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GUIDELINES

ENVIRONMENTAL INSPECTION SYSTEMS

FOR THE MEDITERRANEAN REGION

In cooperation with

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STRATEGIC ACTION PROGRAMME

GUIDELINES

ENVIRONMENTAL INSPECTION SYSTEMS

FOR THE MEDITERRANEAN REGION

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Executive summary

These proposed guidelines have been prepared in accordance with Article 6 *et seq.* of the LBS protocol. They are intended to help countries in the Mediterranean region to establish inspection systems or review existing inspection systems. In this respect, the guidelines are designed to act as a framework insofar as possible, taking into account the situation in the various countries.

With the perspective of the future free trade zone in the Mediterranean area, it is all the more important, if the members of the free trade zone are to operate in harmony, for the countries to establish and operate comparable environmental compliance and enforcement systems.

In order to achieve economic equality, it is a prerequisite for environmental issues in the various countries to be addressed in a fair and consistent manner. In this respect, parallels may be drawn with the NAFTA agreement and the way in which European Union directives and regulations are formulated and implemented.

The guidelines are drawn up so that comparisons with national inspection systems can be made easily by referring to the bullets in the various chapters. In view of the limitations on length and the requirements of readability, many of the suggestions made in this way are not further worked out. In future, specific issues may require more detailed guidelines. Assuming that the national environmental framework laws are in place, the guidelines follow the regulatory cycle, starting with permitting and ending with feedback mechanisms to pass back the experience acquired by inspection systems in exercising their programmes of compliance and enforcement.

Management-related subjects of direct importance to the operational capabilities of inspectorates, such as policy and strategy, are intended to assist in the development of an inspection plan, as a basis for the detailed work plans of individual inspectors. Once an inspection plan has been properly developed, compliance checking and enforcement can take place in a systematic and organized manner.

A special issues section in the report goes into a number of specific important subjects in greater detail. Subjects such as self-monitoring, human resources management and environmental management systems in relation with ISO 140001 and EMAS will play a major role in a number of the countries in the region.

A number of self-explanatory Annexes provide detailed information in support of the various chapters.

Chapter 1. Background information and purpose

These proposed guidelines have been prepared in accordance with Article 6 of the Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources and Activities (LBS Protocol) of the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention). The guidelines are intended to assist countries to establish inspection systems or review existing systems.

Articles 5, 6, 7, 9 and 10 of the LBS Protocol require cooperation between all countries in the region. Article 6, paragraphs 2, 3, and 4, are the main provisions on which the present guidelines are based. They call on the parties to the LBS Protocol to provide for systems of inspection by their competent authorities for the assessment of compliance and the enforcement of regulations.

The strengthening of inspection may be promoted by the Contracting Parties through the development of new structures or the improvement of existing structures for compliance and enforcement. External assistance in this respect may consist of specific training programmes for personnel, the development of common inspection guidelines, manuals, specific checklists for inspections, etc.

Framework guidelines are not intended to be in any way compulsory, nor do they have to be strictly followed by countries. The guidelines may be used by countries, for example, to prepare their own codes of conduct and practices to be followed by their inspection systems.

To make it possible for all countries to work together, environmental compliance and enforcement systems have to be applied and operate in the participating countries. The adoption of a systematic approach to the management of compliance and enforcement is therefore an effective tool in safeguarding the environment in the Mediterranean region. All participating countries must be convinced that comparable inspection systems exist and are really in operation in all the other countries, so as to guarantee economic equality and fair and consistent treatment of environmental issues in all the countries concerned.

Chapter 2. Coverage and rationale

The LBS Protocol covers all polluting activities that have an impact on the Mediterranean basin, whether they are from touristic, industrial, urban or other sources. In most Mediterranean countries, laws, regulations and standards have been developed. Most countries have adopted framework laws and some sort of implementing infrastructure, including an operational inspection system. These framework guidelines start at the point where permission, authorization or consent is necessary for certain activities. This automatically means that compliance monitoring is necessary. These guidelines may then be used as a tool for examining and, if necessary, adjusting the relevant policies, strategies and working methods.

The guidelines adopt a practical approach to the various subjects that are of importance in the process of managing compliance and enforcement. However, before addressing compliance and enforcement, it is first necessary to review the overall regulatory cycle. The elements of the regulatory cycle that are addressed in these guidelines start with the permitting process, followed by compliance checking, compliance promotion, non-compliance response, enforcement and finally, to complete the cycle, feedback on experiences. The feedback process is an essential element in completing the cycle, by making the permitting authorities aware of experience in compliance and enforcement, and particularly the enforceability of laws. Changes to rules, and even occasionally to laws, may be proposed where practical experience of compliance and enforcement has shown up flaws which prevent proper implementation and compliance. Following the order of this cycle assists in the process of the continuous improvement of environmental laws and regulations. The adoption of a systematic approach to compliance checking by inspection systems is the most important element in achieving the objectives for which these guidelines have been prepared. Inspectors, operating within an inspection structure, under the terms of a code of conduct, need to ensure that a fair and consistent approach is adopted in the process of achieving compliance.

Although these guidelines are applicable to many types of control mechanisms, they have been prepared on the basis of experience in implementing environmental laws. They also deal with compliance promotion, responses in the event of non-compliance and enforcement. Enforcement in this context means the exercise of all legal tools to obtain compliance with the law (court action).

The rationale for preparing these framework guidelines is to:

- assist Mediterranean countries to apply a systematic approach to compliance and enforcement;
- assist in the development of a transparent system of compliance and enforcement;
- create credibility among inspectors, but first and foremost between countries;
- promote and assist in the process of achieving a Mediterranean region in which environmental issues are properly addressed at the national level and comparable compliance and enforcement procedures are followed.

Chapter 3. Permitting

Permits, authorizations and licenses are all forms of permission allowing an activity to be carried out. Examples include building permits, authorizations to erect installations and environmental permits authorizing the operation of facilities. All the authorization documents of entrepreneurs have to be checked regularly for compliance. Cases of non-compliance have to be resolved by the authorities to ensure compliance by the violator. In the event of failure in promoting compliance or unwillingness to comply, an enforcement process is initiated as a last resort, but which must in the end result in compliance. It has to be understood very clearly that, without a permitting system, there can be no compliance and enforcement. This mechanism and the step-by-step approach are illustrated in the regulatory cycle.
(Annex 1).

The regulatory cycle shows the logical sequence and the links between the various steps in managing the compliance and enforcement process. Activities at the various stages of the cycle must be carried out effectively and consistently, as failure to develop elements at one stage will be transposed to the next, and will finally result in failure to achieve the overall objective. For example, inadequate and unclear permitting hampers compliance checking and compliance promotion, thereby undermining enforcement.

An (environmental) permit is a contract between the “operator” and the authority issuing the permit. It is not a one-sided contract since, by not challenging it in court, the operator accepts the terms and conditions of the permit. It is therefore a legally binding contract. The contract describes the terms under which the operation or the activity itself is allowed under enforceable conditions. The enforceable conditions must therefore be clearly defined. This means that they have to be able to “stand up in court” in the event that they are challenged or enforcement measures by the court are required to compel the violator to comply.

A permit with enforceable conditions is essential not only for the follow-up activities in the regulatory chain, but also for the permit holder. Permit holders have to be fully aware of their rights and obligations and the way in which the protection of the environment is ensured. The permit must clearly state and identify the margins of the operation within the law. Consistent application of the regulations provides the basis for the fair treatment of all entrepreneurs in the same field of activity and, when consistently applied by the authorities, avoids unfair economic competition.

In many countries, environmental permits are granted, provided that they have been properly applied for, in accordance with the authorities’ application rules, setting out two types of conditions: the first consist of general rules for the proper environmental behaviour of the enterprise; and the second consist of a number of strictly enforceable conditions relating to emissions, safety measures, monitoring obligations and reporting. The general rules are difficult to enforce, but function as indicators of the behaviour of the enterprise management and may trigger investigations, while the second are the really enforceable conditions. Permits may also specify design and operating conditions so as to ensure compliance with existing rules and regulations, and may specify whatever conditions are applicable in view of the envisaged environmental impact of the installation.

When issuing permits for complex facilities in countries where public participation is strong, the authorities may need to justify the contents of the permit and the relevant socio-economic issues, as well as indicating the state-of-the-art technology and abatement measures, to allow comparison by the public.

Interested parties which intend to start an activity need to know what to do and where to compile the authorizations required for the delivery of permits. An example is given in

Annex 2 of the information required for a permit application. It is also the responsibility of the authorities to protect the interests of the entrepreneur by not issuing conflicting permits. It is essential that, before issuing a permit for the commencement of an operation that has an impact on the surrounding area, all the relevant permits must have been issued and their enforceability checked.

In some countries, a high number of separate permits are required before an industrial activity can start. A strong move towards a “one window“ approach is therefore developing. This automatically requires a strong coordinating function between the authorities to achieve a streamlined permitting system.

In most countries, environmental permitting authorities are gradually undergoing a simplification and rationalization process. In this respect, the following simplification and rationalization measures are suggested:

- creation of a single permitting coordination body to achieve an overview of all permits applied for and issued;
- standardization of applications through electronic systems, with centralized data retrieval systems available to all authorities;
- standardization of national reference emission and measurement standards;
- the adoption of general binding rules for “horizontal unit operations” and/or for specific industrial activities;
- the development of voluntary agreements with trade organizations to arrange among their members for voluntary adherence to specified emission and behavioural rules: in such cases, the trade organizations carry out their own compliance monitoring, but are under the obligation to report the outcome to the authorities;
- self-monitoring systems for enterprises with reporting obligations;
- promotion of certified laboratories to carry out compliance monitoring.

The ideal situation from an environmental point of view would be that environmental permits are only granted once all the other required authorizations have been issued. No activity should be allowed without an operating permit. This automatically means that the authority responsible for issuing the permit must have the coordination function. It also means that the coordinating body is in charge, involved or kept updated of the progress of all the other procedures to be followed by the applicant. This fits with the “one window “ approach referred to above.

Occasionally, municipalities issue permits to small industries for a series of activities. The contents of these permits are generally very simple, and their conditions are largely standardized. General binding rules may be applied to the majority of these facilities. Examples include garages, fuel stations, retail activities, small metal plating shops, sports facilities, small printers and handicraft activities.

In most countries, some 80 per cent of permits concern small and medium-sized enterprises (SMEs), and permits may be largely standardized. Nevertheless, each permit must still clearly indicate the general binding rules that are to be adhered to, as well as the national standards applicable to the facility. It is insufficient merely to refer to a text or article of a law or regulation. This holds for all permits. Both parties must, as in the case of commercial contracts, be fully aware of the contents of the permit.

Provinces or regions tend to issue permits for more complex facilities for a series of activities. The more complex the facility, the greater the emphasis that has to be placed on the coordinating function. Permits, which have to be integrated or coordinated between the competent authorities, must not contain conflicting conditions. Monitoring (including self-

monitoring) and reporting conditions are coming to be of extreme importance in more complex facilities.

Central governments tend to issue permits for a series of general facilities of national importance, such as power stations, nuclear activities or activities that affect two or more regions, or in relation to matters covered by international agreements.

The following must be ensured if permits are to be enforceable:

- the application and description of the activity to be undertaken must be considered part of the permit, unless the conditions set out in the permit supercede this information;
- permit conditions must be set out in legally enforceable terminology and must refer to the relevant laws and regulations;
- permits must include explicit conditions respecting emissions, risks, monitoring and reporting, and cover all media in an integrated manner;
- permits may also contain specific conditions that are more stringent to safeguard the environment in the specific permit area;
- the permit must clearly indicate the consequences if conditions are not met or false information is given, and should state that revocation of the permit, penalties, legal action and liability charges for damages are among the consequences of violations;
- the permit should also indicate the action to be taken in the event of a modification of the operation, change of ownership and incidents affecting the environment;
- the permit must indicate when it comes up for renewal and the action that has to be taken for renewal.

The above requirements must result in conditions being set out in permits that are enforceable.

Chapter 4. Functions of inspection systems and inspectors

There is normally a political distinction between the legal, execution/implementation and control functions, with a view to maintaining a society that is stable and functions properly. While it is clear that there have to be links between these functions, it is extremely important for there to be no interference in the decision-making process. In the environmental regulatory cycle, the drafting of laws and regulations belongs to the legal function, which is mainly performed by Ministries of the Environment. Parts of these activities are sometimes delegated to special institutions. For example, implementation is in many cases delegated to lower authorities, such as provinces, regions and municipalities, while the control mechanism is performed by environmental inspection systems. Proper feedback and reporting mechanisms are needed to ensure linkages between the functions.

In practice, however, the desired separation of responsibilities and competences does not always occur. In some cases, the extreme is reached of the same person carrying out both permitting and inspection functions in the same organization. Such undesirable mixing of responsibilities is sometimes unavoidable. The lack of human resources and financing for qualified personnel, the level of development of the organization, the lack of legal and statutory possibilities, the lack of standards and clear regulations, or political interference in inspection functions are factors that are beyond the control of the inspection system. The independence of the inspection system must be the goal of any mature and well-functioning organization.

The environmental inspection system or body needs to be a governmental organization, or an organization or institution that has the authority to act on behalf of the government, with the responsibility of monitoring and promoting compliance and enforcing environmental laws in a fair and consistent manner. Such institutions need to function as independent entities and must only be responsible to the highest political body, as defined in the law. The results of their activities are monitored and reported to the highest politically responsible body (the Cabinet of Ministers, the Minister, President, Parliament and, indirectly, the public)

The functions of inspection systems may vary considerably, depending on the level of development of the legal system and government machinery in the country. Inspection systems sometimes have to operate in situations where there are no laws or information on the state of the environment, and where industry, state-owned businesses and entrepreneurs care little for laws, let alone for compliance with them. Other inspection systems operate in more industrialized and developed countries, with a mature legal system and a well-informed community of industry, entrepreneurs and NGOs.

