B.5 Operations

Safety Procedures and Arrangements

B.5.1 Management should ensure that each installation in an enterprise has written operating procedures and instructions in order to establish the conditions necessary to satisfy the design intent of the installation and maintain its integrity. These should take into account the relevant standards, codes and guidance in order to ensure that equipment, plant and premises provide a safe place of work under both normal and abnormal operating conditions.

B.5.2 Before new products, processes or equipment are handed over from one department to another (for example, from research to production), management should ensure that there are written, agreed operating procedures and safety instructions in order that knowledge and experience gained in research, development, pilot plant and production are passed on. This handover should be formalised by an appropriately signed handover/clearance report.

B.5.3 Appropriate procedures should exist to ensure that effective protection against accidents involving hazardous substances exists during abnormal conditions such as when critical instruments, alarms and emergency equipment are not available, and during periods of stress at the installation (for example, when there are unusual production demands or an economic decline that affects the installation).

B.5.4 Appropriate arrangements should be introduced at a hazardous installation for the prevention of fires, and should a fire occur, for the protection of personnel, buildings and equipment and for firefighting. These arrangements should make provision for the necessary equipment, procedures, training, testing and personnel.

B.5.5 Appropriate procedures should exist for the safe shutdown and decommissioning of a hazardous installation to ensure that hazards are controlled during the shutdown process and while the installation is out of operation.

- During transition phases of operation of a hazardous installation which involve shutdowns and startups - for example, during maintenance of equipment - special efforts should be made to avoid potential causes of risk such as communication problems and split responsibility, since such phases may involve people who are not fully aware of the details of an installation's operation, policies and procedures.

B.5.6 Appropriate arrangements should be in place for maintaining the security of a hazardous installation to minimise the possibility of, for example, sabotage or vandalism. The management of the hazardous installation should specify those areas of the installation to which access should be restricted or controlled, and implement measures to maintain control and prevent unauthorised access.

B.5.7 Management should endeavour to choose the safest practicable means of transport and the safest practicable routing of hazardous substances being taken from or delivered to an installation in order to, for example, minimise the number of people potentially affected in the event of an accident.

B.5.8 A high standard of housekeeping and operational efficiency should be maintained at a hazardous installation since there is a clear correlation between

these functions and good safety performance.

Organisation and Personnel

B.5.9 Management should ensure that appropriate organisational arrangements for implementing the corporate Safety Policy are established. The line of prime responsibility for the management of safety in the enterprise, as well as individual responsibility for safety, should be clearly defined.

B.5.10 Safety should be a line management responsibility, with accountability for the day-to-day management of safety delegated to local line management at each installation in the enterprise.

(i) Management responsible for an installation should be actively involved in developing and updating the local safety arrangements for that installation, which should be designed to satisfy the broader corporate safety objectives, with the participation of the employees concerned.

(ii) Supervisory staff should receive the necessary means and training to fulfill any responsibilities delegated to it for the management of safety.

B.5.11 Management should be responsible for ensuring that each operation is staffed in a manner which allows for the safe operation of installations at all times. Included in this responsibility are the following considerations:

(i) Management should give special consideration to sufficient staffing during nights and weekends, and to controlling overtime work if it may present an increased risk of an accident involving hazardous substances.

(ii) In planning staffing schedules, consideration should be given to avoiding stress and overwork. For example, hours of work and rest breaks should be compatible with safety requirements. Overtime and rest day working by any individual should not be excessive. A record of all such abnormal hours should be maintained to facilitate control on hours worked.

(iii) The possible need for greater levels of supervision during periods of stress should be taken into account. Special staffing requirements and technical skills posed by startups, shutdowns, abnormal or unique operating situations, and emergency response needs should be identified and met by management.

(iv) Consideration should be given to the physical fitness of employees for their jobs, including those employees whose activities are largely sedentary such as managers and control room employees. In this respect, employees should not be assigned tasks if such assignments may compromise the safe operation of the installation. For instance, employees who are affected by substance abuse should not be assigned certain safety-critical tasks.

