. Volume 2 of this Environment Canada auditing series has been designed to assist management tailor the audit protocol. The scope and the audit budget are also determined from management's knowledge of existing environmental control procedures and overall corporate policies. This initial time allocation ensures that a focused audit is performed, and the costs of the actual on-site inspection are minimized.

As has been previously discussed, the audit identifies compliance issues and risks of non-compliance. The identification of risks is a major challenge in the audit process and the depth of analysis and resultant system benefits are determined by management objectives and the audit budget.

The audit is a beneficial component of the environmental management program, as described in Figure 4.2. Through the auditing process, management increases awareness of facility environmental policies, and states its commitment to environmental protection. Employees are kept involved and educated and thus will be more interested in performing their jobs effectively, in addition to reporting situations of environmental risk. In turn, increased management confidence results from the knowledge that the facility is being managed using best management practices, that equipment and management control systems are in place and operating, and that regulatory and ethical responsibilities are being fulfilled.

Through the environmental auditing process, environmental liabilities are identified and programs are developed to manage them. By identifying environmental deficiencies and acting upon them, "due diligence" is displayed, resulting in a measure of protection from criminal prosecution. This identification and reduction of blind spots increases management's effectiveness in dealing with public accountability. Implementation of new programs can also be accelerated using audit results as justification.

FIGURE 4.2

BENEFITS OF ENVIRONMENTAL AUDITING

- IDENTIFICATION OF COMPLIANCE ISSUES AND RISKS OF NON-COMPLIANCE
- IMPROVED ENVIRONMENTAL PROGRAMS
- SENSITIZATION OF SENIOR MANAGEMENT
- BETTER COMMUNICATION AND ENHANCED GENERAL UNDERSTANDING OF FACILITY OPERATIONS
- IMPROVED MANAGEMENT STRUCTURE
- COST SAVINGS AND EFFICIENCY IMPROVEMENTS

The advantage of the audit from a communications standpoint is that many small inputs from many varied personnel result in a team approach to environmental management. Roles and responsibilities of staff are examined, as are associated reporting channels. Auditing subjects an organization's communication network to a test, and provides tangible information with which to improve it.

As a means of assessing long-term benefits, potential cost savings must be estimated. New systems or processes which result from audit recommendations can be compared to those already existing to determine the net worth of the new program. Direct monetary costs of equipment and upkeep should be considered, but the net environmental costs and benefits must be the priority. It may be difficult to attach an exact dollar figure to regulatory compliance in the short-term, but a measure of long-term security will result from performance to short-term objectives.

Specific programs can be targeted at cost reduction centres. Examples include:

- recycling previously disposed of waste materials to reduce disposal and raw material costs;
- sale of waste by-product to another company using this material in their processes;
- more efficient processes, as a result of environmental management system upgrades; and,
- reduction of energy and water consumption throughout the facility.

4.4 Scope and Emphasis of an Environmental Audit Program

A thorough analysis of management objectives is required to set up the organizational and functional elements of an audit program. The extent of the review, and the depth of treatment of individual concerns must be decided upon as a part of the preparation for an audit. This definition of scope and emphasis is what constitutes the framework for the environmental management system.

The elements of a comprehensive environmental auditing program should be planned according to the needs of the organization. Materials and their by-products, and the supporting equipment used, are followed throughout their life-cycle in the facility, from entry to final disposition. Specific programs for air, water, waste, spills and land impact are a major component of the system, but the organization and maintenance of these programs are equally as important. Policy and directives will be used to determine the appropriate comprehensiveness of the audit program, as well as the budgetary allocation to support the program elements.

In conducting an environmental audit, the protocol is critically important, since it serves as the blueprint to ensure consistency in the approach of an audit. The protocol, then, is a formal tool to guide the collecting of evidence and to record the audit procedures completed by the team. The protocol outlines in detailed fashion the steps an auditor must take in meeting the objectives of the program. It ensures comprehensive documentation and provides

a standard for the team members. For example, a through evaluation of waste manifests can provide information on compliance as well as the efficiencies of waste movements. It is the protocol that will direct the collection of these data, and the auditor's skill and technique that will evaluate the data and measure the performance. An audit protocol, to be customized for the particular facility, is provided as Volume 2 of this series on auditing.

In the context of asking "What is right for your facility?", several questions must first be answered:

- Is the program targeted only at compliance to environmental regulations? Or should we manage for better environmental performance?
- To what degree should we analyze our operations?
- How much will it cost (in dollars), and in impact on the facility while the audit is being performed? (ie. are people taken from their jobs?, is production being compromised?)
- Which areas of environmental control actually apply to our facility?
- Which areas of environmental impact can we actually control?
- Are we trading depth of analysis (scope of program) for reduction of costs? Can we do this and still maintain a comprehensive program?

Typically, the decisions made with respect to the above questions are driven by facility operating philosophies. It would be an environmental and facility benefit if this discussion spurred increased awareness, and thus more comprehensive policies, regarding environmental management.

The first feature workshop of this manual is called "What is Right for Your Facility" and is included at the conclusion of Part 1 (pg. 42). Facility management should use this checklist to consider possible areas of concern regarding environmental control at their site and to determine their current level of environmental management. The objective is to develop an awareness of present programs and of those which may be necessary if further control is desired.

5.0 THE REGULATORY REGIME IN CANADA

MANAGEMENT'S MESSAGE

1. The Canadian Environmental Protection Act is the primary federal environmental legislation in Canada. Provincial/territorial and municipal regulations may also apply.

2. Compliance is expected 100% of the time, assisted by government programs to encourage compliance.

3. Through specific regulations developed under CEPA, federal facilities should examine their environmental practices and provide leadership to Canada in environmental protection.

5.1 Legislation, Regulations, and Guidelines

In order that a clearer understanding of environmental compliance issues is attained, it is advantageous to define the terminology, "legislation, regulations, and guidelines". It is also important to discuss the government attitudes that drive the formation of these policies.

The government of Canada is dedicated to protecting Canadian citizens and the society in which we live. To this end, government directives, or Acts, are formulated from which the law, or legislation, is composed. An Act is similar in scope to a corporate policy, which outlines the objectives of the directors of a company. Municipal governments usually pass by-laws as opposed to Acts, by-laws being local rules which address general government objectives as applied to the specific concerns of the municipality.

Regulations are the working rules that must be followed in order to comply with legislation. They differ from guidelines, in that guidelines do not require mandatory compliance. Guidelines are voluntary procedures or regulations that should be followed in order to achieve government objectives. Regulations have the force of law. Guidelines do not. Because guidelines describe good, responsible operating practices and desirable levels of performance, they frequently become the basis of new government regulations.

Due to the technical nature of many environmental issues, much documentation is produced by governments at all levels to encourage the understanding of environmental legislation, regulations and guidelines. This education and training is important if full regulatory compliance is to be achieved.

5.2 Federal Regulations

Environment Canada oversees all environmental affairs in Canada. This includes legislation which guides the formation of environmental regulations at all other government levels. The Canadian Environmental Protection Act (CEPA), as a federally directed piece of

legislation, co-ordinates the protection of the environment as applied to the well-being of Canada as a whole. Other important federal acts include:

- The Fisheries Act;
- Transportation of Dangerous Goods Act; and,
- Hazardous Products Amendment Act.

The Canadian Environmental Protection Act is comprehensive legislation which addresses the environmental concerns of Canada. Some environmental impacts are already regulated by other Acts, but CEPA complements and builds upon their foundations. Federal regulations within CEPA are being formulated on an ongoing basis to ensure Canada-wide compliance with specific environmental concerns such as:

- the control of substances new to Canada;
- the control of all aspects of development, manufacture, transport, distribution, usage and disposal of toxic or hazardous materials;
- regulation of emissions and effluents, including those of government facilities;
- guidelines for environmentally safe practices, and desirable levels of environmental quality;
- control of air pollution impacting on other countries;
- control of nutrients which interfere with water usage of all living things, including plants; and,
- control of waste disposal at sea.

5.3 Provincial and Territorial Directives

Provincial and territorial governments act in generally the same manner as the federal government in that Acts, regulations and guidelines are put forth to control the operation of the province/territory. Federal legislation is frequently used to formulate equivalent provincial regulations where programs or expertise already exist to deal with the area in question. Where provincial/territorial directives are more comprehensive than those of the federal government, industry in Canada must comply with provincial regulations so that conservative environmental practices are undertaken. In the same manner, federal facilities should comply with the spirit and intent of applicable provincial/territorial and municipal regulations. In any case, where specific programs have not been established, Environment Canada legislation is applicable and enforceable. Provincial/territorial regulations generally control specific levels of pollutants that can be emitted to the environment.

5.4 Municipal Directives

Municipal by-laws are enacted to complement federal and provincial governmental legislation where more specific direction is required on environmental compliance. Local variations in climate, geography, or the like would result in a fine-tuning of existing regulations and guidelines to apply directly to a unique environmental situation. Frequently, municipal governments designate regional governments to operate specific environmental programs within large cities. An example is the Greater Vancouver Regional District, which administers air and water quality programs for a group of smaller municipalities in the greater Vancouver area. Figure 5.1. shows the different levels of government which are responsible for air, water, waste, and spills programs in each province in Canada. This figure should be used by Canadian companies and government departments and agencies to determine contacts for specific required programs.

5.5 Enforcement and Compliance

In operating to protect the environment, Canadian companies and government agencies are expected to comply with regulations 100% of the time. This challenge can be met through voluntary use of government programs which promote regulatory compliance and encourage good management practices. Full compliance to all applicable regulations ensures that all businesses compete on equal ground with respect to environmental protection. Environment Canada provides many services to promote compliance to environmental regulations, such as:

- education and information regarding details of legislation, regulation and guidelines;
- promotion of technology development and evaluation of that already existing;
- transfer of technology via documentation, seminars, training sessions, and licensing of research developments to the private sector;
- consultation on regulation development and review;
- development of guidelines and codes of practice detailing methodology to comply with environmental regulations; and,
- promotion of environmental audits.

The alternative to voluntary use of government programs for compliance is compliance attained by enforcement. Many provisions have been made by governments to have in place enforcement procedures to ensure compliance. Enforcement activities through inspectors and investigators include:

- inspection and monitoring;
- investigations of violations;

FIGURE 5.1
LEVELS OF GOVERNMENT RESPONSIBLE FOR ADMINISTRATION OF DIRECTED ENVIRONMENTAL PROGRAMS, BY PROVINCE [8]

PROVINCE OR TERRITORY		AIR QUALITY [2]	WASTEWATER CONTROL (SEWERS)	SOLID WASTE [6] CONTROL (GARBAGE)	HAZARDOUS WASTE CONTROL	HAZARDOUS MATERIALS CONTROL	SPILLS [7] CONTROL
BRITISH COLUMBIA	FEDERAL[1]						X
	PROVINCIAL	X			X	X	
	REGIONAL (GVRD)[3]		X	X			
	MUNICIPAL		X	X			
ALBERTA	FEDERAL[1]						
	PROVINCIAL	X			X	X	X
	MUNICIPAL		X	X			
SASKATCHEWAN	FEDERAL[1]						
	PROVINCIAL	X			X	X	X
	MUNICIPAL		X	X			
MANITOBA	FEDERAL[1]						
	PROVINCIAL	X			X	X	X
	MUNICIPAL		X	X			
ONTARIO	FEDERAL[1]						
	PROVINCIAL	X			X	X	X
	MUNICIPAL		X	X			
QUEBEC	FEDERAL[1]		X[7]				X[7]
	PROVINCIAL	X	X		X[7]	X	X
	REGIONAL (MUC)[3]	X		X			
	MUNICIPAL			X			
MARITIMES	FEDERAL[1]		X[7]			X	X[7]
	PROVINCIAL	X		X	X		X
	MUNICIPAL						
YUKON [4] TERRITORY	FEDERAL[1]	X	X		X	X	X
	TERRITORIAL			X			
	MUNICIPAL			X			
NORTHWEST[4,5] TERR.	FEDERAL[1]	X	X	X	X	X	X
	TERRITORIAL						
	MUNICIPAL						
FEDERAL FACILITIES/ DEPARTMENTS/CROWN CORPORATIONS	FEDERAL[9]	X	X	X	X	X	X

FIGURE 5.1 continued

NOTES:

1. Federal government has responsibilities under CEPA for all aspects of environmental control, but specific administration of many programs has been delegated to lower governments as detailed herein.