The functions of inspectors change according to the duties of the inspection system (see Table 1). They range widely from advisory inspectors to promoters of compliance and, finally, to “mature and experienced investigator/inspectors”, checking permits and reporting independently. Adjustments in the human resources management of the inspection systems are therefore a continuous process (see Chapter 15).

Table 1

Stages in the development of inspection systems

National/local situation	Functions of the inspection system/inspectors
1. No or hardly any laws, no proper licensing office, no enforceable permits (grassroots situation).	Advising, planning and assisting, not policing.
2. Some laws, licensing is on its way, more enforceable permit requirements.	Less like advisers, assist only upon request and start to act as inspectors. As a result, they advise only on inspection and enforcement. Still do not act as police, but are very strict in their approach. Predictable in their attitude.
3. Licensing procedures are operating, laws exist, standards are known, registration is fully developed.	Reporting is required, and results and action are less voluntary. If not, inspectors start by policing. Strong warnings, penalties and the involvement of public prosecutors. Inspectors act as enforcers and monitors, not prosecutors.
4. Inspection and enforcement required.	Compliance testing-independent. Emissions check, research institutes. Accountants checks on bookkeeping and monitoring and self-monitoring checks.

The operational tasks of the inspection system vary considerably and may entail a number of the following, although they are not listed in any order of priority (moreover, the list could be considerably extended):

- providing information and advice to permit applicants, communicating with the licensing authorities during the planning stage of a new activity, and/or discussing the preparation of rehabilitation schemes;
- issuing permits or assisting the licensing authorities to determine the contents of permits, promoting the stipulation of enforceable conditions;
- advising and assisting operators of facilities or enterprises to comply with the regulations as part of compliance promotion;
- determining and requiring remedial action, where necessary; applying or recommending sanctions where they are needed; advising on fines or fees imposed upon companies, calculated on the basis of the savings made by avoiding compliance, plus an amount to deter reoccurrence; and calling in the public prosecutor and/or initiating administrative corrective action and advising administrative courts on the penalties to be imposed;
- following up the results of monitoring and self-monitoring during inspections, and consolidating the results of monitoring activities at the local and national levels;
- preparing and maintaining records of inspections, the observations recorded, action taken and the results of analyses and other relevant information for easy retrieval, including the full development and maintenance of database input and retrieval systems and modern information systems;
- preparing and disseminating information to industry and other partners of their own performance and cases of general interest; providing policy-makers with information on the experience acquired in the implementation and enforcement of laws and

regulations; and developing feedback and reporting mechanisms for policy-makers, permitting authorities, legal bodies and the public;
- informing the public regularly of developments in compliance and enforcement;
- encouraging voluntary compliance by promoting environmentally sound management practices;
- preparing annual, monthly and weekly inspection schedules and optimizing human resources and funding.

Mission statement of an inspection system *

THE INSPECTION SYSTEM'S MISSION IS TO:
• ***Authorize, enforce, inspect and monitor under the relevant legislation***
• ***Consult openly and widely and report on the performance of the organization***
• ***Provide expert advice to the government***
• ***Initiate investigations and developments and disseminate the results***
• ***Work cost effectively and to the highest professional standards***

An inspection system's main task is always to enforce the laws in an independent, consistent and fair way. Its unbiased reports on the state of the environment must reach the highest political figures and the public.

** Used by the former United Kingdom HIMP (Her Majesty's Inspectorate for Pollution)*

Chapter 5. Inspection strategies

A proper description of an inspection system's strategy is a prerequisite for successful operational activities. The strategy needs to be updated regularly so that it is adjusted in a timely and appropriate manner to any changes that have occurred in the conditions under which it was formulated. It is in accordance with the modern management approach to adapt to changing conditions in a timely manner. This also holds for inspection systems. Rigid strategies, organizational structures and management cannot last long in a rapidly changing world. Experience shows that tactics and methods have to be adjusted to cope with changes. When there are too many changes, it is necessary to undertake a radical overhaul of the strategy. The strategy document must strike a balance between requirements and reality, taking into account the capabilities and capacities of the organization.

The starting points for the strategy include estimates of the numbers and types of facilities to be inspected annually, and a clear assessment of the capacities and capabilities available to the inspection system, as well as the political constraints on its operational flexibility. The government has to set priorities in cases where the numbers of compulsory inspections do not match the capacities and capabilities of the inspection system.

An approved inspection plan provides the basis for the annual inspection programme. The chosen strategy and the framework for the inspection plan need to be assured of political backing before inspection functions are carried out.

The first priority of any inspection system is to develop a strategy which ultimately leads to the development of a feasible annual inspection plan that takes into account: the available human resources and budget; compulsory inspections (by law); specific (thematic) inspection programmes; the handling of complaints; court actions; advisory functions (to permitting authorities and policy-makers); annual reporting; and other activities, such as addressing the press and informing the public in special cases.

The second priority of the inspection system strategy is to ensure that the inspection plan is carried out and the quality of the inspection system is "up to standard", based on indicators developed within the system. Most quality indicators now appear to focus on numbers (such as numbers of visits, numbers and amounts of penalties, successful court cases), rather than assessing results from an environmental point of view. Regular external or internal "peer reviews", as well as reviews by independent outside experts may help to form a "guesstimate" of the effectiveness and quality of the inspection system.

The third priority is for the agreed strategy to result in a report which not only justifies the existence of the system, but which also assesses the state of the environment in relation to the main task of the inspection system, namely the enforcement of laws in a consistent and fair manner and the consequent improvement in the environment.

Contents of the inspection strategy

The final inspection strategy document must clearly indicate:

- when and how the inspection system should assist in the development of enforceable standards and requirements;
- whether inspections are to follow a systematic and structured process of compliance checking, compliance promotion and enforcement;
- when to embark on a "black box" approach to inspection, which means that only emissions are actually checked, without considering processes and other operational variations, with a view to saving human and financial resources;

- when to apply a different approach to practical enforcement, namely the so-called “inspect and strike” (penalize) system, meaning that violations are immediately recorded and penalized;.
- how much compliance promotion is to be incited to the violator, manager of the facilities, for being reproachable in order to support a successful enforcement action;
- in cases where the number of annual inspections is important in achieving the goals of the inspection plan, when to shift to lower risk and time-saving inspections of facilities, with a higher probability of non-compliance;
- when to monitor fewer items per inspection, instead of undertaking a complete inspection, as a time-saving option;
- the cases in which “on-site visits” can be skipped in favour of less time-consuming “administrative” inspections;
- when to schedule enforcement actions later, by issuing more warning letters and allowing the extension of inspection schedules;
- when the time has come to initiate enforcement action and coordinate action with other authorities.

The inspection system strategy document is essential for the development of a structured and consistent approach to inspection activities. The document should clearly indicate the goals to be achieved and the limitations of the organization. Tactics are important tools in the practical implementation of the strategy. These may be altered in specific cases, but must still form part of the overall strategy.

Chapter 6. Planning and organization of inspections

Planning for inspections should be undertaken as soon as the relevant laws or regulations are adopted. The legal provisions then need to be put into practice before any actual verification or inspection can take place. Tests and trials prior to such planning can help avoid subsequent difficulties in enforcement.

The overall planning, which should be prepared together with guidance for inspectors, should reflect what is agreed upon in the inspection strategy. The strategy document, for which political approval is necessary, sets out the framework within which the inspection system operates.

Development of the planning and management process for the inspection system can start once the general responsibilities of the inspectorate, as defined by law, have been properly determined.

The following step-by-step approach may serve as a guide for the development of an (annual) inspection plan:

- compile an inventory of all the facilities that require inspection, either in accordance with the law or for other reasons: a priority selection system may help in determining the environmental importance of the facilities to be inspected during the year;
- divide the facilities to be inspected into three (or more if practical) categories (high, medium and low) in relation to their environmental impact and determine the number of facilities in each of these categories;
- establish the frequency of either administrative and/or on-site inspections needed for each category;
- determine the average duration of inspections for each category, based on the skills and experience of the inspectors and the experience of previous years;
- calculate the total number of days of inspection required;
- determine the effective number of inspection days for all the inspectors in the organization, taking care to include full inspections, reporting and court action.

From these six steps, a realistic number can be calculated for the inspectors required.

- The number of inspectors required does not in general match the number of those available. Sometimes the planned number of inspections cannot be carried out because transport is not available to visit facilities. In this case, adjust the frequency of administrative inspections and “on-site visits”. Administrative inspections consume less time than “on-site inspections”. However, major changes to the plan require the approval of higher management.
- The plan must be adapted to the total availability of all resources, including laboratory facilities, where they form part of the inspection system.
- The annual inspection plan may finally require approval from all the political stakeholders.

This step-by-step approach provides an adequate indication of the potential output of the inspection system. The adjustments made to adapt to the capacity of the system clearly indicate the problem areas, and therefore need to be discussed with top management and policy-makers. This may even start a process of further refining the inspection plan.

The special issues of laboratory analysis and sampling frequencies, which also affect the system’s output, have been left aside. However, they also need to be taken into account and integrated into the inspection plan with a view to optimizing the performance and management of inspection systems (see Chapter 13 on monitoring and self-monitoring).

Once a list has been made of the total number of facilities requiring inspection, guidance must be provided to inspectors so that they can plan their work, including:

- a detailed list of the facilities to be inspected, with the relevant regulations;
- details of the items to be inspected at these facilities and the information required by the inspectors;
- estimates of the duration of inspections;
- suggestions as to the frequency and type of inspection needed for a specific facility;
- preparation of inspection reports;
- organizational aspects of the follow-up procedures;
- these inputs are compiled in a work plan that is used to set targets for the performance ratings of individual inspectors (see Chapter 15).

It is also suggested that further internal guidance be prepared for inspectors in the form of:

- rules of conduct for inspectors;
- inspection equipment to be used and sampling procedures to be applied;
- health and safety of inspectors;
- the responsibilities of inspectors, legal issues related to enforcement and the liabilities of inspectors.

The inspection plan and the work plan are important tools which need to be referred to in the annual report of the inspection system. They serve as indicators for the performance evaluation of the management of the inspection system (see Chapter 12). Annex 3 (a), (b) and (c) contain examples of inspection plans developed in various parts of the world. A plan is never perfect. Continuous upgrading is therefore required to achieve a workable and feasible plan.

With a view to reducing the time spent on inspection activities, while maintaining their quality, the following are suggested:

- the use of guidelines and checklists for inspections: checklists are tools designed to shorten inspection time and assist in recalling the issues to be covered during the inspection;
- inspection time should be kept “short and business-like” by stating objectives clearly and adhering to them;
- the visit should be prepared with great care and focus on cases of non-compliance, rather than compliance;
- the possibility should be investigated of reducing the frequency of “on-site” inspections through the more widespread us of administrative monitoring;
- data should be obtained through correspondence or transmission by electronic mail, rather than the collection of information during site visits;
- cooperation should be promoted with entrepreneurs to keep up-to-date with the operation of the facility.

It is suggested that the frequency of inspections should be determined by evaluating the following factors:

- potential impact on the environment;
- complexity of the facilities;
- age of the facility and maintenance/accident history;
- previous environmental performance of the operator with respect to compliance;
- frequent changes of ownership and management of the operator;

- previous prosecutions and/or administrative fines;
- complaints history;
- availability of specific knowledge from other authorities;
- use of self-monitoring, monitoring reports to the authorities and/or remote data systems.
- the use of the European Union Eco-Management and Audit Scheme (EMAS), ISO14001 or other Environmental Management Systems that may affect the attitude of the management towards the environment;
- proper reporting in the framework of ISO and EMAS.

Subjective elements always play a part in determining the frequency of inspections. However, in the final analysis, the professional judgment of the inspectors is a dominant factor, particularly on a case-by-case basis.

In the systematic planning and organization of the inspection plan, some time has been put aside to cope with special issues. Some 20 per cent of the time of experienced inspectors, and up to 40 per cent of that of trainees and junior inspectors, may need to be devoted to handling special issues, such as complaints.

The inspection plan and work plan may become more complicated when the inspectorate is at different phases of development. The inspection system may also be involved in the permitting process and may still have to spend a lot of time on advisory work and compliance promotion. In these cases, the strict separation and division of time is an absolute necessity (see Chapter 4).

The annual inspection plan and individual work plans are essential for the management of the inspection system, not only to justify its activities at higher levels, but also to contribute to the credibility and identity of the system, both internally and externally.

Chapter 7. Conducting inspection visits

The two general types of inspection used for the implementation of the inspection system's work plan are "administrative" and "on-site" inspections.

Although administrative inspections may also be carried out on site, they can be undertaken from behind a desk. In such cases, use is made of the data available in the office, supplemented by data provided regularly by the facility as part of the permit conditions relating to monitoring and self-monitoring. It is, however, preferable to carry out both types of inspection on the premises itself, provided that the work plan allows time for the visit. Administrative inspections require less time than detailed on-site inspections, which involve checking the facilities in some detail.

Administrative inspections cover all the paperwork, starting with the application (if the application is considered part of the authorization) and the administrative requirements set out in the permit. These may include data records of the operation, monitoring of the performance of the enterprise, self-monitoring information in accordance with the permit conditions and the reporting of measurements by certified laboratories. In some cases, certified accounts of expenditure (for example, on waste disposal) or bookkeeping records may be checked in cases of doubt concerning actual emissions (for example, of waste), the fuel used and disposals for which charges are levied, etc.

Information relating to ongoing permitting procedures may also occasionally form part of the information gathered during administrative inspections. Feedback and reporting to the enterprise by the controlling agency are integral parts of administrative inspections.

Administrative inspections must follow strict procedures and should as a minimum include:

- compilation and examination of data related to the application, provided that the application is part of the permit, including the conditions to be adhered to by the company;
- examination of the permit requirements relating to written reports or the provision of data to the authorities;
- examination of compliance with requirements relating to self-monitoring and reporting to the authorities;
- preparation of a checklist of items as a basis for the administrative inspection;
- compilation of the required data in written form by the enterprise;
- preparation of a draft report with findings (to be sent to the enterprise for comment);
- the final report, including the enterprise's comments, containing recommendations and a plan for follow-up activities.