(v) Jobs which are unsuitable for assignment to disabled or restricted employees, pregnant women or young employees due to the risk of an accident involving hazardous substances should be identified and, where necessary, special arrangements made on a case-by-case basis to ensure such employees can perform their tasks safely.

(vi) Employees, and their representatives where they exist, should participate in decision-making concerning the organisation of their activities and the staffing needs of the installation, to the extent that these may affect safety.

B.5.12 Plans for personnel development and rotation of jobs should always be consistent with maintaining operational safety requirements.

B.5.13 Consideration should be given as to whether certain tasks, because of their relationship to prevention of accidents, should be subject to specific management controls; for example, a requirement for a specific authorisation or license for activities such as pressurising tanks and welding.

B.5.14 Sufficient professional safety personnel should be available within an enterprise. Their role should be to remain impartial and independent of line management, to provide expert advice and, as such, to function as the enterprise's safety conscience.

(i) In this regard, safety personnel should:

- have the necessary authority to carry out their responsibilities, and should be seen to have management support;
- interact with, and be respected by, employees at all levels in the enterprise;
- be technically competent, either through specialised training or adequate experience, or preferably both; and
- possess good interpersonal and communication skills.

(ii) The number of safety professionals should be appropriate to the size, technology and complexity of the enterprise.

(iii) Management should consider rotating employees between line management and the safety function in order to increase understanding of safety-related problems, generate better solutions to safety-related problems, and strengthen the "safety culture" within the enterprise.

B.5.15 Each employee should be responsible for following the procedures laid down by management, and for taking reasonable care for his or her personal safety and for the safety of others who may be affected by the employee's acts or omissions at work.

- Each employee should support the ability of others to carry out their jobs in a safe manner, and co-operate actively with management in the application of safety procedures and arrangements.

B.5.16 Safety performance should be considered an essential component of every employee's overall performance and should be reviewed periodically.

- The role with respect to safety of each employee, including managers at all levels, should be clearly defined so that safety performance can be appropriately monitored and reviewed.

B.5.17 Management and public authorities should encourage, and facilitate the ability of, employees to fulfill their role and responsibility. Employees may require the support of unions, confederations and their international organisations to assist them. Employee-management co-operation is a prerequisite to assuring safe operations at hazardous installations.

B.5.18 Effective two-way communication channels for the transfer of safety information between management and other employees should be established at hazardous installations. This will help create and maintain a high level of motivation for all employees to operate the installation safely.

B.5.19 The regular communication channels should be reinforced by the establishment of Safety Committee(s) to provide a formal mechanism for consultation among employees on safety matters. The Safety Committees should support - but not be a substitute for - direct communication among management and other employees, or for individual and line management responsibilities for safety. The use of such Committees enables the maximum benefit to be obtained from employees' practical experience and knowledge, as well as furthering mutual trust and confidence through the actions taken to improve safety.

(i) Safety Committees should operate at different levels in an enterprise and consist of:

- employees at various levels (including Safety Representatives where they exist);
- managers with the authority to implement the Committee's recommendations;
- safety specialists; and
- contractors, where appropriate.

(ii) Safety Committee members should receive safety training and specialist advice as necessary.

(iii) Resources should be available for the Safety Committee to undertake its activities.

(iv) Management should act upon the recommendations of the Safety Committee, recognising that the ultimate responsibility for safety remains with management.

(v) Safety Committee members should not lose any earnings for time spent in activities related to the Safety Committee.

B.5.20 In addition to Safety Committees at individual hazardous installations, the establishment of parallel mechanisms at a corporate, sectoral, national or international level may be considered as a useful means of helping to disseminate safety information and providing input to the relevant decision-making processes concerning safety.

B.5.21 Consideration should be given to the establishment of Safety Representatives at the plant level. Safety Representatives, nominated by employees, represent those employees in consultations with management on matters relating to safety. Safety Representatives should be given specific training related to their role.