2. Air quality for emissions of specific regulated substances is administered by Federal government.

3. GVRD - Greater Vancouver Regional District
   MUC - Montreal Urban Community

4. Department of Indian Affairs and Northern Development (DIAND) (Federal) administers separate guidelines as applicable to northern and native lands, in conjunction with Environment Canada and Territorial governments. DIAND has resource management responsibilities and acts as a quasi-territorial advisory department.

5. Jurisdiction of environmental affairs depends on land ownership, where environmental concern takes place.

6. Solid waste control is usually administered by municipalities, with land-fill sites owned by provincial or private companies.

7. Federal Fisheries Act is applicable if no provincial program in place, or environmental impact is on major waterways or ocean.

8. All transboundary emissions or effects (interprovincial, to USA or other countries) are administered by the Federal government (Environment Canada).

9. Part IV of CEPA provides specifically for environmental operations of federal facilities. All other federal legislation also applies. For a detailed regulatory structure in all environmental areas, federal facilities are encouraged to follow CEPA by applying all regulations and guidelines from federal, provincial, and municipal levels.

- measures to compel compliance without resorting to court action, such as directions by inspectors, ticketing, and ministerial orders; and,

- court action.

Enforcement inspectors and investigators work to attain compliance with the law by voluntary measures, applying regulations in a manner that is fair, predictable, and consistent. The emphasis of enforcement is to prevent damage to the environment by requiring violators to adopt environmentally sound practices. Compliance monitoring will be conducted to verify that activities governed under federal legislation are carried out in accordance with regulations, ministerial orders and permit requirements. To encourage the practice of environmental auditing, inspections and investigations under CEPA will be conducted in a manner which will not inhibit the practice or quality of auditing. Inspectors will not request environmental audit reports during routine inspections to verify compliance.

5.6 Application to Federal Facilities

Government facilities must also be environmentally conscious and use processes and procedures which ensure regulatory compliance. Part IV of the Canadian Environmental Protection Act provides specifically for the operation of federal departments and agencies, Crown corporations, and their associated operations. It is a requirement of the Act that federal facilities be proactive in their environmental behaviour, entailing responsible assessment and reporting of potential and actual environmental releases. All activities which might cause dangerous conditions including those undertaken by outside personnel under contract, are regulated. Any environmental release that occurs on federal lands, whether it be from a federal facility or a leaseholding company situated on that land, implies responsibility for both the property owner and the polluter. An emergency response program must also be in place to prevent dangerous conditions from affecting personnel or the environment. In essence, federal facilities must set an example of environmentally responsible operations for the rest of Canada. Contravention of the regulations is a criminal offence.

6.0 STANDARDS AND PERFORMANCE MEASURES FOR THE AUDIT

MANAGEMENT'S MESSAGE

1. An effective environmental audit program requires standards to be formulated so that audit results can be applied.
2. Government regulations, internal management policies, and best management practices should be used to formulate environmental standards.
3. Best management practices consider aspects of facility operation such as good housekeeping, preventative maintenance, risk identification, and reporting, among others.
4. Environmental control performance measures are necessary to compare facility operations with developed standards.

To conceive an effective audit program, companies and government facilities must develop a standard to which the audit results can be measured. Depending on the depth of the goals and objectives, the standard must incorporate compliance to regulatory and corporate policy requirements. Elements of environmental assurance and best management practices may be included to give the results of the audit more far-reaching effects.

The parameters to measure environmental performance must be adequate in comparison to the above standard. The measures of performance must be relevant and accurate so that, when the performance data are evaluated, recommendations can be made to achieve specific and measurable improvements.

6.1 Regulatory and Legal Compliance

The Canadian Environmental Protection Act required that all reasonable emergency measures must be taken to prevent or eliminate any dangerous condition or reduce or mitigate any danger to the environment or to human life or health that results in the release of, or likely release of, a substance. The Act also requires that any person whose property is affected by the release must report the matter to a CEPA inspector. Failure to do so is an offence under the Act. Environmental auditing is an effective tool in identifying such dangerous situations and determining measures for preventing a release.

Part IV of CEPA, containing sections 52 to 60, relates specifically to federal departments, agencies, Crown corporations, and their works, undertakings and lands. Part IV also allows Environment Canada to make regulations to control pollution from federal activities, and could include regulations designed to control sewage disposal, fuel storage, spill reporting and response, waste handling and disposal.

At the present time, specific regulations under CEPA are being developed, but will not be in place for several years. Consequently, compliance with other federal, provincial and municipal regulations, which in total are very comprehensive, will apply to all industrial operations and government facilities in Canada.

Other federal legislation affecting environmental protection includes the Fisheries Act, Transportation of Dangerous Goods Act, and the Hazardous Products Amendment Act. Each of these acts involves measures for the handling of materials which could be a risk to the integrity of the environment.

In most cases, management must operate their facilities within specified limits with respect to materials released to the environment. These limits are usually concentrations of substances set out in provincial, territorial, or municipal regulations, as determined by scientific experimentation, and experience of material usage in other countries. The environmental audit frequently requires sampling of effluent streams to determine on-site concentrations of those materials of concern to the facility.

6.2 Internal Policies and Standards

In determining the future direction of an organization, senior management must set policies which direct all employees, especially with regard to environmental affairs. The scope of environmental programs is defined, as well as the strategy with which to achieve 100% compliance with government regulations.

Internal policies will delineate how the facility deals with environmental affairs; managing to compliance, to enhanced environmental performance, or toward environmental assurance and risk minimization. With the degree of environmental commitment defined, monetary and manpower budgets can also be developed, as well as an accountability and reporting framework for policies to be communicated and commented upon. Comprehensive standards must include government regulations, and will likely include recommended guidelines, codes of practice, and best management principles.

6.3 Best Management Practices

Best management practices as applied to environmental protection are responsible, self-imposed standards of operation, and are considered the minimum practices required to actively maintain environmental assurance. Environment Canada recommends the adoption of best management practices as components of an environmental management system for Canadian industry and government agencies.

As a means of ensuring regulatory compliance and maintenance of a proactive environmental assurance program, action plans should be formulated which address the following best management practices, as described in Figure 6.1.

GOOD HOUSEKEEPING

The contribution of all company personnel in maintaining a clean, orderly work environment, is the primary focus of good housekeeping. An organized approach to storage of chemicals and equipment, prompt removal of spillage, maintenance of dry, clean, clear floors and walkways, and adherence to established operational procedures can ensure that programs for environmental and public safety are supported.

FIGURE 6.1

BEST MANAGEMENT PRACTICES FOR CANADIAN FACILITIES

GOOD HOUSEKEEPING

PREVENTATIVE MAINTENANCE

RISK IDENTIFICATION

EMERGENCY AND CONTINGENCY PLANS

INSPECTIONS AND RECORDKEEPING

REPORTING

SECURITY

EMPLOYEE TRAINING

PREVENTIVE MAINTENANCE

A preventive maintenance program involves inspection and testing of process equipment and systems to identify possible sources of equipment breakdown. For example, testing of alarms, monitors, underground tanks etc. will proactively spot problems and ensure critical equipment is operating in the event of an emergency. Adjustment and periodic replacement of parts reduces the risk of equipment failure and possible environmental impacts, resulting in an increased probability of continuing compliance with environmental regulations and internal management policies. Thorough documentation of preventive maintenance procedures must also be carried out as part of the program.

RISK IDENTIFICATION

Risk identification as related to environmental control systems should be instituted in a comprehensive manner in order to reduce the probability of unforeseen environmental events. The environmental audit program can be used as a means of assessing risks, and identifying solutions for their management.

EMERGENCY AND CONTINGENCY PLANS

Many larger facilities have established emergency response plans to protect various operations, usually those which involve employee health and safety or expensive equipment. These plans should be extended to include environmental emergencies, even when the consequences of the occurrence are not realized immediately. A holding tank to divert major spills would be an example of a safeguard contingency system. The initial need for this holding tank, or its ongoing maintenance, would be areas to investigate during the environmental audit.

INSPECTION AND RECORDKEEPING

As a best management practice, a periodic, systematic program for inspecting equipment and operating procedures should be maintained. Inspection relates to all other best management practices, as does the proper recording of the results of the inspections. Records should also be kept of environmental incidents, compliance data, and environmental monitoring information (ie. water effluent analysis). An evaluation feedback mechanism should be included in order that the inspection procedures and monitoring records are studied and modified to be as relevant and efficient as possible. Where this monitoring or evaluation notes deficiencies or frequent "near misses", corrective action can be taken before the issue develops into a serious problem.

REPORTING

Directly related to the information generated by inspections is the reporting process. Reporting should be done to a target management group, including within the report specific recommendations for environmental system improvements. The management group must be held accountable for not just reading the report, but instituting the necessary changes associated with the recommendation. A reporting procedure should also be in place to respond to short-term environmental concerns, such as minor spills, leaks, or other discharges, for the purposes of minimizing recurrence and complying with regulations.

SECURITY

Security at a site should be such that unauthorized facility entry and vandalism resulting in environmental hazards cannot occur. At larger facilities, on-site security personnel should be trained to recognize environmental risks to operations, and know the procedures to follow when a spill, leak, or other discharge is detected. Because security procedures are ongoing 24 hours per day, security personnel should be utilized to alert management to unusual environmental conditions. Small industrial operations usually rely on alarm systems for off-hours security. Control of environmental events in an empty building can be accomplished by constructing spill control dykes, installing alarm equipment on machinery and the like, in addition to the usual fire control systems in place in all industrial or commercial buildings.

EMPLOYEE TRAINING

Active involvement of employees in environmental management programs is an effective means of monitoring risks to facility operations. Training should stress responsible action towards reducing environmental mishaps, in addition to adherence to established operational procedures. Employees must understand the consequences of poor environmental performance. Outside contractors, and any other longer term visitors should also be advised of environmental procedures, including emergency plans.

6.4 Environmental Control Performance Measures

In order that environmental audit results can be effectively used in upgrading environmental control procedures, specific measures must be identified which give an indication of equipment or procedure performance. The performance measures should compare actual operations to internal goals and standards, and to government regulations. It is important that baseline data be established so that ongoing measurements can be readily compared.

Many of the specific performance measures, especially those related to regulatory compliance, will be determined by reviewing effluent monitoring data from pollution control equipment, etc. The performance of a preventive maintenance program would be measured by noting incidence of equipment breakdown before and after program implementation. Costs associated with the entire environmental control system can be tracked with respect to direct off-site waste disposal costs versus on-site treatment or recycling. The specific performance measures which can be applied to any facility depend on the environmental control procedures already in place and the scope and objectives of management policies. The environmental audit protocol provides the opportunity to question the accuracy and relevancy of existing environmental control performance measures, and to discover more indicators that could be used to better measure process performance.