Administrative compliance checks cannot replace detailed on-site inspections, during which the actual operational practices of the enterprise are compared with the permit requirements and which may ultimately lead to enforcement action. However, administrative checks may very well serve as intermediate checks to keep track of what is happening at the enterprise. They may also trigger more thorough investigations. Nevertheless, they can make the management of enterprises feel that they are being watched and checked, and that there may be consequences where the authorities are not fully satisfied with the information provided.

The advantages from the point of view of the inspection system are that less qualified personnel can be used, especially once the checklist has been properly compiled, and a routine form of inspection can be established. The time-saving element is especially

important once electronic data links are established, thereby making it possible to undertake desktop administrative compliance checks.

On-site inspections take place on the premises of the facility and must also follow strict procedures. The preparation of inspection visits entails acquiring a thorough knowledge of the history of the facility from existing databases, excellent knowledge and information of the application and permit conditions, the relevant laws and regulations and, where possible, an overview of recent economic and technical developments at the enterprise.

Once the premises have been entered, strict procedures need to be followed. A clear message has to be given of the purpose and programme of the inspection. It must be made clear that an inspection is not a courtesy call, but strictly business-oriented. To avoid any subsequent misunderstandings, the management of the enterprise must be clearly informed at the outset of what is to be investigated and the procedure that will be followed.

This latter includes the report of the visit, the facts recorded and the observations made and, in the event that violations are observed, an exact record of the action to be taken. No discussions should take place during the visit, which should focus solely on recording facts and observations.

The strict procedure to be followed during on-site inspections for compliance and enforcement should include the following:

- preparation of the visit, including the compilation of information ranging from the management structure of the enterprise, site and process description, permit review and quality standards applicable to the objectives of the visit, as well as the priorities and approach to be followed, leading to the preparation of a checklist setting out the major points of the investigation;
- the actual visit, during which care should be taken to explain to the management the purpose of the inspection and the procedure that will be followed, includes the taking of samples;
- the report of the inspection (see also Chapter 8);
- follow-up.

A full step-by-step protocol is to be found in Annex 4.

In many countries, on-site inspections are not announced. This approach seems to be fair, but has some disadvantages, especially where there is insufficient data available or the situation with regard to the permit is unclear. In such cases, inspections have to take the form of investigations into the situation of the enterprise. The presence of the management must therefore be ensured during the visit. Even where the visit reveals a violation of the permit or other requirements, the correct procedures must be followed.

The argument against announced inspections is that the management could undertake clean-up activities, or may have time to hide irregularities and potential violations. The management will anyhow be informed that the next visit will not be announced. This approach has in practice convinced many enterprises to adhere to the permit conditions.

In practice, other types of visits, which are more like courtesy visits, are aimed at compliance promotion, developing cooperation with enterprises or informing them of impending changes. These types of visits are also wrongly considered to be inspections. However, it is important to indicate clearly the consequences of a potential violation in any visit. If such a violation is revealed, a courtesy visit may end up as a *de facto* on-site visit. It is essential that the purpose of the visit should be clearly indicated. This “twinfold” system requires careful handling and shall be avoided.

Other types of inspections

Ad hoc inspections are undertaken outside the inspection plan. These inspections are sometimes required because complaints received by the inspection system are considered sufficiently serious to be followed up at short notice. The same approach should be used as for any other inspection, with the same procedures. However, in view of the uncertainties inherent in the nature of the complaints, it is not always possible to prepare ad hoc inspections thoroughly.

Specific inspection campaigns are subject to the same systematic and programmatic approach as standard inspections. Inspection campaigns are carried out to obtain insight on a specific environmental issue, for example with a view to the preparation of new regulations, or to investigate countrywide infringements as a result of a public outcry at a certain type of activity or following an accident which has received widespread public attention.

Emergency inspections are another type of inspection that does not allow time for adequate preparation. They may not be directly related to existing authorizations, but are clearly connected to violations of laws. Emergency inspections are required because of a direct threat to public health and the environment.

Emergency inspections are mostly related to waste disposal at non-permitted premises, the use of hazardous and dangerous chemicals close to sensitive areas (hospitals, schools or waterways), or major fires close to urban areas. In general, these inspections are related to accidents with a potentially important impact on public health and the environment. Proper procedures have to be followed in all cases. Close cooperation is required between the competent authorities, and integrated and coordinated approaches should be established.

In a number of cases, sampling and monitoring take place during the inspection. In general, this involves a significant additional organizational burden and is therefore not practised regularly. Monitoring and sampling is suggested to take place separately, but following procedures that are similar to those of regular on-site inspections. A checklist should be made available to the monitoring staff, to be completed on the spot, with information on the procedures to be followed. It is essential that sampling procedures are developed, as part of inspection activities. In most cases, at least three samples are taken at each monitoring point: one for direct analysis by the authorities; one reserve sample; and one sample for checking by the enterprise’s own laboratory.

Inspection visits are the backbone of the inspection system and must follow strict procedures to ensure a fair and consistent approach during and after the visit.

Chapter 8. Reporting

There can be no doubting the great importance of reporting on the activities of the inspection system. The adage that inspectors who do not report are invisible and may in the end lose their jobs is very relevant. The same holds for the inspection system itself.

Many different types of reports are made by the inspection system, depending on the activity being monitored. It is essential for the management and operation of the system to standardize reporting procedures. Standardization considerably improves the efficiency of drafting reports and makes them easier to read and more accessible.

Poetic language and long sentences should be avoided. Reports have to be concise, factual and written clearly and simply. Good report writing is not easy, but reports can be structured in such a way that inspectors are able to express their message clearly through standardization.

Reports and letters from inspectors may cover the following issues: (M = managerial and F = field reports)

- visit and inspection reports (F)
- violation reports (F)
- investigation reports (M, F)
- letters (M, F)
- internal reports (M)
- inspection plans (M)
- work plans (M)
- assessment and appraisal reports (M)
- survey reports on the state of the environment (M)
- annual reports (M)
- reports to the public/press (M)

All routine reports can be structured and fed into a database for easy retrieval. These include visit/inspection reports, violation reports and investigation reports. The latter may give rise to some problems in this respect, although their structure can be established to a certain extent.

Examples of the standardization of reports are given in the following Annexes;

Annex 5: inspection reports
Annex 6: investigation reports
Annex 7: assessment reports
Annex 8: letters

Standardization is not so important for survey reports on the state of the environment, internal reports, annual reports, work plans and inspection plans, specific inspection reports and press releases. However, these can all follow more general reporting guidelines, which may be resumed as follows:

- remember who the report or memo is being written to, and what it is intended to achieve;
- people do not have time to read lengthy reports: it is therefore necessary to come to the main points as soon as possible;
- state the most important issues, such as objectives, conclusions and recommendations first.
- place lengthy tables and other information that is not of direct importance to the readability of the report in annexes;

- omit issues that are not directly relevant to the subject;
- only report facts and observations, avoid suggestions and unclear statements.

Reports are essential to a sustainable inspection system. Standardization and structured report writing considerably improve the credibility of the inspection system.

Chapter 9. Responses in the event of non-compliance

Responses in the event of non-compliance are a logical reaction when a violation is observed during an inspection visit. The general course of action is described in the inspection system strategy document (Chapter 5). The more detailed steps to be followed should be set out in a document for inspectors with a view to ensuring consistency of approach and the fair treatment of offenders. This adoption of a code of conduct for inspectors helps to improve the credibility of the inspection system's enforcement activities.

In many countries, the only response to non-compliance is an official notice of the violation in writing, followed by the imposition of a penalty. This strategy is applied even for relatively minor offences, with no warning, compliance promotion, negotiations, discussion or "condoning". Inspectors enjoy no freedom in this respect. Even the size of the penalty is sometimes pre-established by the law. Small penalties may be immediately imposed on the offender, while in the case of more serious offences, especially where violation is considered a criminal act, the case may be referred to the courts.

However, some countries accept a more lenient attitude by inspectors, who may issue verbal non-compliance notices in an attempt to convince the offender to change behaviour. In such cases, inspectors accept promises by offenders to rectify the situation. One of the reasons for this approach is that the procedures to be followed if a penalty is imposed are too troublesome and criminal or administrative court decisions take too long. The real issue of improving the environment and rectifying the situation is lost sight of and the end result is that the environmental situation is not improved at all, or gets worse.

Both systems have advantages and disadvantages. In some cases they may work, and in others they may not work at all. This depends on the national enforcement culture.

The following general guidelines should be followed under any system:

- a visit by an inspector is never non-committal and therefore has to be recorded, with arrangements being made for feedback;
- observations of violations, even when they are small, have to be recorded and clearly indicated to the offender;
- any verbal commitment or promise by the offender should be recorded in writing, and this approach must be made clear from the beginning of the visit; this holds for the inspector, as well as the offender, and is summarized in the well-known phrase "Anything that is said may be used in evidence against you";
- the inspector must always make clear what happens if cases of non-compliance are not resolved;
- follow-up action must be timely and appropriate;
- a penalty must deter the offender from repeating the violation (proper educational value).

In Annex 9, an overview is provided of a number of possible responses in cases of violations (see also Chapter 10 on compliance promotion).

Responses in the event of non-compliance are the first reactions in the process of obtaining compliance and must be carefully orchestrated. The attitude and approach of inspectors determine the impact of the messages that they wish to convey and may start the process of compliance promotion. The strict recording of all steps is a prerequisite for success.

Chapter 10. Compliance promotion

Compliance promotion, as a part of the regulatory cycle, is applied on many occasions when the inspection system is confronted with violations that require remedial action. In a number of cases, time is needed to resolve the situation of non-compliance and, in cases where violations do not have too serious an impact on the environment, some time may be allowed to achieve compliance. The only other action available to the inspection system in the event of violations that cannot be remedied immediately is to close the facility. However, in some cases the closure of a facility can have an even more detrimental effect on the environment. Issues of time and remedial action therefore have to be balanced over a certain period, provided that there are built-in guarantees. The ultimate goal remains the achievement of compliance. **Inspection systems** may use compliance promotion in two cases.

The first relates to the introduction of a new law or regulation. Inspection systems in some countries are involved in the process of explaining and promoting new regulations. These promotional activities may cover a very wide area and may be carried out in a number of ways. The new regulation may be introduced to the target group by means of explanatory circulars, through dissemination via branch organizations and information to NGOs and the press. Other stakeholders, such as governmental organizations and their employees, who have in theory been informed through official bulletins or other official publications, should be involved, since they will have a role to play in the implementation and enforcement of the new regulation. This target group consists of public prosecutors, judges, the staff of administrative courts, public employees, the police and customs officials. It is important for the inspection system to devote sufficient time and effort to this activity in order to establish a responsive climate in the target group. The excuse of not being aware of requirements is removed by compliance promotion activities.

The credibility of the inspection system is also improved through these activities, since the target group appreciates proper and timely information concerning any changes to the regulations.

The second case is when an instance of non-compliance is revealed during an inspection and inspectors are allowed to undertake compliance promotion through negotiation. Such cases have to be handled carefully, as indicated in Chapter 9 on responses in the event of non- compliance. This approach can only be adopted in the event of less serious offences with a negligible impact on the environment. Even then, solutions must be achievable within a reasonable period of time.

The following general guidelines should be applied to compliance promotion:

- compliance promotion is an excellent tool for education and technical assistance to the target community when a new law or regulation is introduced, although the “grace” period must be of short duration and clearly indicated;
- compliance promotion should only be used when it is followed by a compliance check and subsequent enforcement: this is extremely important for the credibility of the inspection system;
- compliance promotion, as a component of the action taken to achieve compliance in facilities, must only be used with great care so as not to prolong any period during which a violation is condoned: a time schedule subject to strict conditions therefore needs to be drawn up and agreed upon by the authorities and the offender, subject to political approval, and preferably made public (a combination of the carrot and the stick);
- solely verbal compliance promotion measures should not be permitted;
- public prosecutors or judges should be informed at all times of compliance promotion measures that involve condoning continued serious violations for a period of time.

Examples of compliance promotion measures undertaken by inspection systems may include:

- telephone calls (recorded and confirmed by letter);
- warning letters and the indication of a time schedule for response;
- setting a requirement that the company rectify and correct a problem (based on a time schedule, with the requirement being duly recorded);
- the requirement of testing and further reporting;
- the requirement to communicate monitoring results;
- issuing threats and warnings that government funding may be denied;
- negative publicity.

Compliance promotion is a useful tool that must be used with care and combined with guarantees that compliance will actually be achieved. It must always be followed by compliance checking within a period agreed upon with the offender.

Chapter 11. Enforcement

For the sake of clarity, in the context of this chapter, “enforcement” means the initiation of legal (administrative, civil or criminal) proceedings where compliance checking has disclosed violations and compliance promotion has failed to resolve the situation. As a last resort, all the available legal measures are used to achieve compliance. This is the moment when the police may sometimes be asked to assist, when public prosecutors are involved, arrests are made and legal action in the courts is prepared. The time for negotiation between the offender and the inspection system, in an attempt to avoid prosecution, is over.

The negotiations held during the compliance promotion stage have therefore failed and there are no longer any mitigating circumstances. The measures taken and the reports drawn up during compliance checking and promotion, the results of the samples taken and all the other material relevant to the violation now become part of the legal proceedings. The prosecution has begun. The enforcement action will end up with the verdict of the judges, either in the administrative or criminal court. Administrative courts are normally more rapid, but cannot pass sentence in cases of fraud. Nor are they competent for enforcement, as the judicial system is required to enforce penalties.