B.5.22 No measures prejudicial to an employee should be taken if, in good faith, the employee complains to other employees with responsibilities for safety of what he/she considers to be a breach of statutory requirements or an inadequacy in the measures taken with respect to safety. Management should support this approach if the necessary "open" attitude to safety matters is to be achieved.

B.5.23 An employee should have the right to refuse to perform any tasks which he/she believes may create an unwarranted risk of an accident involving hazardous substances.

(i) The employee should immediately report to management the reasons for refusing to perform these tasks.

(ii) In certain cases an employee, or a Safety Representative where one exists, may interrupt hazardous activities in as safe a manner as possible when he/she has reasonable justification for believing that these activities present an imminent and serious danger to safety.

B.5.24 Employees should be required to report forthwith to management any situations which they believe could present a deviation from normal operating conditions, in particular situations which could develop into an accident involving hazardous substances. Management should investigate these reports. If this does not result in an adequate response, the employee should be entitled to refer the matter to public authorities.

B.5.25 Employees should not be placed at any disadvantage because of the actions referred to in B.5.23 and B.5.24 above.

B.5.26 Specific policies with respect to personal activities which may affect the safe operation of an installation - such as smoking, substance abuse and similar matters - should be agreed on and included in every individual employee's contract or conditions of employment.

B.5.27 Management should ensure that all employees have appropriate personal protective equipment and ensure that it is maintained in good condition. Management should also ensure that regular training is provided in its use. Employees should be responsible for using the personal protective equipment in accordance with safety procedures and policies.

B.5.28 Management should not engage contractors to perform jobs related to the operation of a hazardous installation if this would compromise safety.

(i) Management should only hire those contractors who are competent to carry out the contracted work in accordance with all applicable laws and regulations, as well as the safety policies and standards of the enterprise and any additional practices particular to their task.

(ii) Before contracts are given, management should obtain evidence that the contractors are capable of performing their tasks to a sufficiently high standard of safety. Compliance with these laws, regulations, safety policies and standards should be an integral part of the contract with contractors.

(iii) Management should monitor the safety performance of their contractors and, in general, contractors should be subject to the same safety management systems as employees.

B.5.29 Contractors hired to perform duties related to the operation of a hazardous installation should have equivalent rights and responsibilities with respect to safety as employees. If necessary, special measures should be developed to ensure that contractors' employees are well-informed of the hazards when operating at hazardous installations. Specific site safety information should be made available to contractors' employees.

Education and Training

B.5.30 Management should take all reasonable measures to ensure that all those employed at a hazardous

installation, including temporary employees and contractors, receive appropriate education and training and are competent in the fulfillment of their tasks under both normal and abnormal conditions. This education and training should cover:

- hazard identification and necessary corrective measures;
- basic emergency procedures;
- correct materials handling procedures; and
- any special hazards unique to their job.

(i) Arrangements should be made to ensure that specialised training needs at all levels are properly identified, form part of a programme aimed at improving safety, and are appropriately satisfied.

(ii) Employees, and their representatives where they exist, should be involved in the development of education and training programmes, the testing of these programmes, and their subsequent revisions.

(iii) This approach to education and training should create the high level of awareness necessary not only to prevent accidents but also to respond to abnormal occurrences quickly and effectively. Ignorance or inadequate information can be a cause of incorrect action.

B.5.31 Safety considerations should be part of the initial induction training given to all new employees to create safety consciousness and commitment.

(i) In addition to the education and training given before taking up normal duties, follow-up education and training should be given regularly.

(ii) During slower work periods, consideration should be given to using employees' free time for education and training activities.

B.5.32 Training should be well-structured to give all employees the skills they need to do the job to which they have been assigned, and be sufficiently broad-based so that employees understand the workings of the plant, equipment and processes.

(i) All employees should be encouraged and trained to think through their assigned tasks and how they can be carried out most safely, rather than just carrying them out mechanically.

(ii) Employees are likely to be more conscientious in their work, and in the application of safety systems and procedures, if their training makes it clear not only what they are required to do but also why the various systems and procedures are necessary.