7.0 LEGAL ISSUES*

MANAGEMENT'S MESSAGE

1. An environmental audit program, and the implementation of audit recommendations, are effective means of limiting environmental liability concerns through a due diligence defence.

2. Corporations, government departments, and associated management and employees, can limit their recourse to a due diligence defense if found to neglect recommendations derived from an environmental audit, without due cause.

3. Regulatory provisions are in place to protect disclosure of confidential business information derived from the audit, unless public health, safety, or protection of the environment are at issue.

Increasing public concern with the preservation and protection of the global environment and the resulting tendency of governments to legislate stricter environmental controls, regulations and guidelines, have made environmental liabilities a major issue in both the private and public sectors. The following discussions centre on:

- Potential liabilities of corporations, directors, officers, employees, and government personnel for contravention of environmental protection legislation and/or regulations;
- The importance of environmental audits in ensuring compliance with applicable laws and regulations; and,
- Aspects of legal concern with respect to audits including due diligence, disclosure of information, and confidentiality.

7.1 Environmental Liability

Environmental liability can arise in any number of ways depending upon the nature of the environmental problem and the forum in which such a problem arises. Liability for environmental offenses or harm generally arises in the context of one or more of the following:

- Prosecutions for federal or provincial statutory offenses;
- Prosecutions for breaches of municipal by-laws;
- Civil liabilities imposed by statute; and
- Common law or civil causes of action.

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*Note: The original text from which this section was prepared gives a more detailed discussion of most of the included topics. The reader is asked to refer to Appendix Document A, "Environmental Auditing Legal Issues," which is provided as an Appendix to the Environment Canada environmental auditing guidance manuals.

Recent enforcement activities at the provincial level, severe fines and other penalties in the CEPA and other statutes, make prosecutions a significant area of potential liability. Prosecutions may arise for any number of offenses including incidences of actual pollution and failure to prevent pollution, and failure to notify environment officials of spills or other reportable incidents. With the growing concern in Canada about the adequacy and consistency of enforcement of environmental laws, it is clear that the risk of prosecution is a major source of concern for corporate and personal liability.

Municipalities are entitled to legislate in the environmental sphere, by-laws which are passed setting out specific offenses and the penalties for their contravention. While the penalties that may be imposed in the event of successful prosecution are small compared to, for example, CEPA penalties, some municipal acts contain provisions allowing municipalities to utilize court orders and sanctions, including contempt proceedings to enforce compliance with by-laws.

The risk of civil suits, particularly following a successful prosecution, is an area of growing concern for both the private and public sectors. Civil liability for loss or damage as a result of a spill or discharge of a contaminant into the natural environment, has been given statutory recognition in some form in most provincial environmental legislation, as well as in CEPA (section 136).

In addition to the liability imposed by various environmental statutes, liability may also arise as a result of common or civil law causes of action even where no statute is breached. Such actions allow individuals or entities whose rights have been violated to sue third parties in civil actions for remedies such as compensation or restitution. The actions include the following:

- private or public nuisance;
- liability for harm or damage resulting from the discharge of inherently dangerous substances or things from the property in question;
- negligence;
- trespass to property;
- the right of the owner of the land bordering on a waterway to the continued flow of the water in its natural quantity or quality subject to the ordinary, reasonable use thereof by the other owners upstream; and,
- fraud and misrepresentation.

While these causes of action have existed for a long time and have been used to redress environmental harm before there was any legislation on the subject, the limits of liability in some of these areas is just beginning to be explored by the courts. The decisions that are being made are becoming benchmarks which promise to significantly affect the way corporations, individuals and government do business.

7.2 Persons Who May Be Liable

The law recognizes the possibility of convicting both corporations and individuals within those corporations who contribute to or commit an environmental offence. CEPA takes a different approach from some provincial acts concerning director and officer liability. Section 122 of CEPA imposes personal liability on directors, officers or agents of the corporation who directed, authorized, assented to, acquiesced in or participated in the commission of the offence by the corporation. Whether all directors and officers would be liable or only those more directly involved at an operations level will be determined on the particular facts of each case.

A further group of individuals who need to be especially aware of liability are those with direct environmental supervisory responsibility. The trend in court cases is toward prosecution of such individuals with or without the concurrent prosecution of the corporation. As such, any officers, boards of directors, or others who set up a framework where day to day activities which could cause pollution are carefully monitored, should be shielded from liability. The goal of a fully developed compliance/environmental management program, of which an environmental audit is a feature, is key.

CEPA, on the other hand, binds the Crown in right of Canada or a province. Part IV of CEPA is potentially very broad, relating to federal departments, agencies, crown corporations, works, undertakings, and lands. The Law Reform Commission of Canada has recommended that the federal government, its agents and servants should no longer claim the immunity statute that has been the norm in the past, except where such immunity is necessary for the public business of government. In addition, the Ontario Law Reform Commission has recommended that the Crown be, for the most part, subjected to the same laws as any ordinary person. If these recommendations are any indication of the "trend of the times", governments and their employees have reason to be concerned since some of their departments are involved in the provision of goods and services which might result in environmental harm or contamination. Courts are also responding to public interest groups and to the public's concern for the environment generally, by granting third parties the status or standing in court to sue government and government agencies for alleged contraventions of environmental laws.

Federal, provincial and municipal government actions can expect to be increasingly scrutinized, particularly in the developing area of environmental liability. The development of effective environmental assurance programs including environmental audits of government departments and facilities would alert government to those practices that could expose the government or its employees and agents, to liability or to public criticism.

7.3 The Importance of Audits and Compliance

The purposes of undertaking an environmental audit fall into three categories of which one or all three may be addressed in any particular audit;

(a) to determine the compliance status of the facility or department with applicable legislation, regulations, standards or policies;

(b) to identify potential liability, risks or hazardous conditions;

(c) to verify the existence and effectiveness of environmental management and control systems.

Environmental auditing for compliance has been a major driving force behind performing audits in recent years. However, determining whether a facility is in absolute compliance at any one particular point in time is sometimes difficult in light of the volume of federal, provincial and municipal laws and regulations that may be of concern. In addition, there are numerous guidelines, standards and policies, which, while not having the force of law, dictate the manner in which a facility is to operate. A lawyer and other environmental professionals well-versed in the regulatory requirements of facilities, can provide advice in this regard with respect to legal requirements including regulatory interpretations and reviewing the protocol and audit reports.

The importance of compliance with environmental laws and regulations cannot be overstated. The potential penalties associated with contravention of environmental legislation have become increasingly important. Environmental audits are accordingly a critical means of gathering sufficient information to determine, from a regulatory and risk management standpoint, compliance with laws and in the event of non-compliance, the steps to be taken to minimize or avoid liability and prosecution. They also are becoming a key component in prudent business planning.

However, the audit itself is but one element of a responsible environmental management compliance program. A management or compliance program ideally would include such elements as:

(a) the development and implementation of written policy statements endorsing compliance with laws;

(b) appointment of, and education of, environmental managers/coordinators with the duties and requirements of environmental legislation;

(c) on-going training of staff in effective performance of functions required by legislation, in particular with statutory requirements to notify environment ministries in respect of a spill and timely, adequate responses to environmental problems;

(d) ensuring the adequacy and accessibility of equipment and facilities to enable compliance to be achieved;

(e) establishment and updating of operating manuals and procedures and emergency/contingency plans;

(f) implementation of environmental protection programs and regular and continuous monitoring and maintenance thereof;

(g) timely communication with employees, including information updates, notices and reminders;

(h) planned and orderly recordkeeping, documenting systems and events; and,

(i) studies and programs directed to air, water, waste, spills and impact on land.

While an environmental management/assurance program cannot guarantee that present or future liabilities will be eliminated, the implementation of such a program will undoubtedly reduce the overall liabilities of an organization and the individuals responsible.

7.4 Due Diligence, Disclosure, and Confidentiality

Unless a statute expressly provides otherwise, the type of defence available for alleged non-compliance with environmental legislation is a defence of "due diligence"; that is, an accused may avoid liability by proving, on a balance of probabilities, that he took all reasonable care to avoid the particular event giving rise to the prosecution. However, courts have considered the following critical circumstances with which to assess the actions of an accused:

(a) the gravity of the potential harm;

(b) the alternatives available;

(c) the likelihood of harm;

(d) the degree of knowledge or skill expected of the accused; and,

(e) the extent to which the underlying causes of the offence are beyond the control of the accused.

Section 125 of the CEPA, as well as most provincial statutes, specifically codify the due diligence defence. It is in the content of the ability to rely on a defence of due diligence that a "compliance program" becomes important. The establishment of a comprehensive and up to date program is a minimum for compliance with directives of relevant legislation. Once in place, the proper maintenance and updating of such a program, so as to provide on-going evidence of reasonable preventive care, will go a long way towards establishment of a due diligence defence if such a defence becomes necessary. The environmental audit is one management tool that can be used to ensure that all existing or potential non-compliance concerns are identified and acted upon.

While environmental audits are an excellent management instrument, the audit may provide evidence against a company or government department or agency and its officials and negate the availability of a defence of due diligence. Accordingly, care should be taken in identifying the information that may be generated by an audit and in assessing whether some or all of the information generated should be protected from disclosure. Most information falls into one of the following four categories:

(a) reports or other information to be provided to government (eg. monthly activity reports on compliance);

(b) information required to be kept by an operator on-site and which is available upon request to inspectors;

(c) corporate policies, procedures, environmental operating plans, emergency spills response plans;

(d) internal memoranda, trade secrets, reports, minutes of meetings or other documents relating to non-compliance or to potential problem areas or harmful practices.

Information in categories (a) and (b) is confidential in that it is only disclosed to government departments requiring it. Disclosure of category (c) information is likely to be beneficial to a facility to evidence care and foresight for environmental protection. It is the disclosure of information in category (d) which is more problematic.

Disclosure of audit information may be of interest not only to government regulators, but also to other outside parties, such as business competitors, private individuals, stockholders, unions, environmental rights groups, and government lawyers. The disclosure of category (d) information to these persons could be harmful to the interests of a company, or a government or government agency conducting an Environmental Audit of its operations. To the extent that it is desirable or possible, information of a confidential nature should be protected from disclosure and treated as confidential.

Information contained in records held by a government department or agency may be disclosed to third parties by means of access to information legislation. Federally, the Access to Information Act creates a broad right of access to Canadian citizens and permanent residents to records under the control of federal government institutions. While the general principle embodied in freedom of information legislation is to provide public right of access to government records, there are protection against disclosure provisions built into legislation, for example, for trade secrets and information subject to solicitor-client privilege.

There are several ways to maintain the confidentiality of the audit results and documentation, such as:

- Create the minimum number of documents and copies which are necessary;
- Maintain an attitude of confidentiality through an emphasis on need-to-know information with employees, consultants or other third parties;
- Ensure that confidential documents are clearly marked as such; and,
- Limit distribution of the report to essential facility management and personnel.

Confidentiality of information is important to the operation of any company or government facility, but care should be taken to ensure that information is available when required by the environmental audit team. Facility management should communicate to the audit team any reluctance they may have in disclosing sensitive information, in order that both parties understand the consequences of withholding important audit evidence.