The role of inspectors changes during the various steps of the compliance and enforcement process. They progress from inspectors checking compliance, to inspectors promoting compliance and finally to investigating inspectors. All the activities undertaken, all the reports prepared, all the samples taken have created a file that will be used to prove the guilt of the offender. Once this work has reached the public prosecutor, the main task of the inspectors is over, although they may have to act as specialists and witnesses in court.

In some administrations, the role of inspectors may be different and variations on the above system may be applied. In some countries, inspectors who check compliance may impose penalties for violations on the spot (field citations) and then fulfil a policing function in collecting fines, although mainly only for minor offences. In more complex and serious cases, higher penalties are imposed. In these cases, they have to be approved by higher authorities within the inspection system or by general managers in the Ministry of the Environment. The latter are also limited in the penalties that they can impose. In the event of disagreement, offenders can challenge the penalties through the courts. Heavier penalties are handled in higher administrative courts and, in the event of criminal offences, the public prosecutor is normally involved and the sentence passed by a criminal court. In the latter case, inspectors may act as specialists or investigating inspectors.

The functions and operational responsibilities of inspectors must be made clear from the very beginning in meetings with the target community. However, in practice, the function of inspectors with many caps are not easy to perform.

In the field of enforcement, inspectors should comply with the following rules as a minimum:

- all action by inspectors must be seen in the light of possible enforcement proceedings, even though they may at times be involved in compliance checking or promotion;
- inspectors must keep records of all their actions from the very beginning of their involvement in cases of compliance checking, compliance promotion or monitoring;

- where inspectors operate within the framework of administrative law, they should always keep public prosecutors informed (either formally or informally) of all their actions: this does not necessarily mean that the public prosecutor will take action all the time, but that files are compiled and progress noted, as the action may at some point involve a criminal offence and the public prosecutor may need to step in if progress is not made (parallel lines of enforcement);
- inspectors should avoid being used as “tax” collectors for the fines they have imposed on violators.

Typical enforcement measures by the inspection system include:

- undertaking second inspections with the specific purpose of confirming violations;
- preparing official notices of violations;
- closing down (in part or fully) an operation on a temporary or permanent basis;
- immediately revoking a permit;
- remedying immediate dangers to the population and the environment (together with the police and other competent authorities);
- seeking compensation for damages through the civil courts;
- imposing fines and penalties;
- assisting the courts as specialists and investigating inspectors in criminal cases.

Although the penalties imposed have different functions, they all have the common objective to deterring recurrences of violations.

Courts may pass down different types of verdicts, such as:

- imposing additional requirements for operation, monitoring and reporting, which make violators more aware of the problem concerned, until adequate proof is provided that the rules are being complied with;
- field citation penalties applied on the spot where clear violations are found, which are intended to have a mainly educational function: they do not hurt, but must have a proportional nuisance level for the violator and, in the event of the recurrence of the violation, the penalty imposed must be considerably (exponentially) higher;
- requiring the enterprise to invest in additional research to improve the situation and report the results, following which the court or the inspection system will decide on the action to be taken immediately;
- requiring the offender to pay the cost of remedying the damage caused, in addition to a further fine to discourage any repetition of the offence;
- revoking the permit altogether and requiring the company to reapply for a permit with new and more stringent conditions, if this is allowed by the law, or when new technologies become available;
- the imposition of plain penalties upon the enterprise, calculated on the basis of the savings made by the company through non-compliance, in addition to a further fine to discourage any repetition: in some cases, penalties are imposed on the person responsible in her or his capacity as a private person (director or senior person in charge), where this is permitted by the law;

- permanent closure of part or whole of the facility for some time to allow the situation to be rectified to the satisfaction of the inspection system;
- the imposition of jail sentences in criminal cases on the grounds of the damage caused, or when fraud is proven in the declaration of waste or other emissions.

The main objective of enforcement measures which include heavy penalties and/or jail sentences is to force the violator to comply and or to put a stop to the damaging activities. Penalties must deter the offender, although they may also have educational value and be designed to achieve environmental improvements in the end.

Chapter 12. Assessment and the provision of feedback

The assessment of the activities of inspectors is an important aspect of the management of inspection systems and the performance of organizations. Critical internal self-evaluation and external evaluations help to create an organization that is capable of improving and becoming more effective at achieving its goals. Undertaking regular SWOT (Strengths/Weaknesses/ Opportunities/Threats) analysis can help this process. Performance indicators also have to be developed, such as the average time taken to rectify a violation, or the number of violations of each category observed over a given period using the same inspection strategy and operating practices. In a number of inspection systems, the number of inspection visits is used as an indicator of efficiency. However, this type of indicator does not necessarily mean much because it does not say anything about the quality of inspection, or its impact on compliance and the enforcement of environmental laws.

A minimum number of assessments and reviews are necessary for an inspection system, including:

- a review of the basic strategy and policies formulated for the inspection system, focusing on their practicability and the success achieved in their implementation: this review should be undertaken once a year, and a SWOT analysis may help in identifying problems and areas in need of change;
- regular assessment of the inspection plan and individual work plans: the implementation of the inspection plan should be assessed twice a year, based on internal discussions and evaluation; individual work plans should be assessed at least every three months, with the indicators being based on outcomes and results, rather than outputs and the action taken;
- an assessment once every three years of the function of the inspection system as a public authority, based on interviews with a number of key persons, colleagues, authorities and other stakeholders, with the results being liable to change the strategy for the coming years;
- annual reviews of the performance and efficiency of the system, based on data on the numbers of inspections, visit reports, court actions, penalties, etc., although it is essential that the final report emphasizes outcomes and results, rather than outputs and the action taken.

In Chapter 8, suggestions are made concerning other types of reporting procedures that are common in inspection systems.

Some of the reports mentioned consist of reports providing feedback to other authorities, for example to improve the conditions set out in permits, or as part of enforcement proceedings by the public prosecutor or the legal department.

Reports providing feedback are of a more general nature and are aimed at a higher policy and implementation level. They include:

- reports on experience of the regulations and laws currently in force, with suggestions for changes;
- reports on cooperation between authorities, containing advice and suggested improvements and changes;
- reports on the workload and general performance of the inspection system and inspectors;
- budgets and spending reviews of the inspection system;
- anticipated problem areas, with short and long-term prognoses;
- reports providing an overview of specific industrial activities and the problems encountered in compliance, inspection and enforcement.

These operational reports may be intended for the Minister or General Director, depending on the organizational structure, but may also reach the public and be discussed openly.

Reporting on the activities of the inspection system must be part of its communication strategy. Communication has a magnifying effect. Information provided to the public and the press on specific successes in enforcement can have a significant impact on potential violators. It is important for the inspection system to be mentioned in the press and to show how it performs. The public is genuinely interested in the environment and the authorities have an obligation to inform them. It is also a matter of sound managerial practice by the authorities to provide the media with information on compliance and the enforcement of environmental laws. Public relations offices in inspection systems or Ministries have proven to be of great value in gaining greater recognition for the work and performance of inspection systems.

Moreover, communication with public prosecutors and judges, and in general exchanges of experience with the judicial system, can be instrumental in promoting broader support and gaining credibility for environmental issues.

Assessment of the performance of the inspection system, as well as reporting to all stakeholders on the experience of the inspection system, and influencing policy-makers by advising on enforcement issues, complete the regulatory cycle and create the conditions for continuous improvements in managing the compliance and enforcement process.

Special issues

Chapter 13. Self-monitoring and monitoring by inspection systems

Monitoring consists of observing and recording an activity, the performance of a device or a process, with a view to establishing its technical and other qualitative and quantitative properties. A monitoring device may be a piece of equipment that records, checks, warns, keeps continuous or semi-continuous records of a specific chemical or physical property that is of value to the operator or process of which it forms part.

Monitoring is an essential component of compliance and enforcement, and is a key element in the regulatory cycle. Regulatory authorities, namely inspection systems, have historically undertaken monitoring. However, it is now the practice for the authorities not only to perform monitoring, but to require permit holders to monitor their own performance and to bear the costs of such monitoring (self-monitoring).

The need for monitoring is manifold. For policy-makers and regulators, it is a tool for evaluating their policy and justifying the legal measures adopted. For controlling agencies, it provides information and measurements, and helps in the development of progress indicators and the increased accountability of the authorities. For the industries concerned, it provides overviews of their own performance and accountability, and affects their behaviour towards environmental issues. Last but not least, monitoring and the reporting of its results serve as a communication tool to the public at large and provide an overview of the state of the environment.

Governments are becoming leaner in terms of human and financial resources. It is therefore becoming increasingly difficult to obtain funding for environmental monitoring. One means of confronting this situation is by requiring polluters to undertake monitoring and reporting themselves. The self-monitoring of industrial activities and regular reporting to the authorities is now obligatory. This does not relieve the authorities of the responsibility of carrying out their own monitoring (random checks) and ensuring compliance with laws, regulations and permit requirements. Another means of coping with budgetary problems is to outsource environmental monitoring and to require polluters to bear the cost, rather than spending scarce public resources.

A third possibility is to levy surcharges, for example on the use of fuel or on emissions. This is now a common means of generating funds. However, such funds should be used for monitoring and should not disappear into the coffers of the State as a tax.

Monitoring should be limited to those elements that are relevant to the environment of the country, as well as to elements of local importance (health and disturbances) and of relevance to the site itself (permit requirements).

The following minimum requirements relating to monitoring and self-monitoring should be set out and applied by the authorities:

- the inspection system has to determine and agree to self-monitoring programmes, which requires coordination with permitting authorities;
- emissions limits and measurement methods have to be clearly set out in the permit; quality assurance methods for the measurements must be approved by the inspection system;
- independent monitoring by the inspection system must prevail in all cases.

The following minimum criteria may be applied to the self-monitoring of industrial activities:

- all emissions that are potentially detrimental to the environment, such as emissions from furnaces, burners, incinerators, emissions into water, sewerage systems and groundwater, and waste generation and disposal, have to be monitored, with the data generated by self-monitoring being transmitted to the authorities, with specific emphasis on data that are of importance in setting emission standards and to national environmental issues, such as reducing CO_2, PCBs, VOCs and heavy metals (electronic links are the preferred means of transferring such data);
- all consumption figures for energy and raw materials, including their content of trace contaminants, must be compiled and submitted to the authorities upon request;
- all information relating to processes, plants and maintenance that is of importance for emissions and the efficiency of the facility, although not all data may need to be transferred, but could also be stored on site: data on the maintenance of monitoring equipment which effects the measurement and transmission of data must also be monitored and stored for a set period of time;
- environmental monitoring in the direct vicinity of the facility of components specific to the activity, such as fluorides near P-fertilizer, aluminium and brick factories; dust near steel mills; SO2 near smelters and power stations; noise near salvage yards; and dioxins/furans near incinerators and foundries;
- all measurements must be analysed according to standardized methods agreed to by the inspection system, in close cooperation with the national laboratory.

Annex 10 contains additional information on the scope of self-monitoring, requirements for the operator and the role of the competent authority. The information has been obtained from such sources as the European Network for the Implementation and Enforcement of Environmental Law (IMPEL) and EURO BAT[1].

Monitoring by authorities should include the following as a minimum:

- a programme to check the performance of self-monitoring of industrial activities, based on checking, sampling and analysis by the inspection system's own laboratories or by certified laboratories;
- inspection on site of self-monitoring records and the internal managerial arrangements of the facility, including the verification of maintenance schemes to ensure the reliability of the measurements, the inspection of calibration procedures and of sampling points;
- reporting and feedback of the results of monitoring to the permitting authority, with follow-up advice.

Self-monitoring has to be promoted by inspection systems so that it can be included in permits as much as is reasonable, with a view to alleviating the burden of monitoring by the authorities and promoting the accountability of industry for the environment. On the other hand, self-monitoring does not remove the responsibility of inspection systems to carry out their own monitoring, although its frequency and duration may change, depending on the proven reliability of self-monitoring.

[1] EURO BAT is the Institute located in Sevilla of the EU that determines for a number of industries what is considered BAT (Best Available Techniques)

Chapter 14. Environmental management systems

An Environm
ental Management System (EMS) is part of the enterprise's overall management system. It includes an organizational structure, planning, responsibilities, practices, procedures, processes and resources for the implementation and maintenance of environmental management. An EMS combines all these aspects into a management plan to develop, implement, achieve, maintain and improve the enterprise's environmental policy, objectives and targets.

The origins of the EMS approach are to be found in the experience acquired by a number of companies in response to environmental problems. These experiences have ranged between doing nothing and crisis response, and have led to the integration of environmental issues into the overall management structure of the company.

The development of an EMS may also be triggered by the rising costs of environmental liabilities when non-compliance is revealed and strict enforcement measures are applied. The first tool developed was an audit system, very similar to a financial audit, to ensure compliance with the environmental regulations governing the company. The system was subsequently expanded to encompass the monitoring of the company's managerial practices and the analysis of its environmental weak points. The next logical step was to incorporate and integrate the Total Quality Management (TQM) approach in environmental issues. This approach is now well accepted in EMS. A full analysis of the EMS approach can be found in ISO 14001, BS7750 and the European Union's EMAS Regulation (EEC 1836/93).

Although governments strongly support and promote the application of these concepts by companies, their added value to the authorities, and particularly inspection systems, is not fully recognized. It is not yet clear how the audits that are part of EMS systems can be used by inspection systems.

Inspection systems could be guided by the following suggestions when working with companies adopting the EMS approach:

- in principle, companies with EMS systems should not be treated any differently from other companies: the audits are internal and, unless specifically required by the permitting body, should remain internal reports with no effect on the compliance and enforcement functions of inspection systems: no evidence of violations should be drawn from the contents of these reports;
- in the event of serious offences, and assuming that there is no other way of obtaining the specific information required, inspectors could exercise their powers to obtain these reports;
- company audits should not be used for regular compliance control, with the exception of any reporting on monitoring and measurements that is in any case required in the permit.