B.5.33 Consideration should be given to training employees in groups rather than individually, where appropriate, since group training can be an effective way of instilling good safety attitudes in employees, developing positive group behaviour, and establishing increased ability for group members to predict potential safety problems and to develop solutions.

B.5.34 Where appropriate, education and training should be available in languages other than the primary language used at the installation, for example where there are foreign employees or where the installation is located in a multilingual area. Where employees speak different languages, management should consider

the need to establish a language as the one used in the event of an emergency, and then to provide the appropriate education and training so all employees can understand and respond correctly to commands during an emergency.

B.5.35 Records should be kept, and maintained up-to-date, of all safety-related education and training of employees including managers, supervisors, technicians and Safety Representatives.

B.5.36 The effectiveness of safety education and training should be regularly assessed to ensure that all employees can carry out the duties for which they are responsible in a safe manner. This assessment process is particularly important in times of change, such as when employees, including managers and supervisors, are being assigned to a new or different installation.

B.5.37 Education and training programmes should be modified to reflect changes in processes used, technology applied, and procedures followed at an installation.

B.5.38 Training should be considered part of employees' jobs for purposes of calculating working time and wages.

B.5.39 The management of hazardous installations should take all reasonable measures to inform on-site employees and contractors of the hazards to which they may be exposed related to accidents involving hazardous substances. Adequate information on hazards (including emergency exposure levels) and on the procedures to be followed for safe handling of all substances used at the installation, manufactured as intermediates, or available for sale, should be obtained, kept up-to-date and disseminated widely, in a language(s) which all employees can understand.

B.5.40 Technological information and assistance related to safety of hazardous substances should be provided by management of hazardous installations to contractors, distributors, transporters and users as well as to employees.

B.5.41 Managers and supervisors should be made aware that they have a special obligation to keep informed about safety standards and risks. They should know and fully understand the properties and behaviour of the hazardous substances being used and the limitations of the equipment and technology. They should be competent to implement the measures to be taken in an emergency.

B.5.42 Every supervisor should ensure that those on his or her team know how to carry out safely the tasks entrusted to them and how to maintain a high level of safety awareness. To achieve this, each supervisor should receive training in communication techniques, safety leadership, accident investigation and reporting procedures, safety and health analyses, and the conduct of safety meetings.

B.5.43 Safety training should be included in the education of engineers and other technical specialists at both universities and schools. To this end, the safety aspects of the design and operation of hazardous installations should be integrated into the relevant curricula. Industry and public authorities should promote this.

Human Factors

B.5.44 Particular attention should be given to the role of human factors in preventing accidents at hazardous installations, recognising that humans will, on occasion, fail and that the

majority of accidents are in some part attributable to human error, meaning human actions which unintentionally exploit weaknesses in equipment, procedures, systems and/or organisations.

(i) In planning all phases in the design, development, operation, maintenance, shutdown and decommissioning of a hazardous installation, management should take into account the possibility that human error can occur so that its effects can be minimised.

(ii) The human factor should be taken into account when hazard identification and assessments are carried out.

(iii) The human factor, including both positive and negative aspects of human behaviour, is applicable to all employees in a hazardous installation including managers and contractors.

B.5.45 The demands of each task which may affect the safe operation of an installation should be carefully analysed in order that employees and their tasks are mentally and physically matched, and employees are not overloaded or excessively stressed, so that they can make the most effective and safe contribution to the enterprise. Mental matching of a task involves consideration of the information and decision-making requirements as well as the perception of the task; physical matching includes consideration of the design of the workplace and working environment.

B.5.46 Employees should be encouraged to share their experiences in order to reduce the risk of human error. This can be accomplished through, for example, safety workshops, discussions of near-misses and other group discussions, as well as by inspection and observation of the workplace by employees and, where appropriate, by Safety Representatives.

B.5.47 Experiences relating to human errors should also be shared among different companies and, to the extent possible, among public authorities.

B.5.48 Training and education programmes for all employees should deal with the issue of human errors, including the underlying causes and prevention of such errors. These programmes should also take into account ergonomics and the employee/machine interface (see paragraphs B.5.30-B.5.43 on Education and Training).