The Canadian Environmental Protection Act has incorporated some protective measures for businesses with respect to disclosure of confidential business information to public sources, unless disclosure is in the interest of public health, public safety, or protection of the environment. This applies to all information except trade secrets, where the Minister of the Environment deems the public interest to clearly outweigh any material financial loss or prejudice to the competitive position of the person or company who provided the information. Since there has been no court cases as yet interpreting these provisions, it is difficult to predict to what extent they will be applied.

In addition to protecting audit information by arguments of confidentiality or trade secret, another means to attempt to prevent disclosure of this information is to claim solicitor-client privilege. Solicitor-client privilege is concerned with communications between a solicitor

and a client in connection with legal advice and with such communications in connection with pending or contemplated litigation. As such, solicitor-client privilege may offer a viable means of halting disclosure of sensitive audit information. In this regard, care must be taken to maintain the confidential status of the audit report. Privilege is easily lost if the audit is not kept confidential and is released or communicated to third parties. There is a further risk that while the audit report itself may be privileged, internal memoranda and similar documents prepared as a consequence of the audit may not be. The latter may be equally or more damaging if disclosed or if recommendations are not acted upon. Admittedly, solicitor-client privilege greatly inhibits the utility of an environmental audit as an effective management tool. For this reason, such legal protection is infrequently sought. However, lawyers are increasingly recommending to their clients that audits should not be conducted without the protection of solicitor-client privilege.

WORKSHOP #1: WHAT IS RIGHT FOR YOUR FACILITY?

Every facility is different. They are different in the services they offer, the products they produce, the way they are managed, and the way in which they impact on the environment. The one common feature to all is that compliance with environmental regulations must be maintained.

The following questionnaire will assist facility management in determining the depth of the environmental systems which currently exist in the organization, in addition to creating an awareness of what areas may still require attention if more environmental control is desired. Management is asked to honestly assess each question and answer yes or no, whichever is most appropriate. The total number of yes answers will be used as a guide to the degree of environmental management which is currently in place.

INSTRUCTIONS

1. Answer each question yes or no, whichever is most appropriate.

2. Total the number of yes answers.

3. Refer to the classification given at the end of the workshop and determine the level of current environmental management at your facility.

4. Use the discussion to heighten your awareness of the possible level of environmental management which could be obtained, if it became a goal for the organization.

NOTES:

- "you" refers to associated personnel (environmental, production, administrative).

- "specific regulatory compliance requirements" refers to municipal, regional, provincial and federal regulations for your type of organization, business, or industry.

- "routinely" can be daily, weekly, monthly, yearly, etc.

- be truthful, this is not a test. It is in your best to determine what's right for you.

		YES	NO
1.	Are you familiar with the specific regulatory compliance requirements for discharges of wastewater from your facility?	____	____
2.	Are you familiar with the specific regulatory compliance requirements for both hazardous and solid waste storage and disposal at your facility?	____	____
3.	Are you familiar with the specific regulatory compliance requirements for air and noise emissions from your facility?	____	____
4.	Are you familiar with the specific regulatory compliance requirements for reporting and cleaning up spills which may occur at your facility?	____	____
5.	If your facility has had a warning or compliance violation notice from a regulatory inspector or agency, has immediate action been taken to rectify the situation? (Answer yes to this question if you have not had a warning or notice in the past).	____	____
6.	Does anyone at the facility routinely (on a schedule) monitor, test or have tested, and report on the quality of wastewater discharged from the site to the local sewer system?	____	____
7.	Is anyone at the facility responsible for waste handling and storage, and arranging for waste disposal at the facility including waste inventories, labelling, registrations, etc.?	____	____
8.	Does anyone at the facility routinely monitor, test or have tested, and report on, the quality of air emissions and ventilation effectiveness at the facility, including obtaining permits for emission sources (if required)?	____	____
9.	Does anyone at the facility routinely inspect and maintain equipment which would be used to contain and clean-up spills or would be used in an emergency situation?	____	____
10.	Does the facility have a written environmental policy which stresses compliance to all applicable environmental regulations?	____	____
11.	Does the facility have a written wastewater management plan and program including responsibilities for duties and standards for monitoring, reporting, treatment, and training?	____	____
12.	Does the facility have a written waste management plan and program including responsibilities for duties, and standards for handling, storage, labelling, and personnel training?	____	____

		YES	NO
13.	Does the facility have a written air management plan and program including responsibilities for duties, and standards for monitoring, reporting, equipment operation, treatment, and training?	____	____
14.	Does the facility have a written spill control and emergency response plan including responsibilities for duties, and standards for equipment inspections, response procedures, reporting, and personnel training?	____	____
15.	Does the facility have a comprehensive environmental assurance policy which incorporates the aforementioned plans and programs and ensures communication of the facility goals to all personnel employed at the site?	____	____
	TOTAL NUMBER OF YES ANSWERS	____	

NUMBER OF YES ANSWERS — **CLASSIFICATIONS**

0 - 5 — Managing for Compliance

Environmental controls at this level include those which address the specific requirements of environmental regulations with the intent of maintaining compliance only. Periodically, compliance is compromised due to the unforseen circumstances such as process upsets, non-routine operations, human error, etc. There are usually few on-going procedures such as monitoring, recording, and evaluating data associated with the facility's operations, to identify risks to compliance.

In order to increase environmental management from the compliance-only level, risks to compliance should be identified and those risks acted upon to reduce their probability of occurrence. The results of an organized risk management program include increased safety, increased efficiencies, and a greater possibility of on-going compliance in the long-term.

An Environmental Audit which investigates systems for compliance must still assess the facility control and equipment in place to maintain compliance. Some aspects of management systems must also be addressed during the Audit. Workshop #2 in this manual, called "Developing Environmental Goals and Objectives for Your Facility", will assist management in setting specific goals and objectives for the depth of investigation which is appropriate for your facility.

NUMBER OF YES ANSWERS	CLASSIFICATIONS

6 - 10 Managing for Performance Improvements

Environmental controls at this level include those which consider risks to compliance in the long-term. The controls in place can usually accommodate small process upsets, many non-routine operations, and some incidences of human error without compromising compliance. There are usually schedules for monitoring, recording, and evaluating data associated with the facility's operation, but not all schedules and routines are documented. These programs contribute to increased process or service efficienceles in the organization.

In order to increase environmental management from the performance improvement level, all related environmental functions should be brought together into a series of comprehensive management plans. Each plan should be fully documented and include responsibilities and functions of all personnel affected. These plans should be communicated to all staff and feedback mechanisms installed to ensure that the programs are understood and performed properly.

An Environmental Audit which investigates performance improvement through risk minimization must fully assess management systems in place in order to determine where further improvements can be made. Workshop #2 in this manual, called "Developing Environmental Goals and Objectives for Your Facility", will assist management in setting specific goals and objectives for the depth of investigation which is appropriate for your facility.

11 - 15 Managing for Environmental Assurance

Environmental controls at this level include comprehensive written plans or programs which consider minimizing impacts on the environment to a degree consistently greater than that required by regulations. The controls in place will help minimize the probabilities of adverse environmental discharges by using best management practices and ensuring that employee communication and contributions is maintained throughout the facility. Management has usually developed a facility environmental policy which clearly details the goals and objectives of the organization over a given time period. Budgets and planning for environmental affairs are given equal priority to other management functions.

An environmental audit which investigates environmental assurance practices, must fully assess existing management systems, programs, and policies to ensure that items which were previously not considered, do not "fall through the cracks". The degree of investigation and depth of analysis is great. Workshop #2 in this manual, called "Developing Environmental Goals and Objectives for Your Facility", will assist management in setting specific goals and objectives for the depth of investigation which is appropriate for your facility.

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1.0 THE IMPORTANCE OF GOALS AND OBJECTIVES

MANAGEMENT'S MESSAGE

1. The environmental audit program should provide assurance to management, identify and assess risks, and optimize environmental resources.
2. Through the audit program, management requires accurate information, employee support, legal guidance, strong communications, and a realistic budget.
3. Long-term and short-term environmental goals should be defined as part of audit program scope.

1.1 Policy Statement

The existence and effectiveness of an environmental auditing program depends on the policy set out by an organization's senior management. With specific guidance, other management and employees will have long-term direction in terms of performance.

Environmental policies may be separate directives or combined with general policy statements designed to sustain general operations. The intent of environmental policy development is to:

- protect the assets of the organization by ensuring long-term management of environmental risk;
- provide scope and direction to environmental auditing programs; and,
- ensure compliance to environmental legislation.

These points should be applied independent of the size or nature of the organization. The environmental policy might be formulated only to achieve compliance, or it may be part of a total environmental assurance program which stresses a full commitment to environmental excellence.

Policies also supply targets with which to measure environmental performance. The targets must be realistic with respect to the abilities of facility personnel, and address the time and budget resources required to achieve them. Performance measurements will be built into the auditing program by lower levels of management based on established policies, and be used to indicate adequacy of existing programs to achieve facility goals.

1.2 Rationale and Criteria for Program Development

1.2.1 Management Requirements

The development of an environmental auditing program is an ongoing management process, driven by the goals and objectives of the organization. Programs which are already in place provide information to management which can improve existing systems.

For an appropriate program to be implemented, management needs:

- accurate information (knowledge);
- support in attainment of policy directives by all employees;
- legal guidance for compliance issues;
- an accountability network;
- a strong communication mechanism (to and from staff);
- a realistic budget for program development and maintenance; and,
- trained personnel.

A large organization can often supply all of these requirements through existing staff and systems. Consultants are available to assist others who cannot formulate auditing programs on their own. With the help of environmental experts, management can audit their own processes and generate the information required to fulfil many of their environmental program needs.

1.2.2 Maintaining Program Development

Maintenance of environmental systems is a dynamic process. The programs monitored by the environmental audit program require periodic modifications due to changes in environmental regulations and guidelines, as well as alterations in existing facility processes. The initial analysis of facility operations gives information to management which helps to formulate goals for environmental performance and procedural optimization. As already discussed, progress toward attainment of targets is an important management indicator.

An initial assessment of program status is achieved by the initial environmental audit, which describes where the current program is lacking or is functioning satisfactorily. Management can gain information about where the program is now, and where it should be in order to comply with regulations, and to progress toward targeted performance levels. Thus by means of the audit, management can constantly monitor the status of its environmental programs and maintain their development in a proactive manner.

1.2.3 Realistic Budgeting Programs

The definition of organizational goals and objectives requires planning for future needs, and resource allocation for environmental programs which must be sufficient and realistic. Even if the audit is only compliance-oriented, it is important that monetary and personnel allocations do not restrict completion of the audit as intended. In addition, the maintenance of the program over time, and the establishment of reporting networks, must be addressed in the environmental budget.

Consideration must be given to both direct financial costs for the audit, and the indirect costs associated with disregarding potential environmental risks on a long-term basis. Financial planning must weigh the most cost-effective approaches for completing the audit, as well as the costs associated with forced compliance to environmental regulations. Short-term planning

of emergency programs to protect personnel from hazardous environmental events will be cost-effective when potential long-term compensation and legal costs are taken into account. Budgeting for these factors is important in achieving the objectives set out by management.

1.2.4 Impact of Public Accountability

In setting goals and objectives, and developing an audit program to manage environmental concerns, management must consider the organization's contribution to society. Programs should be designed to address the impacts of a product, process or service on the environment and the public. These are areas of importance to most companies, but especially concern government departments and agencies.

Government facilities must have clear objectives to serve the public in a top quality manner. Because employees are seen as direct government representatives, they must set an example of required action in environmental programs. Legislation such as the Canadian Environmental Protection Act outline stringent measures for environmental compliance and risk assessment for federal facilities. These departments are providing leadership to the country, and are directly accountable to the public.