However, inspection systems may change their strategies and policies towards companies with an EMS in the following ways:

- the frequency of regular compliance and enforcement inspections may be reduced, provided that the company has proven sufficiently in the past that its EMS system works properly, cases of non-compliance have been reported voluntary and consistently and adequate countermeasures have been taken;
- where reporting and control analyses by the authorities have been carried out regularly and show no deterioration in emissions over time or any increase in the number of incidents, and there has been no change in management or take over of the company, consideration may be given to reducing in-depth compliance checking to administrative compliance checking and diminishing the frequency of sampling;
- it is clear from the information provided in Annex 11 that neither ISO 14001, BS 7750 or EMAS can replace the responsibility of the authorities to check on compliance with the regulations.

Annex 11 contains an overview of the step-by-step development of an EMS and of the attitudes of authorities towards ISO 14001, BS7750 and EMAS.

EMS may very well be promoted by the authorities and may generate a different type of compliance and enforcement inspection. The differences may lie in the frequency and depth of inspections, based on the experience acquired with a particular enterprise. It should be clearly indicated that responsibility for compliance checking remains with the inspection system.

Chapter 15. Human resources management

Many management books have been written on this subject, but little information is available on human resources management that is specifically relevant to environmental inspection systems.

With regard to the qualifications of inspectors, it may be said that, in view of the functions assigned to inspection systems as a whole, and to individual inspectors, a broad range of qualifications and managerial skills are required. The management of an inspection system has often been compared with “running with a wheel barrow full of frogs and trying to keep them all in.”

The human resources in inspection systems consist of a group of inspectors who are:

- highly qualified and professional;
- highly motivated;
- involved in the community and society;
- law-abiding and of a high moral standard;
- independent in their attitude to work;
- difficult to change,
- output and product oriented.

In addition to the above, the following may be added with regard to their personal characteristics and working habits.

Personal characteristics:
They are polite, punctual, ethical, meticulous, methodical, curious, not afraid to ask questions, flexible and confident.

Working habits:
They are professional, they complete paperwork, plan ahead, work well with colleagues, consult experts, understand bureaucracy, use resources effectively, and are always well prepared, thorough, fair and consistent in their approach.

Taking an overview of the functions of inspection systems and the changes and trends that are inevitable in the field of the environment, it may be said that inspection systems will be increasingly difficult to manage. It will also be difficult to find people who are suited to the ever-changing objectives set for inspection systems.

The optimal composition of inspection systems (in terms of numbers and qualifications) at the various stages depends on many factors, including:

1. The scope and extent of the environmental requirements that have to be met, the complexity of the regulations and the type of inspection that is required.
   (Note (a): If inspection systems consider facilities or enterprises as “ black boxes” and only check emissions, without needing to look at their internal processes, a simple “clerk” type inspector is all that is needed. However, a totally different type of inspector is required if process knowledge is required during inspection to establish compliance.
   Note (b): Integrated inspections require generally knowledgeable and experienced inspectors, while more specialized inspectors may be adequate for inspections covering a single field).

2. The preferred ratio of inspectors to the number of facilities requiring inspection.

(Note: An experienced inspector has about 160 effective inspection days per year available. Depending on the complexity of the facilities to be inspected, an average of 50 to 100 facilities can be inspected a year. Two to three on site visits a week are a good average. In the event of second-line inspections, one inspector can supervise 3-500 facilities on average).

3. The preferred ratio of permit drafters to inspectors in organizations that are responsible for permitting as well as inspection.
   (Note: In organizations that handle both permitting and inspection, an average ratio of 3 to 4 permit drafters to one inspector is a common figure).

4. Anticipated level of non-compliance.
   (Note: A non-compliance rate of 40 per cent is usual during first visits, with a residual rate of 10 per cent in second visits, with penalties being imposed or legal action being taken in 1-2 per cent of the cases. Two out of 100 inspections therefore tend to end up as court cases. This figure is important in estimating the human resources required to cope with the judicial aspects of an inspection system. An experienced lawyer or a person with a degree in law can on average handle 25 court cases a year, although evidently these figures may vary from one country to another).

5. Administrative and managerial resources needed to support inspection and permitting activities
   (Note: Inspectors do their own report-writing and administrative work; a ratio of four inspectors to one administrative employee is the average. Administrative support is only for filing and the typing of special reports, answering the telephone and keeping the agenda. Management requires one manager for 10-15 inspectors, one manager for ten permit drafters and one legally trained person for 30 employees.
   Supervision in departments or sub-departments has a span of control of max 6).

6. Overlapping responsibilities with other governmental agencies (from which resources can be drawn, or for which resources have to be made available)
   (Note: In most cases, only one person per organization is in charge of coordination with other authorities. In most cases, the manager (seconded by a deputy or an administrative employee with experience) takes care of this function)

Functional qualifications of environmental inspectors

Depending on the level of development of the inspection system, the functions assigned to it and the human resources available, the qualifications of the staff will vary considerably. For the sake of simplicity, the following job classifications may be used:

Technical (T): highly-qualified personnel with university degrees (MSc) and, depending on types of industries covered, degrees in chemical engineering, civil engineering, biology (if many agricultural industries are covered), sanitary engineering, or equivalent degrees. These are mostly inspectors who carry out detailed on-site visits. They need to have reporting capabilities and do not require a lot of coaching. Senior inspectors must have more than five years experience in the field and are preferably recruited from industry. They should be able to take initiatives in investigating cases of non-compliance.

Junior inspectors must have more than two years of experience in the field, and a university degree or equivalent. They work with senior inspectors on larger compliance checking functions. They should have reporting capabilities using pre-established report forms.

Adjunct inspectors come straight from university and are trained on the job for two years before becoming junior inspectors.

Administrative personnel (A): with technical training in the administrative control of permits and applications for permits. They may have a BSc. in environmental science or education in sanitary and or civil engineering, or equivalent experience. Experience in industry as technicians or operators of facilities. They check monitoring and self-monitoring requirements based on a checklist and they draft reports using pre-established report forms.

Visual inspection personnel (V): personnel with either many years experience in assisting administrative compliance checking or with some technical experience.

Table 2

Compliance checking methods versus skills

Compliance checking activity	**Skills required/suggested**
Integral inspections of complex facilities	Teams of Ts +As
Integral inspections of small facilities	T or A
Specific inspection of single field	T or A or V
Administrative checking	A
Ad hoc	A, T or V
Surveillance inspection	A or V or teams of A+V
Complaints	T or V
Condoning controls	T

The following table indicates the required capacities and qualifications of inspection system personnel for the performance of duties in the field of compliance checking.

Table 3

Compliance checking: required capacities and resources

Compliance checking activities	**Requirements/ conditions**	**Capacities/ qualifications of personnel**	**Human resources relative to operational budget**	**Frequency in practice for facilities**
Technical on-site inspections	Emissions/standards and permit conditions	Specialized highly qualified personnel	Considerable (expensive personnel)	Low e.g. once or twice a year
Administrative compliance checking	EMS, procedures, test certificates for self-monitoring, and monitoring data	Well qualified environmentalists with technical background	Average	Medium e.g. twice a year
Visual compliance checking	Basic provisions, safety records, data transmission equipment, operation and standby emergency equipment	Personnel with basic environmental training	Low	High e.g. 10 times/ year visits of disposal sites, complaints, investigations

Annex 12 provides a graphical overview of the effort (human resources and funding) required for the development of an organization responsible for managing compliance and enforcement. The permitting and enforcement components clearly vary considerably at the various stages of development. Most of the data provided apply to fully developed organizations with a relatively stable workforce and a well-defined inspection plan. In practice, and especially during the stages of strengthening and building the capacities of inspection systems, these figures may be quite different. Improving the enforceability of permit requirements plays an important role in achieving full enforcement.

The knowledge and skills of personnel in inspection systems vary according to the functions that they are assigned and need to be kept updated by means of training. The rotation of inspectors and permit drafters in inspection systems that also cover permit writing is an excellent way of improving the enforceability of permits, as well as the quality of inspection

The following list is split into three basic knowledge categories, namely legislative, scientific/technical and personal skills:

Legislative:	Knowledge of national environmental acts/laws/regulations in all environmental fields, applicability of standards National basic laws and new laws/regulations under preparation Constitution (only as far as applicable to the task) Precise powers and obligations of inspectors and the organization Knowledge of legal possibilities of other authorities with which they have to cooperate Functioning of courts, public prosecutors and legal procedures Legal requirements for the collection of evidence and drafting legally correct reports of violations (training with forensic specialists)
Scientific/technical:	Technical report writing Environmental auditing Compliance audits Computer skills Best Available Techniques (BAT) and Best Available Techniques Not Entailing Excessive Costs (BATNEEC) Sampling methods Site safety knowledge Current scientific and technical environmental issues Documentation systems (data retrieval systems)
Personal skills:	Investigating skills Handling confrontations Stability under pressure Creative and innovative approach

In relation to human resources management, inspection systems have to address the following as a minimum:

- long-term personnel planning is an essential part of human resources management;
- new staff and regulations must be accompanied by budgets and funding before they can be constructively incorporated into personnel planning;
- a personnel management plan has to be incorporated into long-term planning;
- a personnel appraisal system should be developed, with promotion opportunities based on performance ratings rather than seniority;

- staff training is essential: junior staff should, as a minimum, have 30 per cent, middle staff 20 per cent and senior staff 5 per cent of their time each year devoted to training;
- the rotation of staff (at 3-5 year intervals) and management (5 year intervals) in the areas of permitting and inspection is necessary to improve staff capacities.

Glossary of definitions

The following are definitions compiled agreed upon under the auspices of the European Union Network for the Implementation and Enforcement of Environmental Law (IMPEL).

Promoting compliance
The use of communication, encouragement, supervision and other means to reach compliance with general and specific rules.

Enforcement
The application of statutory means of coercion and sanctions to ensure compliance in a situation where non-compliance with an act or regulation has been established.

Supervision
The checking by competent official designated as a supervisory officer. Supervisory activities may include Site visits/inspections, the monitoring of emissions, the periodic evaluation of licenses, the performance of environmental audits and checks on transport.

Primary supervision/first line inspection
The checking of compliance with legislation and regulations by the competent authority given responsibility by law for direct checking.

Secondary supervision/second line inspection
The checking by higher government authorities of the implementation by lower government authorities of their environmental functions (i.e. supervising the supervisors).

Investigation
The process of detection activities designed to discover criminal offenses for the purpose of criminal law enforcement.

General investigating officials
The officers of the regional police forces and the National Police Force, who have a general power of investigation.

Special investigating officials
The officials who have restricted powers of investigation. This means that the power of investigation is restricted to the investigation of certain offences made punishable in certain laws.

(2) Criminal law enforcement instruments
The public prosecutor is in charge of the criminal law enforcement.
In a situation where an offence has been established the public prosecutor can take the following decisions:

* impose certain provisional measures;
* apply to the court for the imposition of more severe provisional measures than those mentioned above;
* not to prosecute;
* not to prosecute under certain conditions;

* propose an out of court settlement;
* prosecute.

Out-of-court settlement
A settlement between the public prosecutor and the suspect in which the suspect is given the opportunity to avoid further prosecution on certain conditions. These conditions may entail the obligation to pay a fine, the obligation to take remedial action, the obligation to improve the internal environmental care in a company, the obligation to accept a press release of the "out of court "settlement.

Provisional measures
If there is a serious suspicion of an environmental offence and immediate action is required the public prosecutor may order the suspect to refrain from certain acts and/or to store and keep certain objects in a place designated in the order. He also can apply to the court for the imposition of more severe provisional measures. The court can for example order the (partial) closure of the suspect's business, the appointment of an administrator to manage the affairs of the suspect, the (partial) divestment of certain rights or the confiscation of certain benefits.

(3) Administrative law enforcement instruments
The competent public authority is in charge of the administrative law enforcement. These authorities have the following enforcement instruments at their disposal: communication, encouragement, supervision and the application of administrative sanctions.

Officials of the competent authorities may have the following administrative law powers to make supervision possible:

* demand to inspect and take copies of books and other business records;
* halt means of transport and search their cargoes;
* enter all places with equipment;
* arrange to be accompanied by other persons when they enter premises;
* list, examine and take samples of goods.

The following administrative sanctions can be applied:

* exercise executive coercion: i.e. to take remedial action at the expense of the offender;
* impose penalty payments: i.e. a penalty which applies as long as the person/firm in question infringes the rules and which has to be paid per period of time that the infringement lasts or per offence [= coercion sum or environmental performance bond];
* change the license or the exemption;
* (partially) cancel the license or the exemption.

Condoning
The act by the competent authority to tolerate an illegal situation.
A division is made between active and passive condoning.

Active condoning means that the competent authority explicitly makes clear in writing to the offender that no administrative enforcement action is taken against a certain illegal situation. Active condoning is allowed only under strict conditions.

Passive condoning means that the illegal situation is tolerated without any action of the competent authority towards the offender. Passive condoning is not allowed.

(4) Covenant

Voluntary agreement/letter of intent between government authorities or government authorities and the private sector on certain environmental issues. Sometimes these covenants are linked to existing guidelines or sometimes they anticipate new legislation.

Target group

A group in society that makes a large (and fairly homogenous) contribution to the environmental burden. Possible target groups: agriculture, industry, refineries, energy companies, retail trade, traffic and transport, consumers, construction industry, waste disposal sector, drinking water supply industry and research institutes.

Target group policy

The arrangements made between the government authorities and the various target groups to achieve environmental targets within a given period.

Corporate environmental plan

A plan in which the environmental effort to be made by a company is defined.