B.5.49 Special care should be taken during periods of stress to avoid human errors which could lead to accidents. Management should make it clear that safety considerations take precedence over other considerations. Stress affecting safety could result from pressure on individuals or groups of employees or on the enterprise as a whole (for example, to increase production or cut costs).

B.5.50 In their monitoring activities, both management and public authorities should consider the role human errors might play in increasing the potential for accidents involving hazardous substances. They should consider the potential for errors both in the use of equipment and in following procedures (see subsection B.6 on Safety Performance Review and Evaluation).

B.5.51 It should be recognised that human error outside the hazardous installation can contribute to the increased risk of an accident or adverse effects in the event of an accident. For example, public authorities should take into account the fact that human error in

land-use planning, in emergency planning, or in emergency response can affect the safety of a hazardous installation or aggravate effects of an accident.

Maintenance

B.5.52 Management of hazardous installations should establish programmes for the regular maintenance, inspection and testing of equipment to ensure that it is at all times fit for the purpose for which it was designed.

(i) Maintenance programmes should be adhered to strictly and should be reviewed periodically to ensure they continue to be appropriate in relation to safety requirements.

(ii) Maintenance standards should be developed to help guarantee the safety of each operation.

(iii) Maintenance jobs should be performed according to established maintenance procedures.

(iv) Records should be kept of all safety-related maintenance work carried out, and equipment reviews and reliability assurance procedures should be established.

(v) Records should be kept of any faults found during maintenance of equipment which might materially affect safety, and prompt action should be taken to rectify the faults.

B.5.53 The local management at each hazardous installation should regularly inspect and maintain emergency alarms, protective and emergency devices, and all devices critical to the orderly shutdown of operations in conjunction with the relevant public authorities, where appropriate.

Repairs and Modifications

B.5.54 The management of a hazardous installation should establish formal procedures to ensure that no repair work or modifications to plant, equipment, processes, facilities or procedures compromise safety.

(i) Modification procedures should apply to both permanent and temporary changes, and should be based on appropriate up-to-date process documentation and, where appropriate, a physical inspection of the installation.

(ii) All modification proposals should be registered and assessed so that the necessary hazard studies are carried out, the appropriate design considerations are made, and the changes proposed are properly engineered and recorded.

(iii) Major modifications should be subject to the same notification and reporting requirements as new installations (see, for example, paragraphs B.2.12-B.2.14).

B.5.55 Proposals for significant modifications should require a review by competent technicians who are independent of those directly responsible for the proposal.

(i) The level of management approval necessary for a modification should be based on the associated level of risk.

(ii) Supervisors having the authority to make a modification, for example to a manufacturing procedure or operating instruction, should be fully aware of the hazards involved and should consult the relevant competent specialist(s) before initiating such a change.

B.5.56 In the case of any changes made to a process which could affect safety - for example, use of different process materials, alterations of conditions, increase in batch size, or use of larger/different equipment - the original hazard analysis should be reviewed and the process documentation file or plant dossier supplemented accordingly.

- Techniques should be developed to assess how a series of minor changes, taken together, could affect safety at an installation and what could be done to mitigate any increased potential for accidents.

B.5.57 After repair, modification, and/or overhaul of plant and equipment, the necessary test runs and safety checks should be carried out in the presence of the supervisor responsible for the operation of the installation, who should be required to formally approve the restarting of operations.

B.5.58 Procedures should also exist to ensure that changes in management, other personnel and organisation do not compromise safety. Such changes should trigger review procedures to ensure safety has not been adversely affected.

Storage of Hazardous Substances: Special Considerations

While all the Guiding Principles in this document apply to storage facilities for hazardous substances, storage presents special risks or concerns which warrant additional guidance. These apply to both on-site (at the installation) and off-site (contract) storage, including bulk storage (for example, in tank farms) and non-bulk storage (for example, of packaged goods). Only paragraph B.5.59 relates exclusively to the situation where the storage facility is off-site. The warehousekeeper, for purposes of this text, is the person responsible for the storage facility, whether on-site or off-site.