1.3 Long-Term and Short Term Goals

The scope of an environmental audit program is determined by the short-term and long-term goals of the organization. Short-term goals may be included as the vehicles for attainment of longer-term targets, providing an easier means of measuring progress towards future requirements.

A limited scope environmental audit may have compliance as its only major objective. In this case, performing the audit might be the target in the short-term, while acting to achieve compliance would constitute a longer-term objective. Maintaining compliance might only be considered once initial compliance is realized.

In the context of using the environmental audit in a proactive sense to develop environmental assurance programs, some of the short-term goals of management might be:

- to define the scope of the audit;
- to initiate measurement and reporting programs for environmental control;
- to widen communication channels and keep management informed of concerns; and,
- to identify major areas of environmental program deficiency.

Long-term goals may include:

- maintaining compliance:
- anticipating new regulations;

- identifying and minimizing risks;
- stream-lining processes and material usage; and,
- reducing costs associated with environmental protection.

Defining these goals, and the amount of time allotted to achieve them is a process unique to each organization performing environmental audits. The scope and emphasis of the audit is driven by these goals, and management must consider the impact that a chosen methodology might have on operations.

2.0 ACCOUNTABILITY FRAMEWORK

MANAGEMENT'S MESSAGE

1. Senior management is responsible to the organization for providing direction, setting goals, and supporting environmental protection programs.

2. All levels of management, including the legal department, are accountable to one another for actively pursuing, reporting on, and following up on the organization's environmental concerns.

2.1 Top Management Support

As the top level of management and the primary representatives to the public, the board of directors must give responsible guidance to an organization's activities. Just as in government structure, the managing directors draw upon advisory personnel who take care of the finer details of operations and provide solid back-up information upon which directors can base decisions. If top management does not support general programs, such as environmental protection, then the specific programs, such as environmental auditing, cannot be carried out in a conscientious manner.

Certainly, top management support will lead to appropriate resource allocation for environmental auditing. Communication networks will be enhanced, and employees will know that a firm commitment has been made to provide environmental protection. In turn, this commitment to environmental planning must be reciprocated by the actions of the rest of the organization and give the board of directors confidence in the environmental programs they have mandated.

2.2 Roles and Responsibilities

The different levels of management as detailed below, are provided as a guide to the responsibilities of the management functions, and not necessarily of specific levels which exist in every company or government department. Smaller organizations may incorporate several levels into one management group, or even one management person. The management structure shown here is classical, and should be used loosely to determine accountability within the environmental auditing program. Figure 2.1 gives an outline of responsibilities and reportability of different management levels.

CORPORATE MANAGEMENT

As the level which responds to the board of directors, corporate management is responsible for the overall operations of the organization. Corporate management may include heads, vice presidents, etc. of operations, research, development, finance, and other areas. The direction given to the environmental management system, and the departments responsible for administering the programs, are allocated from this group, as are decisions

regarding budgets and emphasis of the program. Feedback to corporate management will be general, highlighting environmental concerns, potential problems, and performance of the systems already in place. The scope of the environmental auditing program will be defined.

OPERATIONS MANAGEMENT

Operations management is the primary hands-on group associated with running a specific department. This level of management could include the plant manager, production manager, maintenance manager, etc. Environmental affairs are one aspect of environmental responsibility to corporate management, mainly with respect to major problems which could disrupt the operations of the facility. The environmental audit program is co-ordinated directly at this level.

Operations management delegates specific responsibilities to facility managers and environmental staff, who are accountable for providing feedback on the status of the environmental programs in place. Administration of risk assessment programs performed in conjunction with the audit, and the action plans of environmental managers and staff, are conceived at this management level.

FACILITY/DEPARTMENT MANAGEMENT

The overall management of environmental programs, as well as other day-to-day facility operations are the direct responsibility of the facility or department managers, who would include personnel responsible for specific divisions such as chemical treating or product assembly. These managers have a focus to get results through the environmental department regarding the status of the environmental audit and the associated reporting mechanism. Follow-up programs would be initiated and performance of environmental programs monitored. Facility or department management is accountable throughout the management system for the maintenance of safe environmental practices.

ENVIRONMENTAL PROTECTION MANAGEMENT

Working in conjunction with operations and facility managers, the environmental manager is responsible for direct action taken with respect to environmental audit recommendations. Many of these recommendations arise from analysis done by environmental staff, and as advisors, environmental management must ensure that a complete understanding of issues is achieved. The audit may also be used by other management levels to provide an unbiased assessment of the environmental department's effectiveness. In this case, independent experts would be responsible for audit execution.

LEGAL COUNSEL

Legal advisors, whether they form a separate department, or come from outside the organization, help management at all levels identify appropriate regulatory and environmental liability concerns. The scope of the environmental audit should be set with significant input from legal consultants to ensure that both long-term and short-term regulatory compliance is achieved. Audit procedures and documentation must be sufficient to protect management

from legal prosecution in the event of an environmental occurrence. Legal counsel is an important component of the planning stages of environmental systems, and must maintain appropriate documentation regarding specific responsibilities of those personnel involved in the environmental audit program.

2.3 Developing Audit Program Performance Measures

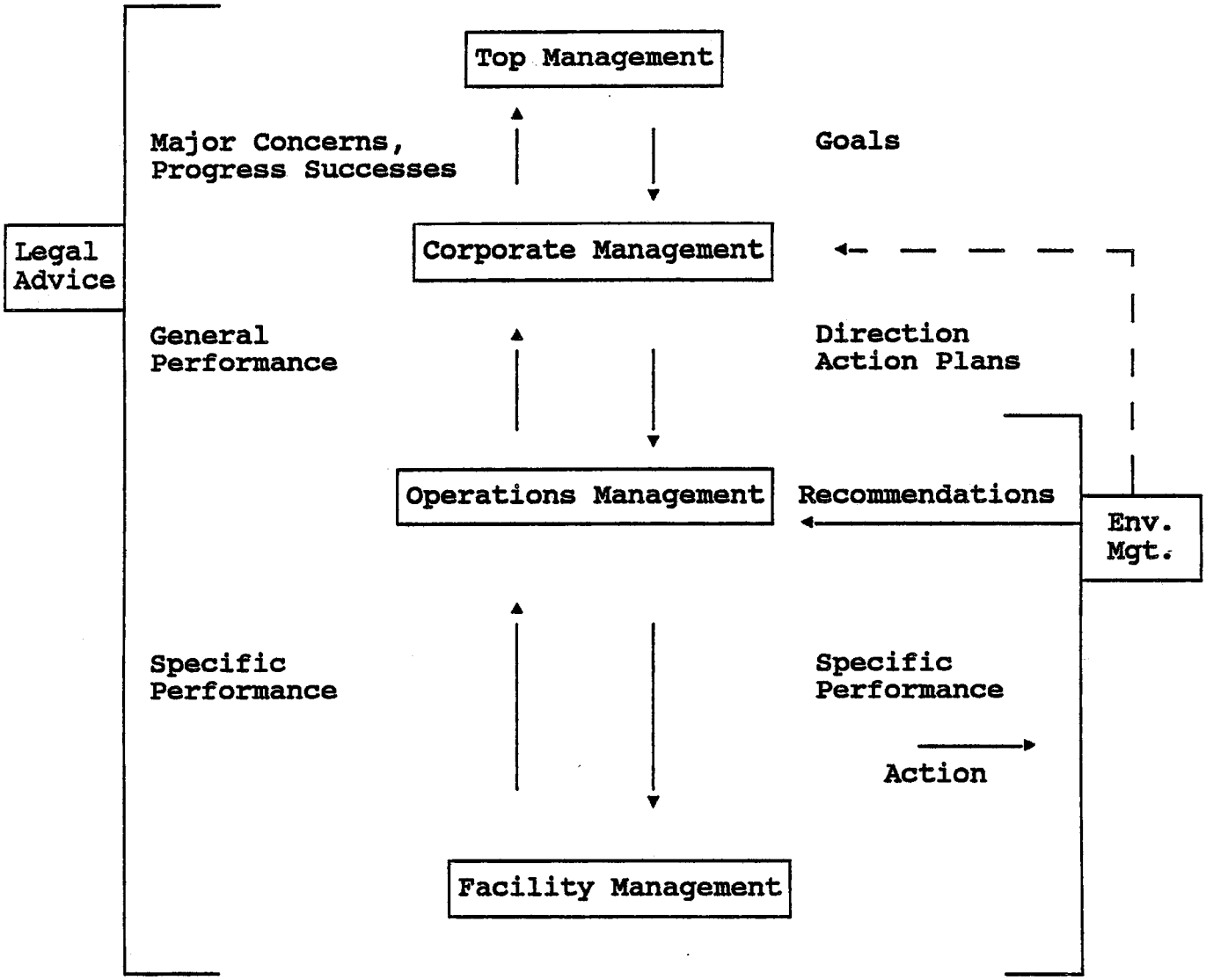
An integral part of the auditing program is the evaluation of the raw data from the audit to develop relevant performance measures. Indicators must be set up that generate the feedback required by management, specifically those that measure the performance of the audit documentation, reporting, and evaluation procedures. Determining adequacy of the auditing program is a function of the accuracy of the performance measures, which should be appropriate in the context of environmental regulations and established policies. Internal quality checks within the system should also be included to ensure that the auditing program generates unbiased feedback.

2.4 Responsible Reporting to Short-Term and Long-Term Goals

Reporting of environmental results and recommendations is vital to ensure the support of management's environmental policies. Since information is time-sensitive, current, accurate documentation must be available to all levels of management in order to maintain efficient environmental controls. Up-to-date information would also be required to defend management directives from a legal standpoint, with respect to government regulations, and public accountability. Key personnel throughout the management hierarchy must be given responsibility for, and take charge of, generating relevant reports, and ensuring that these reports are read and acted upon. This "stewardship" of the reporting process is an important component of the environmental audit program and requires responsible, timely action from committed personnel, so that short-term and long-term environmental goals can be attained.

FIGURE 2.1

ACCOUNTABILITY NETWORK FOR ENVIRONMENTAL AUDITING



3.0 THE PRINCIPLES OF ENVIRONMENTAL AUDITING

MANAGEMENT'S MESSAGE

1. An environmental audit includes more than a surface assessment of environmental systems.

2. The audit should include top management support, line management involvement, auditor independence, a comprehensive methodology, verification of evidence, relevant standards, consistency, and integration into the environmental management system.

There are a number of principles for effective environmental auditing that define the approach and establish the difference between an "audit" and an "assessment". These principles include:

- Top Management Support
- Line Involvement
- Auditor Independence
- Comprehensive Methodology
- Evidence and Verification
- Relevant Standards
- Consistency
- Integration

TOP MANAGEMENT SUPPORT

The commitment to the environmental audit process must start at the top of the organization. Because the process is so broad in its sweep, top management support and direction is required to ensure co-operation throughout the management structure. As well, the resources for the program, both financial and manpower, are extensive, requiring management to be committed to the process of continuing environmental improvement, in order that the necessary budgets will be approved.

LINE INVOLVEMENT

A successful program requires commitment and co-operation through the full line management structure as the elements of environmental performance touch on many small parts of a wide variety of jobs at the facility. From this point-of-view, broad co-operation will be required as the audit impacts on routine process operations. For example, during the on-site investigation, some normal operations may require rescheduling as selected staff are requested for interviews. The importance of disclosure is also emphasized. All staff are encouraged to *disclose anything they are asked, as the audit process is an internal review system for* improvement.