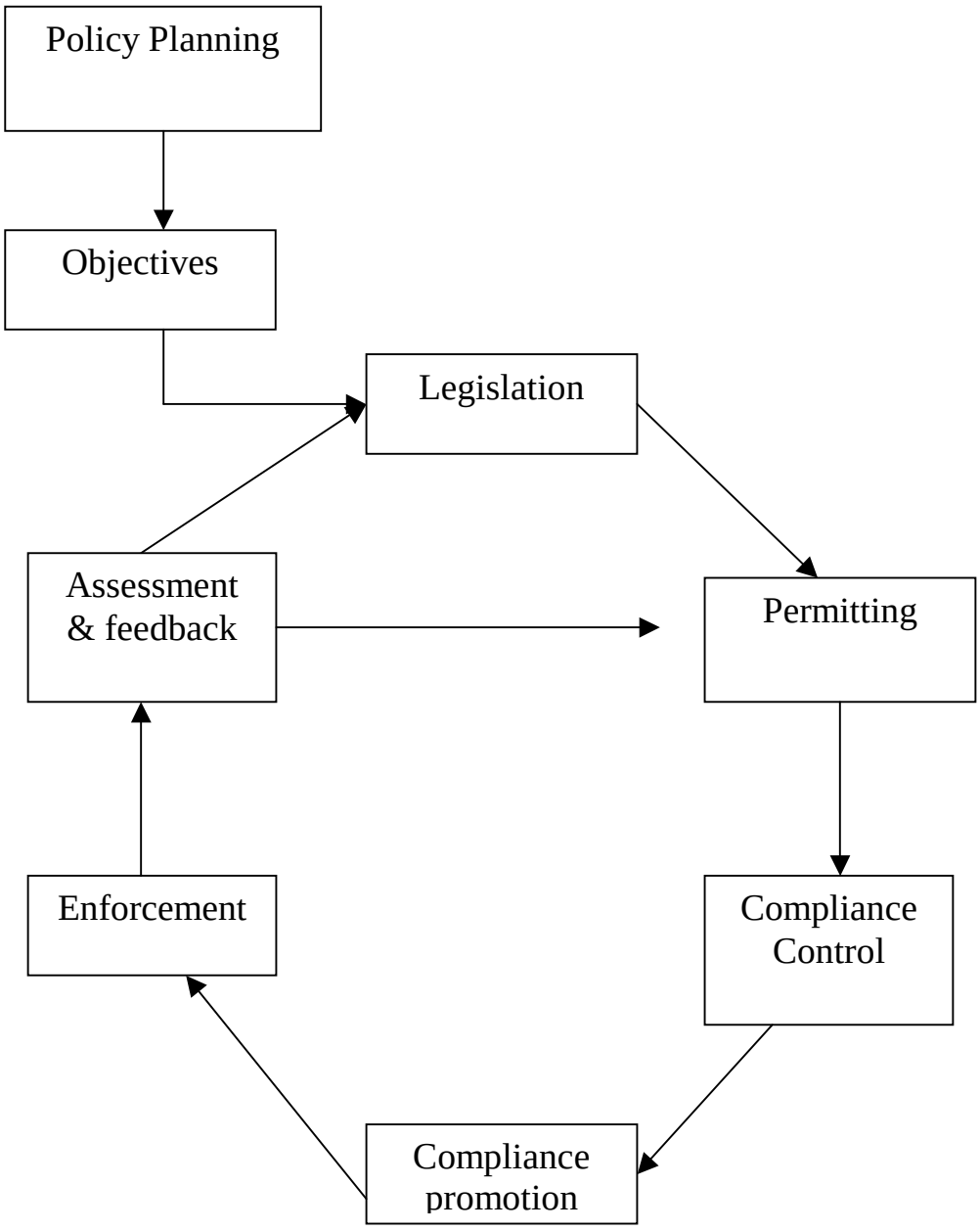
(5) Corporate environmental management system

The part of the overall management system which includes the organizational structure, responsibilities, practices, procedures, processes and resources for determining and implementing the environmental policy.

ANNEXES

ANNEX 1

The Regulatory Cycle



ANNEX 2

Her Majesty's Inspectorate of Pollution
THE ENVIRONMENTAL PROTECTION ACT 1990, SECTION 6

Application for an Authorisation under IPC

If there is insufficient space on the application form please continue on separate sheets and indicate, at the top of the continuation sheets, the question being answered.

**Please delete where not applicable.*

Section 1 : Applicant's Details

i)	Registered Name and address of Applicant	Name : Address : Town : Country : Post code :
	Contact	Name : Tel. No. :
	Companies House Registration Number *(where appropriate)*	
ii)	Address of Process *Location (if mobile process: principal place of business)*	Name : Address : Town : Country : Post code :
	Contact	Name : Tel No. :
	National Grid Reference *(eight figure: e.g. TL 1234 5678)*	
iii)	Address to which invoices should be sent	Name : Address : Town : Country : Post code :
	Contact	Name : Tel No. :

iv) Application Fee (cheques should be made payable to: "*HER MAJESTY'S INSPECTORATE OF POLLUTION*". PAYMENT BY DIRECT DEBIT & CREDIT CARDS NOT ACCEPTED.

Amount attached to application:	
Number of components:	
Components contained within process *(see guidance note):*	
Schedule reference number and process type:	

v) Is this an application for a mobile process? Yes/No

vi) Borough or District Council area in which premises are located *(if mobile process then local district council of principal place of business):*

vii) Waste Regulation Authority area:

viii) Are there any plans to discharge to sewer? Yes/No

If Yes, please provide name of Sewerage Undertakers:

ix) Are there any plans to discharge to controlled waters? Yes/No

x) Are there any sites of special scientific interest (SSSI) within 1 mile of the process? Yes/No

If Yes, please detail:

xi) Are there any details you consider need to be covered by commercial confidentiality? Yes/No

xii) Have you given Notice to the Secretary of State (Environment) that information contained in this application should be excluded from the public register in the interest of national security? Yes/No

If Yes, what was the date of the Notice?

If Yes, please see the attached guidance note which details the procedures you must follow.

xiii) If this is an existing process are there any current documents permitting the release of substances into the environment? Yes/No

If Yes, please enclose copies of consents/agreements/authorisations, etc. that are held *(if copies not available then list and give appropriate reference numbers, where known).*

Applicant's Declaration

I hereby declare that al information contained in this application is, to the best of my knowledge, correct.

Signed *(on behalf of organisation)* : Position in organisation :	Organisation name: Address : Date :

Where necessary, answers to the following questions should be provided on separate sheets. Please identify the question numbers to which answers relate and please indicate in each section that extra sheets are included.

Section 2 : Process Information

a) State the category and purpose of the process:

Is any information provided on additional sheets? Yes/No

b) Brief description of process *(Please provide a FULL description on a separate sheet)*:

Is any information provided on addition sheets? Yes/No

c) What standby capacity is available to cope with the breakdown or planned maintenance of process (with respect to planned or unplanned releases)?:

Is any information provided on addition sheets? Yes/No

d) Describe how the process *(including the abatement techniques)* copes with he full range of operating circumstances of the plant [i.e. the normal range of operating conditions, together with any foreseeable movements away from the norm *(e.g. start up of process)*].

Is any information provided on addition sheets? Yes/No

e) State if the process will be operated continuously and give details of the staff employed to control the process, their training, together wit h the management arrangements of the staff, and the process generally:

Is any information provided on addition sheets? Yes/No

f) Describe the techniques (including chimney height in cases of releases to he atmosphere) that will be used to ensure that the objectives, contained in section 7(2) and (7) of the Act *(see Introduction to accompanying guidance note)* are met. This should include all the relevant techniques *(e.g. process controls)* and should not be limited to any abatement techniques that are employed to minimise or render harmless any releases.

Is any information provided on addition sheets? Yes/No

g) How will the objectives mentioned in sections 7(2) and 7(7) of the Act be achieved, and how will compliance with the general condition implied by section 7(4) of the Act be demonstrated? *[Should the application be for an existing process a timetable should be provided that details the improvements that the applicant intends to implement to bring the process up to new plant standards (see guidance note). A full justification for the timetable and why the improvements cannot be implemented sooner should also be supplied].*

Is any information provided on addition sheets? Yes/No

If necessary, answers to the following question should provide on separate sheets.
Please identify the question numbers to which answers relate and please indicate in each section that extra sheets are included.

Section 3 : Releases to the Environment

i. Releases to Air

a) Does the process result in any release into the atmosphere? Yes/No

If No, please go to Section 3(ii), if Yes, continue with this Section.

b) List any prescribed substances to be released to air, and any other substances that may be released to air that could cause harm to the environment.

Give full details of any stacks, chimneys or other release points that will be a source of the above substances being released into the atmosphere.
Please quote the release rates in terms of 0˚ centigrade, pressure of 100kPa. Also identity the percentage of oxygen, and the exhaust velocity for each release point.
Where the release rates are formed by a combination of substances please group the substances in the table below to indicate the composition of the combined release into the environment.

Substance and mass released	Release rates (m^3/s)	Expected average concentration (mg/m^3)	Maximum release concentration (mg/m^3)	Release point description	Height of release	Map reference

Is any information provided on addition sheets? Yes/No

c) What are the consequences of the release of these substances taking into account local circumstances *[including any releases from nearby processes (where the information relating to other processes is publicly available)]*?. Give references for any assessment criteria used *(e.g. modelling, dispersion calculations).*

Is any information provided on addition sheets? Yes/No

ii. Releases to Water - controlled waters.

Please see the "Guidance to Applicants" which gives advice on what information is required to adequately describe the location of the various release points to waters.

a) List any prescribed substances that are to be released to controlled waters, and any other substances that may be released to controlled waters that could cause harm to the environment.

Where the releases consist of a combination of substances please group the substances in the table below to indicate the composition of the combined release into the environment.
All concentrations to be expressed in terms of mg/l and the rate of flow of the discharge in terms of litres/second.

			Release		
Substance	Release point	Name of watercourse	Rate of flow (l/s)	Maximum concentration (mg/l)	Average concentration (mg/l)

Is any information provided on addition sheets? Yes/No

b) What are the consequences of the release of these substances taking into account local circumstances *[including any releases from nearby process (where the information relating to other processes is publicly available)].* Give references for any assessment criteria used *(e.g. modelling, dispersion calculations).*

Is any information provided on addition sheets? Yes/No

iii) Releases to water - sewers

a) List any prescribed substances, and any other substances that may be released to sewers that could cause harm to the environment.

Where the releases consist of a combination of substances please group the substances in the table below to indicate the composition of the combined release into the environment.
All concentrations to be expressed in terms of mg/l and the rate of flow of the discharge in terms of litres/second.

		Release		
Substance	Release point	Rate of flow (l/s)	Maximum concentration (mg/l)	Average concentration (mg/l)

Is any information provided on addition sheets? Yes/No

b) What are the consequences of the release of these substances taking into account local circumstances *[including any releases from nearby process (where the information relating to other processes is publicly available)].* Give references for any assessment criteria used *(e.g. modelling, dispersion calculations).*

Is any information provided on addition sheets? Yes/No

iv) Releases to Land

Are there any substances that will be released to Land? *(This should include those materials that are removed from the site for landfill, those materials that are landfilled on the site occupied by the process, and any substances that could be released from the process, into the land on which the process is sited, or that could contaminate the ground or the buildings).* Yes/No

If No, please g to section (v), if Yes, please complete the table below.

Substance	Release point	Concentration (mg/l)	Quantity released *(annual tonnage)*

Is any information provided on addition sheets? Yes/No

v. Other Releases from the Process

Are there any other releases form the process that have not been detailed above *(e.g. as a consequence of: incineration, chemical treatment etc.)?* Yes/No

If No, please go to section (vi), if Yes, please complete the remainder of this part.

a) Please give details of al other releases by completing the table below.
Where the releases consist of a combination of substances please group the substances to indicate the composition of the combined release into the environment.

Substance	Release point	Concentration (mg/l)	Quantity released *(annual tonnage)*

Is any information provided on addition sheets? Yes/No

b) What are the consequences of the release of these substances taking into account local circumstances *[including any releases from nearby process (where the information relating to other processes is publicly available)].* Give references for any assessment criteria used *(e.g. modelling, dispersion calculations).*
Where the releases consist of a combination of substances please group the substances to indicate the composition of the combined release into the environment.

Is any information provided on addition sheets? Yes/No

vi. Storage of substances

Are there any requirements to store raw materials prior to use, intermediates produced in the process of wastes on site prior to disposal? Yes/No

a) Please detail the storage arrangements used *(where the storage involves mixtures of substances please group substances to indicate the nature and composition of such mixtures).*

Description of substances stored	Location of storage	Detail of storage method

Is any information provided on addition sheets? Yes/No

Section 4 : Compliance

1. Applicants will be required, as a condition of authorisation, to make and implement adequate arrangements to demonstrate compliance with the conditions of the authorisation. This section is for the company to propose how it would demonstrate compliance with possible authorisation conditions relating to:

    i. feedstock quality (where it affects the releases to the environment)
    ii. process parameters
    iii. performance of pollution abatement plant
    iv. release monitoring or sampling
    v. environmental sampling
    vi. analytical procedures
    vii. quality assurance plans
    viii. record keeping

Reference should be made to British Standards Institute and other accepted procedures/standards wherever possible.