B.5.59 The management of an enterprise seeking to store hazardous substances off-site - including products, raw materials and intermediates - should satisfy itself as to the suitability of the facility for the storage of such substances, and of the competence of the warehousekeeper to undertake the storage required in a safe manner. This could involve the enterprise monitoring the storage facility and training employees of the off-site facility.

B.5.60 The warehousekeeper should ensure that all relevant legislative requirements and applicable codes of practice for the safe storage of hazardous substances are strictly applied wherever applicable.

B.5.61 The owner/supplier of the hazardous substances being stored should provide the warehousekeeper the information necessary to prevent accidents and to respond appropriately should an accident occur.

(i) In this regard, the owner/supplier should provide a material safety data sheet (MSDS) or product data sheet so that the warehousekeeper can ensure that physical, chemical and (eco)toxicological, and other properties relevant in the case of an accident are understood by all relevant employees working in the storage facility.

(ii) Particular attention should be given to proper labeling of hazardous substances, indicating any hazardous properties on labels and the appropriate precautions to be taken.

(iii) In addition, the owner/supplier of the hazardous substances should provide information concerning reaction

and/or decomposition products formed in the event of a fire.

B.5.62 The owner/supplier of hazardous substances should consider reducing the amount of hazardous substances requiring storage, off-site and/or on-site, if this would reduce the adverse consequences of an accident involving the hazardous substances.

B.5.63 A storage facility should be designed taking into account the nature of the hazardous substances to be stored in the facility.

(i) The design of the facility should allow for the separation of incompatible substances and subdivision of inventories by the use of separate buildings, fire walls, etc. and, for example, should enable access for inspection of hazardous substances, reduce the likelihood of domino effects should an accident occur, and permit firefighting.

(ii) In designing such facilities, particular attention should be given to incorporating automated systems for handling hazardous substances, which reduce the risk of an accident involving such substances.

B.5.64 Storage facilities should incorporate safety features to prevent accidents and to reduce the adverse effects in the event of an accident. For example, security measures should be in place and fire protection equipment should be available. Adequate catchment facilities should be provided to facilitate the activation of spill mitigation procedures to protect the environment in the event of an accident.

B.5.65 A storage plan should be drawn up by the warehousekeeper showing the nature of the hazardous substances in each part of the storage facility.

(i) The storage plan should be made available to the relevant local public authorities (for example, fire services).

(ii) Information concerning hazardous substances held in a storage facility should be maintained up-to-date.

B.5.66 Procedures should be established at storage facilities to prevent the risk of degradation of hazardous substances or packages as well as labels or other markings. Good housekeeping practices should be initiated to prevent accidents.

B.5.67 In order to prevent explosions and fires, consideration should be given to whether the conditions of storage (including, for example, temperature and pressure) create special risks. Consideration should also be given to avoiding potential sources of ignition such as smoking, welding, and shrink wrapping equipment. All power equipment should be specially protected, as necessary.

B.6 Safety Performance Review and Evaluation

Safety Performance Review

The premise of this subsection is that hazardous installations should be subject to periodic safety performance reviews and evaluations. The nature of these reviews and evaluations, and the roles and responsibilities of management, other employees and public authorities are set out below.

B.6.1 Safety performance in hazardous installations should be periodically reviewed in order to:

- **assess achievements with respect to the general goals set;**

- **determine how well specific safety-related policies and decisions have been put into practice;**
- **focus resources where improvements are most needed;**
- **provide information to justify the adjustment or upgrading of goals and achieve further improvements;**
- **demonstrate management's commitment to safety and provide motivation for improvement;**
- **provide a basis for recognising good and inadequate performance;**
- **provide information on safety achievements to the public authorities, community, shareholders and non-governmental organisations; and**
- **provide input into education and training activities.**

B.6.2 Public authorities and industry, with the involvement of employees, should develop proactive/positive indicators of safety performance as well as methods of assessing achievements in risk reduction. While changes in lost-time accident rates have been used and have some value in measuring safety performance, they are reactive indicators and provide only part of the total safety picture.