AUDITOR INDEPENDENCE

Environmental auditors must be independent from the activities that are being audited. If they are not, objectivity and credibility are jeopardized. Normally, this means the audit is conducted by individuals external to the audited facility, such as environmental personnel from other company locations or external auditing consultants.

COMPREHENSIVE METHODOLOGY

The difference between a site assessment and an audit is that the latter requires a detailed, rigorous methodology. In addition to comprehensive protocols, the audit is conducted with formalized procedures. For example, the development of auditor's notes or working papers allows for the checking and cross-checking of complex information.

EVIDENCE AND VERIFICATION

The concept of evidence and verification of an environmental deficiency is another element that sets the audit apart from simpler assessments. This implies a more sophisticated level of investigation where initial statements or perceptions are not taken at face value. Facts must be confirmed or verified, sometimes by assembling together seemingly unrelated information.

RELEVANT STANDARDS AND MEASURES

The standards and measures of environmental performance must be relevant and accurate to the organization. The validity of the measures will depend on how meaningful the findings and recommendations will be for the facility.

CONSISTENCY

Consistency in the approach will be important to maintain quality control and a consistent level of performance across the organization. The audit should be true to the comprehensive elements of the program and should not be applied with varying levels of rigor at the individual sites. Each audit should be comprehensive and applied the same way from site to site and from year to year.

INTEGRATION

The environmental audit is one component of environmental management and not a substitute. It is an internal department tool used within the context of the broader environmental management program.

4.0 CONDUCTING AN ENVIRONMENTAL AUDIT: AN OVERVIEW

MANAGEMENT'S MESSAGE

1. The audit can be divided into three stages: pre-audit activities, on-site investigation, and audit analysis and reporting.
2. Pre-audit activities are conducted to prepare for and maximize the usage of time needed for the on-site work.
3. The on-site investigation is used to collect and verify information on environmental control performance.
4. The audit analysis and reporting determines recommendations and communicates them to the proper personnel.

The purpose of this section is to discuss the elements of an environmental audit. The audit can be divided into three main stages, those being pre-audit activities, on-site investigation, and audit analysis and reporting. An overview of the audit process is included in Figure 4.1.

4.1 Pre-audit Activities

The pre-audit activities are designed to prepare for the audit. This is important to ensure that on-site time is used effectively. The objectives and scope of the audit are developed at this time to ensure that the audit will meet the needs of management, and consider all environmental control systems and risk situations.

4.1.1 Setting Objectives and Scope

Accurately defining the objectives and scope are very important to an audit as this will determine the depth of the investigation. To a large extent the objectives of the environmental audit will be governed by top management policies. The minimum goal of the audit is to satisfy management that the facility's environmental management systems are sufficient to satisfy government regulations. The audit can also be designed to assess the requirements of developing additional programs which perform over and above regulatory standards. Workshop #2, "Developing Environmental Goals and Objectives for Your Facility" (pg. 74), will assist management with the development of appropriate environmental goals of a more general nature.

In addition to the requirements of upper management, facility management will also have objectives. For example, a new waste management plan may have recently been implemented. The environmental audit provides the means to evaluate the new plan.

After the audit objectives have been identified, it is necessary to define the scope or boundaries of the audit. The scope primarily determines what areas of environmental control are to be investigated and the depth of the investigation. In addition, these factors must be weighed against cost. The more items included in the audit and the deeper the investigation, the more costly the audit will become.

The scope of an audit may be defined to evaluate a specific procedure or area of environmental control. For example, the audit may be directed to evaluate waste management procedures. However, a more comprehensive scope may be necessary to fully assess environmental risks.

Once the objectives and scope of the audit have been finalized, the protocol should be modified to reflect these requirements. The protocol is a formal tool that guides the collection of evidence in order that the objectives of the audit are met within the specific scope. In order that the auditors are as efficient as possible, a procedural manual for the development of environmental audit protocols accompanies this document. The areas of environmental control addressed in the protocol are:

- Waste Management;
- Air Management;
- Wastewater Management;
- Spill Prevention, Control and Emergency Response; and,
- Land Impact and Site Management.

4.1.2 Audit Team Selection

The quality of the audit will be determined by the quality of the staff undertaking the review. The number of members in the audit team will vary from one person to many, depending on the size of the facility and objectives and scope of the audit. The following is a brief list of necessary skills required on an audit team.

- Professional Auditing Expertise
  - To provide skills in verification strategies, accepted auditing standards and a general understanding of the approach and intent of the audit function.

- Management Systems Experience
  - To lend expertise and knowledge regarding both the environmental management systems in place and the overall information system and reporting requirements.

- Engineering and Environmental Training
  - To provide insight into technological applications relevant to the needs of the facility.

- Scientific Qualifications
  - To identify hazards or potential hazards in a particular situation or operation (eg. groundwater contamination).

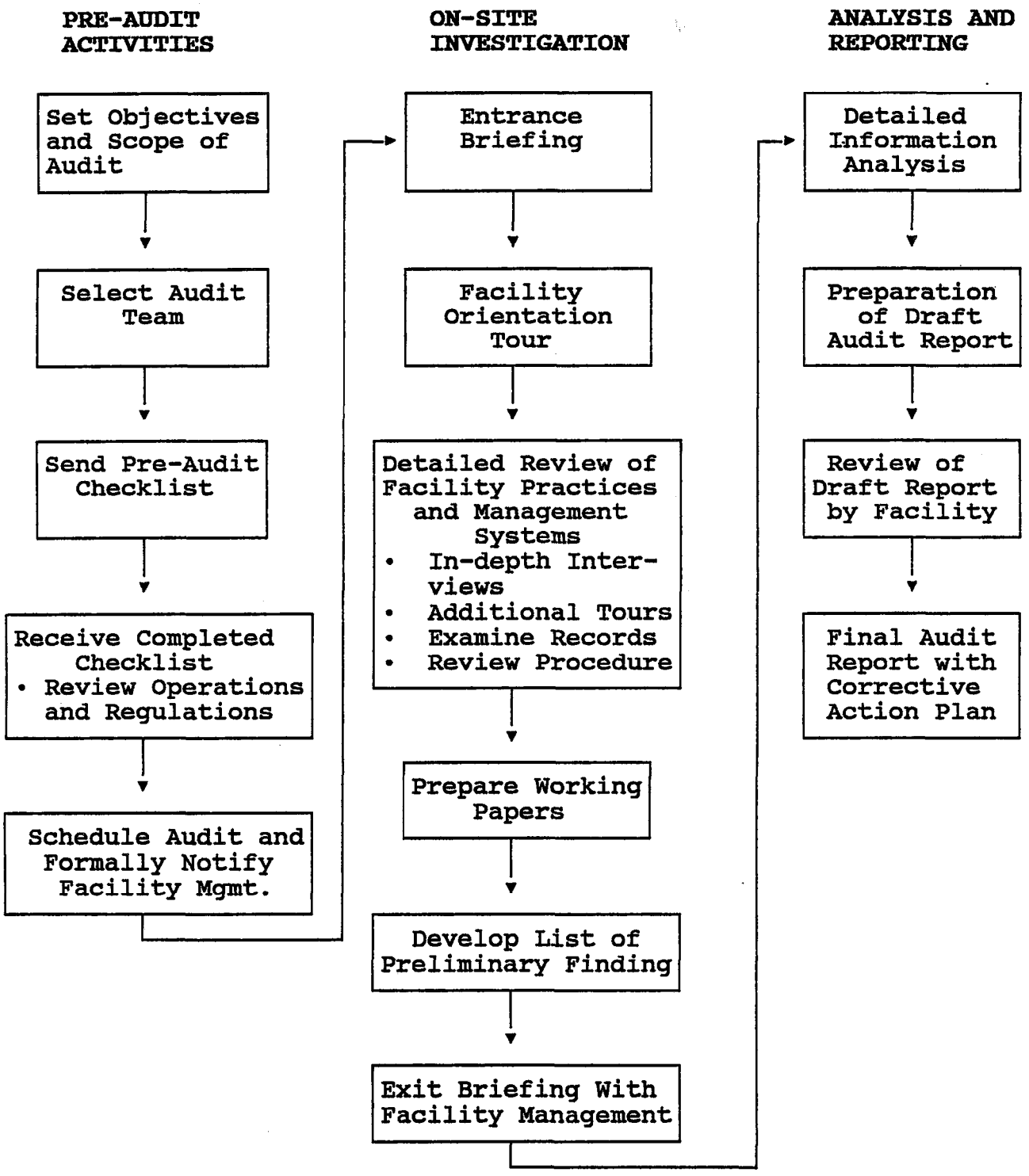
- Familiarity with Operations
  - To ensure the facility being audited is being fully examined by individuals who are knowledgeable regarding the processes and established procedures.

- Regulatory Affairs Expertise
  - Knowledge of relevant laws and regulations that apply to the facility operations.

The audit team may include the environmental co-ordinator, facility staff, and/or consultants in order that as many of the above skills and knowledge are included. It is important that the members of the team be objective. This may be particularly important if staff members are used. If facility personnel conduct the audit for parts of the facility for which they are responsible, personal bias could influence their investigation.

FIGURE 4.1

SCHEMATIC OVERVIEW OF THE AUDIT PROCESS



Patterned after figure from EPA "Environmental Audit Program Design Guidelines for Federal Agencies", Washington, D.C. August, 1989

4.1.3 Pre-audit Review of Regulations and Operations

The audit team members should have a working knowledge of the regulations that apply to the audit location. A list of relevant federal, provincial, and municipal regulations should be prepared for review and familiarization by the audit team.

A checklist sent to the facility manager is one way of facilitating the collection of data required prior to the on-site investigation. The checklist provides a summary of the facilities at the site. This information is important in areas such as setting the agenda and audit team selection. For example, the returned checklist may indicate that the facility has a water treatment lagoon. In this case the audit team should include someone who can effectively evaluate the performance of this water treatment technology.

At this time, the auditors should also request that additional information be assembled for them. The types of information that may be requested include:

- facility organization chart with staff names and job titles;
- blueprints of the facility, especially a site plan, sewer plans, specifications of wastewater treatment and air emission controls, etc.; and,
- all permits on file for compliance to government regulations.

4.1.4 Audit Scheduling and Formal Notification

Based on the information reviewed so far, dates for the on-site work should be scheduled, providing the audit team and facility management ample time to prepare. It is important that staff be given sufficient time to collect the information requested by the auditors. Typically, 4-6 weeks is required.

The duration of the on-site work will vary depending on the objectives and scope, the size of the facility and the manpower available to conduct the audit. An agenda based on the information collected before the audit should be assembled to ensure efficient usage of time on-site. The time required for the audit will depend on the size of the audit team, but it is assumed that larger teams will be assigned to audit larger facilities. In this context, the on-site work typically requires between 2 and 5 days.

The audit team should confirm in writing to management the date that the on-site work will commence. This should include a summary of the objectives and scope of the audit as discussed by both groups, as well as a letter to be distributed to those personnel affected by the audit that the audit will be taking place. The audit team or management should distribute this notification. An example of such a letter is included in Volume 2, "Environmental Audit Protocol" accompanying this document.

4.2 On-site Investigation

The on-site investigation is usually referred to as the audit. It is during the on-site investigation that much of the information gathering will take place. During this intensive investigation, the protocol is used to direct the auditing process.