Is any information provided on addition sheets? Yes/No

ANNEX 3

Human resources calculation scheme

Calculation of number of Inspectors				
Polluting level	**High**	**Medium**	**Low**	**Totals**
Number of enterprises				
Freq. “on site inspections”/a				
Freq. “administgrative inspections”/a				
Days per “on site” Insp. per “adm.” Insp.				
Total mandays				
Effective days per inspector				
Number of inspectors				

Additional staff requirements		
Management		
Administrative staff		
Judicial support		
Staff turn over		
Total		

Total of Inspectors and additional staff	

Human resources calculation scheme

Calculation example (Simplified system)

Calculation of number of Inspectors				
Polluting level	**High**	**Medium**	**Low**	**Total**
Number of enterprises	750	6000	15000	21750
Freq. “on site inspections”/a	2	0,5	0,2	
Freq. “administrative inspections”/a	3	1	0,2	
Days per “on site” Insp. / per “adm.” Insp.	2 / 1.0	1.0 / 0.5	0.5 / 0.2	
Total mandays	5250	6000	2100	13350
Effective days per inspector				150

Additional staff requirements		
Management	One Chief Inspector and 9 division heads A ratio of one management level to 10 to 15 Inspectors on average	9
Number of inspectors		90
Administrative staff	On average 4 to 5 inspectors to one administrative support	18
Judicial support	On average one judicial person to 30 inspectors On average 100 inspections 2 court cases	4
Staff turn over	Stable personnel 5% On average 10% turn over	9
Total		40

Total of Inspectors and additional staff	130

Example with different system of calculation based on number of conditions to be checked and different complexity factors

EXAMPLE ON HUMAN RESOURCES for ENFORCEMENT ACTIVITIES

	Polluters		
	High	**Medium**	**Small**
Total number of factories	50	75	17000
Number of prescriptions per permit	100	50	10
Complexity factor	2,5	2,0	1,0
Total units for enforcement checking	12500	7500	170000
Number of visits per year	2	2	0,5
Units per year	25000	15000	85000
Units per manyear	3000	4000	5000
Number of Inspectors required*	8	4	17
Administrative support	3	2	5
Management	1	1	2
Total Manpower	12	7	24
Grand total	43		

* No correction for personnel turn-over: no judicial support.

- In Sri Lanka, there are 60.000 industrial establishments of which 17.000 are registered under the Factory Ordinance of the Labour department.
- In 1989, 7.610 industries were surveyed.
- About 4.600 are classified as potential polluters :
  - 49 of high polluting capability and
  - 73 of medium polluting capability

ANNEX 4

FACTORY VISIT

- **PREPARATIONS**
- **ON-SITE VISITS**
- **REPORT**
- **FOLLOW-UP**

FACTORY VISIT

PREPARATION - 1

GENERAL

- **MANAGEMENT STRUCTURE**
- **FACTORY HISTORY (Business, complaints)**
- **SITE DESCRIPTION**
- **PROCESS DESCRIPTION**
- **PERMIT REVIEW**

  WATER, WASTE, AIR, NOISE, SOIL, GROUNDWATER, RISK
- **QUALITY STANDARDS APPLICABLE**

FACTORY VISIT

PREPARATION - 1

OBJECTIVES OF VISIT

- **DEFINE OBJECTIVES**
- **PRIORITIE OBJECTIVES**
- **STEP-BY-STEP APPROACH**
- **ANNOUNCED/UNANNOUNCED VISIT**

APPROACH

- **INTRODUCE PURPOSE OF VISIT TO MANAGEMENT**
- **EXPLAIN PROCEDURES**
- **ANTICIPATE REACTIONS**

FACTORY VISIT

ON-SITE VISIT - I

- **CIRCUMVENT PREMISES AND OBSERVE ANOMALIES**
- **ASK FOR MAN IN CHARGE**
- **EXPLAIN PURPOSE OF VISIT**
- **EXPLAIN PROCEDURES / FOLLOW-UP / REPORTING**
- **ASK FOR CHANGES IN THE PROCESS, EQUIPMENT, WORKFORCE, BUSINESS GENERAL**
- **REVIEW PERMIT SITUATIONS**
- **EXPLAIN MAJOR PROCESS STEPS AS YOU HAVE UNDERSTOOD FROM PERMIT APPLICATION;**
  ASK COMMENTS
- **RUN CHECKLIST ON MAJOR ENVIRONMENTAL ITEMS**
- **DISCUSS FACTORY VISIT**

FACTORY VISIT

ON-SITE VISIT - II

- **EXECUTE VISIT ON SITE :**

  LOOK FOR WATER, WASTE, AIR, NOISE, SOIL, GROUNDWATER, RISK

- **CHALLENGE MANAGEMENT WITH DETAILED QUESTIONS**

- **RETURN TO OFFICE OF FACTORY**

- **GIVE IMPRESSION OF VISIT**

- **ANNOUNCE VISIT REPORT (ROUGH CONTENTS)**

- **GIVE FURTHER FOLLOW-UP :**

  - **ADVICE**
  - **WARNING**
  - **TICKET**

- **INDICATE FUTURE VISIT**

FACTORY VISIT

REPORT

- **PREPARATION ACTIVITIES**
- **OBJECTIVES OF VISITS**
- **RESULTS - OBSERVATIONS**
  - CONCLUSIONS
- **DATA IN ATTACHMENTS**
- **INFORM FACTORY ON REPORT, ASK COMMENTS WITHIN TIME-FRAME ON DRAFT**
- **GIVE REACTION ON COMMENTS IN FINAL REPORTS**
- **REPORT TO DEPARTMENT MANAGEMENT WITH RECOMMENDATIONS AND FOLLOW-UP**

IN BRANCH TYPE INVESTIGATIONS CONSIDERABLE TIME SAVING CAN BE ACHIEVED THROUGH STANDARDIZATION

FACTORY VISIT

FOLLOW-UP

- **EXECUTE FOLLOW-UP FROM RECOMMENDATIONS**
- **CHECK DATA ON FEASIBILITY BEFORE ACTION**
- **REPORT TO DEPARTMENT MANAGEMENT OF FOLLOW-UP ACTIVITY PLANNED**
- **ASK MANAGEMENT FOR LIMITATIONS, RESTRICTIONS OR OTHER ELEMENTS THAT MIGHT OBSTRUCT THE EXECUTION OF THE RECOMMENDED ACTIONS**
- **FEED BACK RESULTS IMMEDIATELY**

ANNEX 5

INSPECTION REPORT

Application No: ……..

Date : ……..

Sector ( )

Category ( )

Report on Inspection of: …… …..

on: …… …..

1.0	Inspected by :	1.	…….
		2.	…….
		3.	…….
2.0	General information:		
2.1	Name and address of		
	Industry / Operation / Process		…….
			…….
2.2	Type of Industry / Operation / Process		Manufacture/Assembly/Formulation/
			Repacking Processing/Other (Specify)
2.3	Name and Designation of Officials interviewed		…….
			…….
3.0	Description of Industry:		…….
3.1	Date of commencement of operations:		…….
3.2	Number of shifts :		…….
3.3	Shift time:		…….
3.4	Strength of work force:		…….
3.5	List of Manufactured Products:		…….
3.6	Production capacity:		…….
3.7	Average daily production rate:		…….
3.8	List of Raw Materials used		…….
	(with quantities per month)		…….
3.9	Chemical Use :	…….	
3.9.1	Trade name	Chemical Name	Quantity
	……	……..	……

4.0 Details of process machinery :

	List of machines	Power (HP/KW)	Other details
i			
ii			
iii			
iv			
v			
vi			

5.0 A list of available permits from Local Authorities of State Authorities permitting the establishment of operation of the Industry:

	Name	Date of Issue	Date of Expiry
a.			
b.			
c.			

6.0 Sketch of Site (with buildings) and surroundings:

7.0 Zonal classifications:

7.1 As observed:

8.0 Pollution potential:

8.1 Noise levels :
- a. Time of measurement:
- b. State of operation: full capacity / medium capacity / low capacity
- c. Measurement at source :
- d. Measurement at boundary :

9.0 Liquid Effluents:

9.1 Source of Waste Water	Quantity
Processing	
Cooling	
Washing	
Domestic (specify)	

9.2 Mode of release: Batchwise/Continuous

9.3 Final discharge point:

9.4 Details of recycling (if any):

9.5 Sampling Details:

Sample no.	Sampling Point	Temperature

9.6 Details of available treatment:

9.7 Is land available for alteration/extensions to treatment plant:
Yes / No

10.0 Solid waste :

10.1	**Type** (of compositions	**Quantity** per day	**Method** of Disposal	**Location** of Disposal of waste)

10.2 Treatment of Solid Wastes:

10.3 Recycling Possibilities:

10.4 Information of emissions:

Possible Emissions	Density of Smoke	Colour of Smoke

12.0 Safety measures:

12.1 List of Fire Fighting Equipment:

12.2 Proposed Safety Measures to be taken in case of Industrial Accident:

12.3 Storage of Facilities for Hazardous and Toxic Materials:

12.4 Any other relevant details:

12.5 Groundwater: Protection : ----- :

13.0 Drinking water : Protection : ----- :

FOR OFFICE USE ONLY

1. New Industries
   Approved / Not Approved:

1.1 Conditions :

2. Existing Industries:

2.1 Pollution Level :
   Low/medium/high

2.2 Was licence issued: Yes/No
   If so conditions attached

2.3 Renewal date:

2.4 Next inspection

…… ……..
Date Signature of Authorised Officer

3.0 Follow-up

Rep[ort to be made available to industry: ……..(date)
Letter to be written to industry: ……..(date)
Coy of letter to legal division : Yes/No

ANNEX 6

INVESTIGATING / REPORTING

- **PRERARATION**
- **INVESTIGATION**
- **REPORT** - **general layout**
  - **practical suggestions**
- **GENERAL COMMENTS**

INVESTIGATING / REPORTING

PREPARATION

- **DEFINE GOALS**
- **SET PERFORMANCE CRITERIA**
- **SET TIME SCHEDULE**
- **MAKE “BAR-SHEETS”**
- **LINE-UP CONTENTS OF REPORT (define chapters)**
- **PREPARE QUESTIONNAIRE / CHECKLISTS**
- **PREPARE TABLES FRAMEWORK**
- **PREPARE VISITS**

INVESTIGATING / REPORTING

INVESTIGATION

- **EXECUTE PREPARED QUESTIONNAIRE / CHECKLIST**
- **REPORT ON EXPERIENCE OF VISIT**
- **WRITE INITIAL COMMENTS ON PREPARATION**
- **COMPILE CONCLUSIONS / RECOMMENDATIONS DURING INVESTIGATION IN BROAD TERMS**

INVESTIGATING / REPORTING

REPORT

GENERAL LAYOUT

- **TITLE / DATES / OFFICIALS**
- **CONTENTS**
- **EXECUTIVE SUMMARY**
- **CONCLUSIONS**
- **RECOMMENDATIONS**

NOW “REPORT”

- **INTRODUCTION**
- **GOALS / OBJECTIVES**
- **EXECUTION - CHAPTERS**
- **RESULTS - CHAPTERS**
- **ANNEXES**
- **LITERATURE**

INVESTIGATING / REPORTING

REPORT (practical suggestions)

SEQUENCE IN EXECUTION

- **Fill in tables**
- **Produce graphs**
- **Prove correlations / connections**
- **Make preliminary calculation and recommendations (number them)**
- **Organise info / data per chapter**
- **Start writing chapter-by-chapter from available tables/graphs**
- **Put not-essential data / tables in annexes**
- **Write conclusions**
- **Write recommendations**
- **Write introduction**
- **Write executive summary**

WAIT ONE WEEK (ripening process)

- **Read your report again**
- **Show to an honest friend**
- **Make adjustments**

INVESTIGATING / REPORTING

GENERAL COMMENTS

- **REMEMBER - WHO IS INTERESTED?**
  - WHO MIGHT ALSO BE INTERESTED?

- **IS THE MESSAGE REACHING THE TARGET GROUP?**

- **WHO MUST DO SOMETHING?**

- **WHAT IF / WHEN NOTHING HAPPENS?**

- **DO NOT FORGET COSTS, HUMAN RESOURCES, CAPABILITIES AND CAPACITIES WHEN RECOMENDATIONS ARE MADE**

ANNEX 7

A checklist for the assessment of academic papers, reports, proposals, published articles, themes, or books.

---

1. Aim :	What is the objective of the document, for whom is it written, from what point of view and what will it cover (and not cover).
2. Need:	Why is necessary to write it, what is wrong or missing from work of others, why is it now possible and what is its use.
3. Definition:	Words are an imprecise form of communication. More than just technical words require definition e.g. the word “management” can mean many things. Several such words together can mean practically anything.
4. Starting Point:	Can one accept the premises (or background), or summary of the correct state of the art, on which the document has been based.
5. Logic:	Is the logical development sequential, without a break and with minimum unconsidered loose ends.
6. Relevance:	Is all the material relevant to achieve 1 for the benefit of 2, taking the reader from 4 via 5 to 10 below.
7. Original:	Does the document make a genuine contribution to the state of knowledge or look at the topic in a new and useful way.
8. Conclusions:	Do these (and recommendations) inexorably follow from the arguments given, and to what extent is aim achieved.
9. Well written :	Is the document structured, clear, succinct, with minimum jargon and tables. Does it have a light unbiased style and, above all, is it interesting to read.
10. Conviction:	Does the document hear the marks of having been written by an expert or one with deep practical experience. Is evidence submitted convincing.
11. Visuals:	Do graphs, tables, diagrams etc. contribute and clarify rather than distant, distract or confuse. Is their source given and are they in the right place.
12. References:	Are these adequate in coverage of the field and of people with impeccable (or at any rate reliable) reputations.

ANNEX 8

LETTERS (on-site visits)

INTRODUCTION- **WHY LETTER**

- **PEOPLE INVOLVED**
- **WHEN**

OBSERVATIONS

- **FACTS**
- **CONFIRMATION OF FACTS AND SET DATE**
- **REACTION OF ENTERPRISE ON SITE**

CONCLUSIONS

- **1, 2, 3, ……**
- **ASK FOR COMMENTS AND SET DATE**

ADVICE

- **CHANGE ….. SET DATE**
- **IMPROVE …. SET DATE**
- **REPORT ….. SET DATE**

FOLLOW-UP

- **WHAT IF NOT ……**
- **WHEN NEXT ACTION OR NEXT VISIT**

ANNEX 9

RESPONSE TO VIOLATIONS

A review of the requirements shows several possible areas of violation. There are several possible responses to these violations.