4.2.1 On-site Audit Briefing

The on-site work should begin with a meeting between the audit team and senior management. The meeting allows the two groups to review and discuss the objectives and scope of the audit, including the management structure of the organization and the associated communication networks. Operations are reviewed as well as any background information required. The meeting is also used to co-ordinate the audit activities. The audit team should begin setting up detailed tours of the site facilities at this time. As well, interviews with in-plant staff can be arranged.

4.2.2 Detailed Site Tours

The second step in the on-site investigation is to conduct detailed site observational tours of all operations. The personnel conducting the tours should be familiar with the operation being reviewed so that processes can be explained and any questions the auditor may have can be answered. It should be noted that this is not an interviewing procedure, so questions should be kept brief and to the point.

The tours have several purposes. The tours will provide the auditor with an understanding of the various processes. This will allow the auditor to better evaluate how the processes or procedures might affect the environment, both during normal operation, and non-routine operations such as start-up. The site tours are also important for identifying the environmental control techniques for the various processes. The control technology can then be evaluated through the interview process and review of documentation.

The detailed site tours are also useful for observing obvious inconsistencies and deficiencies. These observations will include visual staining around the site, unlabelled waste drums, poor housekeeping and so on. The deficiencies should be noted so that they can be investigated through the interview process and documentation review. For example, if staining is observed in a particular area, the auditor could tailor some of his or her questions specifically towards spills. Also, spill reports applicable to the area would be examined.

It is important that the auditors give equal weight to examination of systems which perform efficiently. Information gathered in this context can be used as examples of properly run processes which can be applied to other, less efficient areas. In addition, auditor interest directed toward good employee and system performance will encourage continued good performance and environmental risk minimization.

4.2.3 Interviewing and Evidence Gathering

The majority of the on-site investigation will be spent gathering evidence in order to develop and support conclusions regarding the environmental performance of the facility.

Evidence is obtained through interviews with employees, observing work practices, examining process and control equipment, and reviewing documentation such as waste manifests, spill reports, procedural manuals and so on. The auditing team may require copies of some documentation to take with them for further review. This is beneficial as it allows the audit team to concentrate on the aspects of the investigation that can only be done on-site, such as employee interviews, tours, and site observations. In general, the audit team cannot take too much information.

The evidence is used to evaluate management systems and communication of control procedures through the different management levels. Application to all facility employees is included. As well, the performance of environmental controls noted during the detailed site tours will be investigated further.

The collection of evidence is directed by the protocol to ensure consistency in the approach of the audit. It details the steps an auditor must take in meeting the objectives of the program. However, it serves only as a guide to direct the auditor and to ensure all issues have been fully addressed. The evidence gathering is at the discretion of the auditor, as it is his or her investigative techniques that determines the effectiveness of the audit. The audit protocol also serves as a record of the tasks that have been completed. It is therefore important that deviations from the protocol be recorded.

It is important that auditors realize that one piece of evidence does not prove that a finding is true or false. Once a finding has been made, the auditor must then look for further evidence in order to verify it. For example, a comparison of the waste inventory and waste manifests may show there is no record of shipments of a particular waste, indicating it may be disposed of improperly. Asking one of the wage staff what is done with the waste may confirm the waste is disposed of improperly or it could also be that there is no record of disposal because the waste is recycled.

One of the primary sources of evidence is interviews with employees. This includes all staff levels from top management to wage staff. The interview should be scheduled ahead of time. Also, the auditor should not allow the interview to exceed the agreed-upon time limit without checking that the worker has no objections. Note that, in general, a series of short interviews are more effective than a few long ones.

The auditor should be well prepared for the interview to ensure the desired information is obtained. The name and job title or responsibilities should be known and recorded before beginning the interview. In addition, the auditor should know what information he or she requires. The protocol and information obtained in the audit to this point will determine much of what is required.

The interviews are generally informal, taking place at the worksite, but usually in a private room. This is normally more comfortable for the worker, and allows he or she to demonstrate a point if need be. However, it is also important that discussion be conducted away from other workers so that he or she feels free to disclose information.

To obtain quality information, it is important that a good rapport be established with the worker. A personal introduction, as well as a discussion of what the auditor is doing and the purpose of the information, will help the employee to relax. The auditor should be sensitive to the worker's nervousness and show genuine interest in his or her views.

When asking questions, the auditor should avoid if possible those which result in yes or no answers. Also, leading questions may result in opinions in anticipation of what the employee thinks the answer should be. Listening to the worker's answers is important, not only to ensure that the information is understood, but also to demonstrate that what he or she has to say is important. One method of demonstrating that the auditor is interested is summarizing the information and repeating it back. This also gives the worker the opportunity to correct any misunderstandings.

During the interview there are a number of things the auditor should do to ensure accurate unbiased information. The auditor should stress his or her independence, and minimize adding outside information or comments to employee answers, either verbally or through body movements, such as shaking the head. While the information from the interview must be recorded, note taking should complement the interview process. Tape recorders should never be used. However, if no notes are taken, the worker may become offended that his or her information is not important.

4.2.4 Management Presentation

At the end of the on-site work the audit team presents preliminary findings to company management. The immediate feedback is important to keep management informed and to show thanks for their help and co-operation. Because a detailed report will require extensive analysis of the data collected, the preliminary report will give management an indication of the results of the audit and major areas of concern.

The meeting should be relaxed and friendly, involving management directly concerned with the audit, and the audit team. The findings presented should include not only deficiencies, but also the systems that perform well. It should be stressed that the purpose of the audit is to help improve environmental controls, not to criticize existing procedures.
The exit meeting should address:

- required information not found during the audit;
- immediate environmental concerns of a compliance nature and those which present risks;
- general performance of the environmental management system;
- possible recommendations;
- time required to analyze information and write report; and,
- additional management inputs.

4.3 Audit Analysis and Reporting

Analysis of the information collected during the on-site work is critical to the audit process as all the post-audit activities are based on the information contained in the report. The analysis and the report writing are both very time-consuming parts of the audit process.

4.3.1 Information Analysis

It is during the information analysis part of the audit that most of the thinking is done. The audit team must look at all the pieces of information and relate them to one another. It is during the evaluation of the findings that talent and past experience in environmental auditing are most important.

4.3.2 Findings and Draft Report

The audit report is one of the most important elements in the audit process, but it is also the most time-consuming. The purpose of the report is to provide management with information on the results of the audit, consistent with the original objectives and scope. The report should demonstrate the need for corrective action and also recommend solutions, thus initiating corrective action.

The audit report will contain a number of recommendations for correcting issues of non-compliance and improving environmental management systems. In addition, management may require that the audit provide cost estimates for remediation. The audit report writer may find it necessary to discuss options for remediation with corporate management before costing the recommended programs.

The report writing must be clear and concise, using familiar terminology. The report will be read by a variety of people with varying levels of knowledge regarding facility operations and environmental management. The results of the audit should be presented in a factual and specific manner, using numbers and dates to verify conclusions where possible.

When reporting a situation that is out of compliance, the specific regulation or policy should be stated. In addition, a brief statement as to why it is out of compliance is helpful, as some of the intended audience will not be familiar with the regulations and policies. Finally, the report should include an Executive Summary to present a summary of the audit findings and important recommendations.

4.3.3 Client Review of Audit Findings

The draft report is reviewed by management to ensure the information it contains is correct and that it meets the objectives of the audit. The distribution of the draft report is limited to specific personnel as it may contain inaccurate information that could reflect poorly on the facility operations. The environmental audit is a legal document, requiring review by a lawyer to ensure that the wording will not implicate management or staff for non-compliance to environmental regulations.

4.3.4 Final Audit Report

The final report is issued after the initial changes requested by management have been made. The final report has a more general distribution, including the organization's directors. Also, as one of the purposes of the audit is to improve environmental performance, middle management may also receive copies. However, the audit may contain information regarding non-compliance with regulations or other sensitive information and therefore should be considered to be a limited distribution document within the organization. The action plans and associated programs that result from the report recommendations should become widely circulated to affected personnel to ensure proper program implementation.

4.3.5 Audit Presentation to Management

The audit presentation provides the opportunity for facility management and the audit team to discuss the final recommendations of the audit. The audit team should be well prepared for the presentation to ensure that all the important issues are addressed. As most of the individuals present will be familiar with the preliminary audit findings presented in the Exit Meeting, the discussion will centre on the recommendations. The discussion will allow management to get feedback from the auditors regarding remediation plans. The presentation therefore acts as a means of initiating the audit follow-up program.

5.0 REPORTING AND COMMUNICATION

MANAGEMENT'S MESSAGE

1. The audit report is a vital link in the auditing process, and should include well-defined objectives addressing an organization's management policies.

2. The content of the audit report should be appropriate to the need of the target audience and should contain accurate information and prioritized recommendations.

5.1 Audit Report Purpose and Content

PURPOSE AND OBJECTIVES

In order that the audit report is properly compiled, its purpose and objectives must be defined. The objectives should reflect top management policies. In general, the audit report provides information on the status of environmental programs with respect to internal standards or expected performance. The information is used by various levels of management to address compliance issues, areas where programs were not previously maintained or thought to be of concern, and policy directives that could not be readily measured, such as environmental awareness and job effectiveness.

The basis for follow-up is also delineated in the audit report. Action plans to be initiated by facility management are given clear definition in relation to remediating environmental problems. Documentation procedures are outlined for uses in follow-up, in legal defence, and for reference purposes. The communication aspect of documenting the audit procedure ensures that the audit is performed conscientiously, with performance to goals reported, and non-compliance issues dealt with.

CONTENT AND FORMAT

The content and format of audit reports depends upon the target audience. The major report derived from the audit findings will be discussed in this section, while the smaller communicative reports for upper management are discussed in Section 5.2, specific to the needs of the management group in question. A preliminary report of major audit findings should be drafted immediately after audit completion, for immediate inspection by management directly involved in overseeing the auditing program.

The audit report should contain:

- Accurate information
- Clear, concise information, including
  - program elements which are sufficient or lacking
  - performance with respect to management goals

- specific, pinpointed examples to convey information accurately (be direct)
  - schedules used
  - documentation used
  - reference to regulations
  - departments concerned, as opposed to names of personnel

- Depth of problems, priority of concern

- Deficiencies and efficiencies

- Audit details
  - purpose and scope
  - description of audit team
  - time period covered by audit
  - processes, procedures, areas covered

- Legal review

- Reference to all sections of the protocol

A typical report format would include sections for introduction, summary, description of findings, recommendations, and appendices if required. The recommendations are the most important as it is from these suggestions that action plans are derived. Within the report, content can be organized by directed program (air, water, waste, etc.) or by environmental issue (regulatory compliance, performance, risks, etc.), using the other group as sub-headings. Figure 5.1 shows a typical organization of the audit report. Typically, the report will be organized following the protocol format, which results in overall consistency throughout the auditing system. Consistency between reports from different audits performed at different times or locations of the same organization also enhances the communication process.

5.2 Objectives and Needs of the Target Audience

Depending on the audience in question, communication from the audit must meet the needs of the specific group, from directors to the actual auditing team. The chain of reporting up and down the management ladder is enhanced by tailoring reports to an organization's policies, and including a level of detail appropriate to the group reading the report. The following paragraphs address the reporting requirements of those personnel involved in the environmental auditing program.

DIRECTORS

Since an organization's policy is formulated directly at this level, the directors require general information on performance of environment programs to these goals. Major concerns must be highlighted and an assurance given that these concerns are being addressed in an organized and conscientious manner. Such assurances, and the reporting of efficient environmental performances, build confidence in the environmental management system, and give directors a solid foundation upon which to base environmental policy decisions, as well as public relations programs.

CORPORATE MANAGEMENT

Corporate management, as the managers of operations management, are responsible for overseeing the performance of lower levels of personnel with regards to action plans and specific environmental concerns. A report to this level requires more detail than the director's report, but not so much as to cloud the major issues. Financial resources for the audit program may be allocated from this group, depending on the organization.

OPERATIONS MANAGEMENT

Operations management must be made aware of serious environmental risks that may put facility production, safety, or compliance programs in jeopardy. Potential for major environmental events must be outlined. Administration of programs for achieving overall goals and for thorough communication are also objectives of operating management. In small organizations, assistance in problem solving may be required from these managers, so reports directed to this level must contain details on recommendations from the audit as input to the problem solving process.

FACILITY MANAGEMENT

Facility management require direct performance measures, both positive and negative, from an audit report. These are used to initiate action required for regulatory compliance and environmental risk reduction. Findings must be prioritized, accurate, and direct to enable management to have confidence in the solutions they implement.

ENVIRONMENTAL PROTECTION MANAGEMENT

As technical and organizational support staff, this group requires knowledge that facility personnel understand environmental responsibilities and can recognize when deficiencies are present. Sufficient detail and explanation must be contained in the audit reporting to enable solutions to existing problems to be formulated, and used in other areas of the facility as applicable. Depending on the organization, the performance of environmental management personnel may also be subject to auditing to ensure unbiased audit results.

ENVIRONMENTAL STAFF

Environmental staff act as hands-on extensions of facility and environmental protection management. Specific details of environmental programs are put into effect by maintenance and improvement of existing systems. The audit report required by environmental staff is similar in scope to that of facility management, differing only in the larger quantity of background information required to make effective operational changes.

LEGAL COUNSEL

In advising the management hierarchy in environmental affairs, legal counsel requires a detailed audit report targeting personal accountability for maintenance of environmental protection programs. Areas of potential non-compliance must also be highlighted. Management must indicate those departments responsible for instituting and maintaining specific environmental programs, as well as defining the time frame for action, and the follow-up performance measures required.

AUDIT TEAM

Information required by the audit team comes from all management levels. Management must supply clearly the scope and emphasis for the audit by way of a detailed protocol and outline of environmental policies. In doing so, the audit team will comprehensively investigate all environmental areas which must be assessed, and document and report the findings to the various management levels. In addition, the audit team should report any minor upgrades that have been implemented as a result of the audit being performed.

FIGURE 5.1

TYPICAL ORGANIZATION OF AUDIT REPORT CONTENT

BY DIRECTED PROGRAM

1. Air Quality

   - compliance
     - -regulated
     - -company policy
   - program performance
   - major risks

2. Wastewater

   - compliance
     - -regulated
     - -company policy
   - program performance
   - major risks

etc. for other directed programs

BY ENVIRONMENTAL ISSUE

1. Regulated Compliance

   - air
   - water, etc.

2. Internal Policy Compliance

   - air
   - water, etc.

etc. for other environmental issues

6.0 ENVIRONMENTAL AUDIT FOLLOW-UP PROGRAM

MANAGEMENT'S MESSAGE

1. In order to ensure that audit recommendations are acted on, audit follow-up procedures should be used to manage the implications of the recommendations.
2. Audit recommendations must be prioritized consistent with policy and best management practices.
3. Action plans are important elements for implementing audit recommendations.
4. Audit follow-up procedures should be documented and reported to appropriate management groups to maximize protection from potential legal prosecution.

The audit follow-up procedures are an integral part of the environmental audit program. Deficiencies in the environmental systems are identified in the audit report, but there is a need to ensure that the areas of potential liability are corrected. In order to ensure that the recommendations are implemented, it is necessary that the audit be followed by a program that effectively manages the recommendations. This program should include reporting to document the actions taken.

In the audit follow-up process, management must determine answers to questions such as:

- What has been accomplished through the auditing process?
- Were the program objectives met?
- Where did the audit exceed objectives?
- Where did the audit fall short?
- What changes can be made to improve the audit program?

Answering questions such as these, and ensuring that audit recommendations are discussed and acted upon by appropriate management groups, will result in real progress toward attaining an organization's environmental goals.

6.1 Prioritizing Audit Recommendations

The first step in implementing the audit recommendations is to develop an action plan. In order to do this it is necessary to determine the priority or rank of the various recommendations contained in the audit. The action plan can then be designed to ensure that high ranking recommendations (ie. non-compliance) be given immediate attention.

In order to prioritize effectively, it is necessary to categorize the type of audit recommendations. For example, the recommendations can be grouped according to those dealing with:

- Regulations;
- Internal Policy;
- Professional Practice;

- Public Perception/Local Conditions;
- Major Environmental Hazards; and,
- Operating Procedures.

Depending on the size of the audit, it may be necessary to further group the recommendations into sub-categories so that they can be dealt with more easily. For example, the different categories may be divided up according to the type of emission, such as air, water, etc.

The responsibility for assigning priority to the recommendations is ultimately that of corporate and operations management, with input from the audit team and lower management groups. One method of involving these groups is to discuss during the pre-audit meeting how the priorities will be assigned. The auditors can then present the recommendations in the final report in order of decreasing priority. Management can review the order of priority and make changes as necessary.

The method for assigning priority should be consistent with Best Management Practices and address factors of interest to management. The recommendations may be ranked in any of several ways. The following are the more common:

- Probability and severity of the potential hazard and the effect on human health and the environment.
- The potential enforcement penalties associated with a finding.
- Authority establishing the requirement. Federal legislation is given higher priority than provincial, and so on.
- Impact on public accountability.

6.2 Developing the Action Plan

The objective of the action plan is to review audit recommendations, and plan and implement appropriate solutions. It provides the opportunity to target where the major concerns exist and to allocate the resources and personnel to remediate the issue. In addition to providing the time span for completing the project, it should clearly specify the roles and responsibilities for executing the improvements. These recommendations, then, become discrete programs managed within the organization's environmental management program.

It is also possible that some of the recommendations will not be executed. For example, management may have further information and valid concerns and may not agree with the findings of the audit. Also, the technology to implement the findings may be prohibitive or is not yet available. Whatever the reason a recommendation is not performed, it is important that the justification for this decision be documented.

A major part of the action plan involves scheduling time, resources, and budgeting funds to ensure that the recommendations are implemented. The schedule should ensure that high priority recommendations are implemented quickly.

6.3 Reporting

Documentation and reporting of the status of action plans are important components of the environmental audit follow-up. Ongoing reports ensure that management is kept aware of the degree of completion of action plans, and that all management groups are kept involved with environmental commitment.

The documentation of action plan activities is also important from the use of this record-keeping for future audit planning, to legal back-up in the event of an environmental incident. Proof of an initiative in solving non-compliance problems will act as an element of due diligence if regulatory authorities investigate the incident. Documentation acts as an element of security, showing that management has acted positively to remediate environmental problems.

6.4 Quality Assurance

Quality assurance can be defined as a set of procedures used to investigate properties of a system to ensure a high level of performance is attained. The concept of quality assurance is an important component of the audit program, being used to verify the accuracy of audit information, to maintain auditor independence, and to measure audit performance. The audit should incorporate cross-referencing mechanisms to check the investigative techniques of the audit team.

Quality assurance can also be applied to the implementation of audit recommendations. In order that action plans are carried out in a timely fashion, a means of checking the status of system upgrades should be incorporated into the reporting and feedback channels of the environmental management system. Quality assurance measures will help maintain an appropriate level of action so that non-compliance issues will be corrected and environmental goals are met.

WORKSHOP #2: DEVELOPING ENVIRONMENTAL GOALS AND OBJECTIVES FOR YOUR FACILITY

The following matrix checklists will assist facility management in determining specific environmental goals and objectives for their site or organization. These goals and objectives can be used as a basis for setting environmental policy and developing an Environmental Audit program. For each checklist, management is asked to put a checkmark into each box where a "yes" answer is applicable and to then study the finished chart to determine which areas not marked, require further attention. It is the intention to create an awareness with management, of the multifaceted nature of environmental management systems which may be required for their facility.

INSTRUCTIONS

1. Consider the question posed in each box for each control area of each matrix and enter a checkmark if the appropriate answer is "yes".

2. When finished all questions, study the chart to determine which environmental control functions not previously performed (boxes left blank) are applicable to your facility.

3. Use this increased environmental awareness to structure goals and objectives which can be used to initiate new or more efficient environmental control or assurance programs.

The purpose of this workshop is to develop environmental goals and objectives for your facility. Even if your organization already has a set of written goals, this study provides an opportunity to consider whether the current environmental systems are sufficient. By studying the two checklists and your summaries, and understanding the concepts presented in this auditing principles manual, it should be possible to answer the following question:

> "Would an Environmental Audit of your facility give you valuable information for improving your environmental performance ?"

If your answer is "yes", it is necessary to define the goals and objectives of your environmental programs in order that boundaries can be given to your initiatives and to the audit. It is also important to consider programs which are already in place so that a comprehensive action plan can be formulated which is facility-specific. The "Environmental Audit Protocol" for use by Canadian government and industrial facilities accompanies this manual and should be used to customize an audit for your site. Management should now develop their environmental goals and objectives and fill them in below.

Environmental Goals and Objectives for the _____ Facility.

MATRIX 1: POTENTIAL ENVIRONMENTAL IMPACT CHECKLIST

QUESTIONS:	AREA REQUIRING ENVIRONMENTAL CONTROL					
	WASTEWATER	WASTE	AIR EMISSIONS	HAZARDOUS MATERIALS	SPILLS CONTROL	
Do you know where your discharge points are?						
Do you know the compliance standards?						
Do you know if the facility is in compliance?						
Can you identify all: • Routine discharges? • Non-routine discharges? • Potential facility upsets?						
Do you know the composition?						
Have you identified areas of environmental risks?						

On a separate sheet of paper, summarize your findings.

MATRIX 2: ENVIRONMENTAL CONTROL PROGRAM CHECKLIST

DO YOU HAVE A PROGRAM FOR:	AREA REQUIRING ENVIRONMENTAL CONTROL						
	WASTEWATER DISCHARGES	WASTE	AIR EMISSIONS	HAZARDOUS MATERIALS	SPILLS	EMERGENCY RESPONSE	
MAINTAINING COMPLIANCE							
TREATING OR CONTROLLING							
MAINTAINING DISCHARGES AND PROCEDURES							
ANALYTICAL OR EQUIPMENT TESTING							
EQUIPMENT INSPECTIONS							
RECORDKEEPING							
INTERNAL REPORTING							
RISK IDENTIFICATION							
GOOD HOUSEKEEPING							
PREVENTATIVE MAINTENANCE							
PROCEDURES TRAINING							
WRITTEN PLANS							
WRITTEN PROCEDURES							
MANAGEMENT/EMPLOYEE COMMUNICATION							

On a separate sheet of paper, summarize your findings.

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QUESTIONS:	AREA REQUIRING ENVIRONMENTAL CONTROL					
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DO YOU HAVE A PROGRAM FOR:	AREA REQUIRING ENVIRONMENTAL CONTROL						
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TREATING OR CONTROLLING							
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PREVENTATIVE MAINTENANCE							
PROCEDURES TRAINING							
WRITTEN PLANS							
WRITTEN PROCEDURES							
MANAGEMENT/EMPLOYEE COMMUNICATION							

On a separate sheet of paper, summarize your findings.