1. Telephone call
2. Inspection
3. Warning letter
4. Official notice of violation
5. Negotiation of compliance schedule
6. Close down part of the operation temporarily
7. Close down part of the operation permanently
8. Close down the whole operation temporarily
9. Close down the whole operation permanently
10. Revoke a permit
11. Enter and correct immediate dangers to the local population or environment
12. Sock compensation for damage caused by the violation
13. Require that the company correct the problem
14. Require testing and reporting
15. Require monitoring and reporting
16. Fines (eg., a fixed amount not influenced by variable such as duration or seriousness of violation)
17. Penalty (eg., a calculated amount influenced by one or more variables such as duration and seriousness of the violation)
18. Jail terms
19. Seizure of property
20. Denial of government funding or assistance
21. Negative publicity
22. No response
23. Other: _____

ANNEX 10

MONITORING/SELF MONITORING

Monitoring of releases from industrial processes and of their impact on the environment is a key element of regulatory control. Such monitoring may be undertaken by the competent authorities responsible for inspection duties. Industrial process operators may also be required to carry out monitoring themselves and report their results to the competent authorities. This is known as "(Operator) Self Monitoring". Requirements for self-monitoring are expected to increase as:

- the complexities and sophistication of measurement techniques advance and costs rise
- industry adopts EMAS and ISO 14000 Environmental Standards
- the polluter pays principle is applied, particularly under regulatory regimes which do not provide for recovery of competent -authorities costs from operators under a charging scheme.

Self-monitoring provides additional information on which the competent authorities can judge whether an operator is complying with relevant legislation and conditions of permits. It does not change the duty of the competent authorities to assess compliance, by means of inspection, and by using its own monitoring data, or by reliance on operator self monitoring or a combination of both. The competent authorities also continue to be responsible for enforcement. Similarly it does not in any way diminish the duty on the operator to ensure that all necessary measures are taken to comply with relevant legislation and conditions of permits.

Self-monitoring, for the purpose of this paper, primarily relates to measurements of process conditions, process releases and environmental levels, and reporting of the results by the operator to the competent authorities in accordance with requirements specified in laws, regulations or permits. The self-monitoring of an operator's performance with regard to environmental targets, process/plant improvements and overall compliance is more appropriately considered under more general reporting requirements.

Requiring self-monitoring can offer benefits to the competent authorities through utilizing the operator's knowledge and experience of his process in the planning and carrying out of a monitoring program which can lead to improved control over releases to the environment
providing a mechanism for educating the operator about the requirements for complying with relevant laws, regulations and permits and for increasing management responsibility for compliance and the impact of process releases on the environment.

Self-monitoring will normally provide more information than may be obtained by periodic inspection and monitoring by the competent authorities. The operator is also in a better place to deploy self monitoring on grounds of his proximity to the monitoring points. Non-compliance will become known to the operator first who must react accordingly and inform the authorities immediately.

The operator must provide the necessary expertise, equipment and analytical facilities to carry out the specified measurements. These may be owned by the operator or be contracted out. Combinations of these arrangements are common whereby the operator takes samples and has the analyses carried out by a contract laboratory.
Whatever the arrangements are for carrying out self-monitoring the costs are met by the operator. This can free-up resources for the competent authorities to focus on other aspects of environmental protection. This is consistent with the polluter pays principle.

LEGAL CONSIDERATIONS

Because of the benefits of self-monitoring it is likely to develop into an important requirement of environmental legislation. It is important that national legal systems:

- provide the competent authorities with appropriate powers to impose requirements
  for self-monitoring on the operator:
- allow self monitoring data to be used for enforcement action against companies
  and do not consider it inadmissible on the grounds of self incrimination.

SELF-MONITORING SCOPE

Self-monitoring regimes may cover:

- controlled emissions of waste gases and airborne particulate to air via chimney stacks
- controlled discharges of waste water via sewers to and from effluent treatment plants, directly to receiving waters such as the sea, lakes, rivers and streams and to land via septic tanks and drain points
- controlled disposals of solid waste to landfill sites
- controlled disposals of solid and liquid wastes, including organics, to incinerators
- industrial process raw material inputs (e.g. trace contaminants) and operating conditions (cg process temperature, pressure and flowrate)
- fugitive releases to air, water and land
- receiving environments eg ambient air, grass, soil surface and ground waters
- use of raw materials and energy
- noise and vibration
- odor
- process/plant conditions which are relevant to the time measurements are made
- operation and maintenance of relevant monitoring equipment

COMPETENT AUTHORITIES' ROLE

As discussed, the overall duty of the competent authorities and the operator are not changed under a self monitoring regime. The competent authorities are responsible

for ensuring that the operator complies with laws, regulations and permit conditions, including those specit~,4ng the requirements for self-monitoring.

In order to achieve this the competent authorities must:

- determine or approve the self monitoring programs.specifying measurement standards and quality requirements
- assessing compliance with limits
- inspecting operators' self-monitoring arrangements
- carrying out independent monitoring

The competent authorities must approve the monitoring program, which may become a publicly available document, and specify the standards and quality requirements for self-monitoring which are to be achieved by the operator, and ensure that possibilities for cheating and fraud are minimized.

In order to ensure that self-monitoring provides reliable data, the competent authorities
must specify standards and quality requirements. This may be best achieved by working with other bodies eg Standards organizations, accreditation bodies to establish a quality measurement infrastructure covering:

- performance standards for monitoring instruments and type approval or product certification or other systems providing equal assurance.
- the requirements for on-site calibration and qualification of instruments
- performance standards and accreditation schemes for personnel and organizations carrying out manual sampling, periodic measurement using portable instruments and calibration of fixed instruments
- standards methods of sampling and analysis
- quality assurance requirements for laboratory analysis which are best developed by third party accreditation according international standards

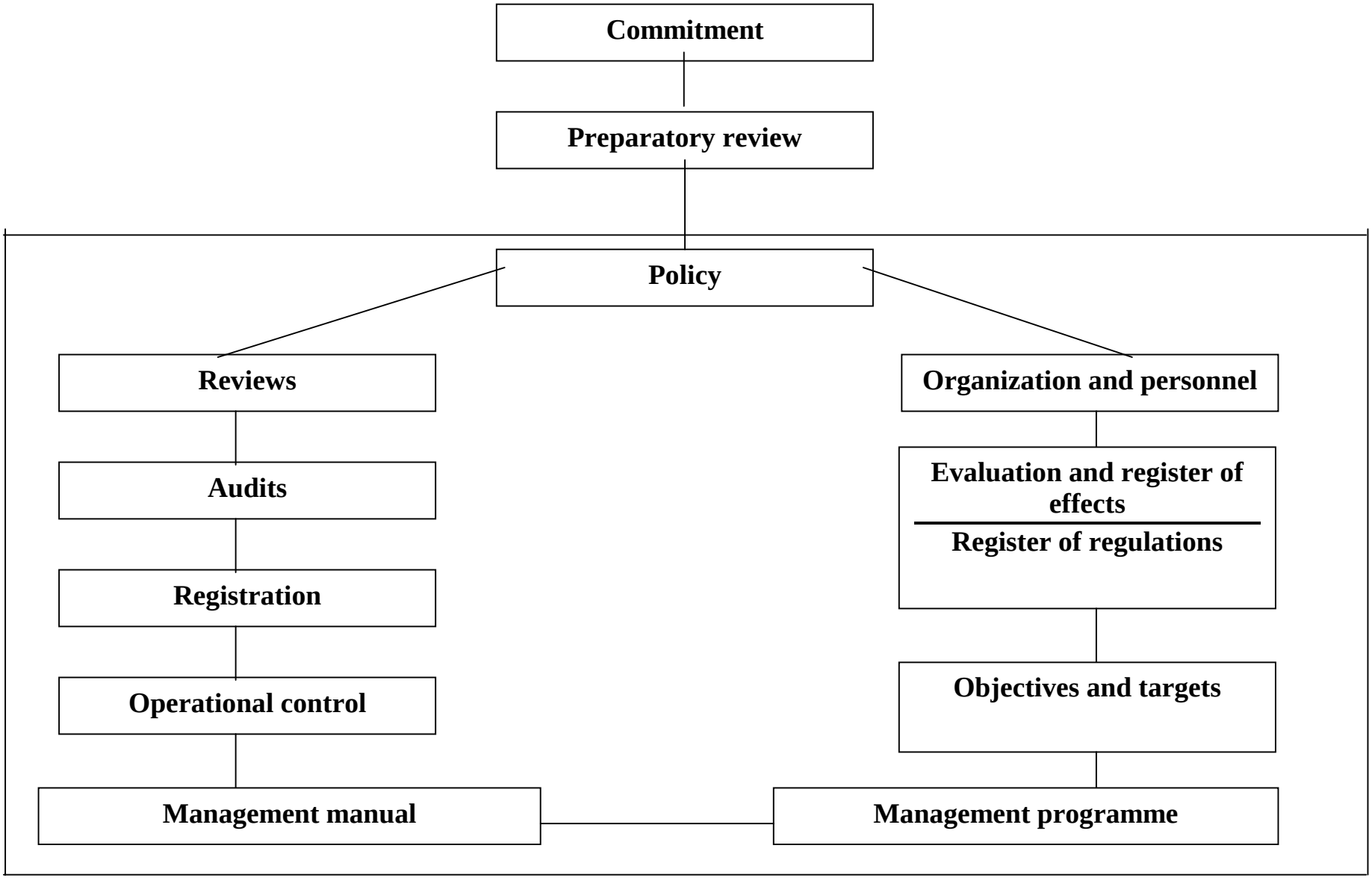
Ref: EU IMPEL files on Monitoring

ANNEX 11

INDUSTRY ⟷ GOVERNMENT

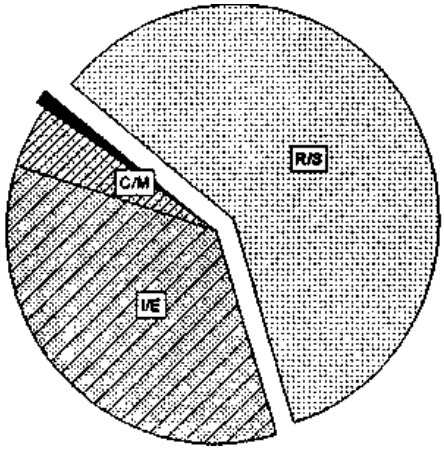
Basic instruments	**- ISO 14000 - BS 7750 - EMS -EMAS**	**Covenants - gentlemen's agreements**	**lows, regulations standards**
Implementation execution tools	**- Accreditation board (AB) (organisation) - Certification of industries**	**- Trade Organisations (TO) (branch) - agreement per sector ⟷ - information to TO**	**- Authorities - Permitting process - Permit conditions (enforceable conditions)**
Compliance checking/ control	**- Certified inspectors from AB (once 1-3 yrs) - Reporting to AB**	**- Feed-back of performance to TO - Overall reporting to authorities (4 yr interval)**	**- monitoring - reporting - inspector visits (government promotes self-monitoring)**
Enforcement authority / institute	**- AB? - Penalties? (max. revoke certificate)**	**- ? - via governmental ⟶ authorities**	**- enforcement by authorities penalties/court/police)**

Schematic diagram of the stages of the implementation of an environmental management system

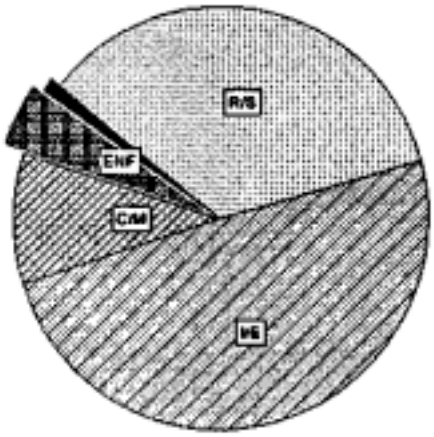


ANNEX 12

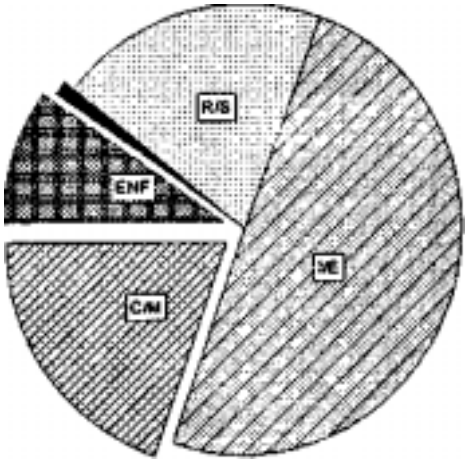
START



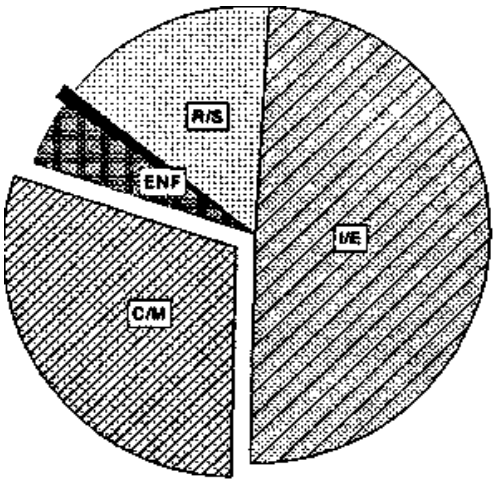
DEVELOPMENT



HALF WAY



END



Legend

ENF Enforcement
C/M Compliance and monitoring
I/E Implementation and execution
R/S Regulations/Standards

Area Reflects Human Resource Impact and Effort

References

1. UNEP Technical guidelines no 6,11,and 36 on compliance, enforcement and communication, form 1993-1996.

2. EU IMPEL publications on Criteria for Inspection, self-monitoring, planning and reporting from 1994-2000.

3. DILEMMAS IN COMPLIANCE by ir Rob Glaser Environmental Excellence

4. Moving to New frontiers in permitting, Compliance and Enforcement WHO meeting Athens March 1999

5. Guidelines for Environmental Compliance and Enforcement ANPA April 2001

6. EPA principles of Enforcement

7. Inspector reference manual from Canada

8. Ministry of Environment publications

9. Publication of the former HIMP of UK

10. FEDIC Environmental Training courses in EMS