B.6.3 Systematic safety improvement programmes should be developed by management, with the involvement of other employees, at each installation.

(i) These programmes should be regularly reviewed to ensure an improving trend in safety performance is achieved.

(ii) Such proactive safety schemes should be promoted by public authorities.

Monitoring by Industry

B.6.4 Management should ensure that every hazardous installation is subject to a comprehensive system for monitoring safety, covering both technical and management aspects, including hardware and procedures. Management should continually review its operations to ensure that no previously unrecognised risks have been introduced and that there is the required degree of compliance with the relevant national and international legislation, standards, codes and guidance as well as the enterprise's own requirements and guidance. By doing this, any needs for additional, new or improved standards, hardware and/or procedures should be revealed.

(i) The approach to monitoring should be systematic. In this regard, a monitoring plan should be developed at each installation, "owned" and primarily implemented by the local management, and with flexibility built in to avoid it becoming routine.

(ii) The monitoring plan should include regular inspections at the workplace, periodic detailed checks on specific activities and procedures, and an overall audit of performance.

(iii) The monitoring plan of an installation should form the basis of a hierarchy of annual safety assurance reports, from the manager responsible for an installation to division/business/company/enterprise executives and subsequently to the Chief Executive Officer of an enterprise.

(iv) Emphasis in monitoring should be on those aspects vital to the safety of the particular installation, as revealed by the hazard evaluations. Some general aspects will need to be covered in all monitoring, such as:

organisation and management; training; plant integrity; fire protection and prevention; accident/dangerous occurrence investigation and reporting; and emergency procedures.

(v) The potential level of risk should be a significant factor in determining the frequency of monitoring.

B.6.5 In addition to any changes in response to legal requirements, improvements suggested by monitoring should be made where such improvements are reasonably practicable and contribute to the ultimate goal of "zero incidents".

B.6.6 Management should, as appropriate, utilise auditors independent of the local management and employees to monitor hazardous installations. Such an approach using, for example, expert consultants or the enterprise's central safety services can be a valuable means, in certain cases, of raising safety performance by providing another, more independent, viewpoint. Insurance companies may provide a useful service in this respect, especially to small and medium-sized enterprises.

B.6.7 A statement of an enterprise's safety and health performance should form part of the yearly report to its shareholders and employees.

Monitoring by Public Authorities

B.6.8 Public authorities should establish appropriate arrangements for monitoring the safety of hazardous installations in all phases of their life cycle, including planning, design, construction, operation (including maintenance) and decommissioning. When monitoring hazardous installations, public authorities should assess the safety performance of the operation both in terms of meeting technical standards and ensuring that management systems are adequate and effective (that is, systems/procedures as well as the hardware). By proactive monitoring of hazardous installations, public authorities should check, on an equitable basis, industry's compliance with relevant requirements and practices and help to promote industry action beyond minimum requirements.

(i) Monitoring of existing installations should be carried out by means of both a planned sequence of unannounced or announced inspections, and visits in response to accidents, complaints and other indicators that safety performance may be inadequate.

(ii) Public authorities should decide on the frequency and nature of planned inspections, commensurate with the resources available to them and the risks presented by the installation, using some form of priority rating system.

(iii) Public authorities should have free access to hazardous installations and be provided with the information necessary to conduct inspections and audits.

B.6.9 Public authorities should be given sufficient resources and personnel to carry out their monitoring function. Public authorities' inspectors should receive the training and have the necessary expertise to determine, for example, whether the approaches taken in a hazardous installation will achieve the legal safety requirements.

B.6.10 Public authorities' inspectors should be empowered to initiate enforcement action to remedy any serious defects which they discover during any monitoring.

B.6.11 Public authorities should ensure that guidance is prepared for those with compliance obligations on how they can best meet their obligations and satisfy the monitoring/enforcement authorities.

B.6.12 Public authorities should use monitoring as a means of providing support to the management of hazardous installations, consistent with the authorities' enforcement responsibilities. Monitoring provides an opportunity for the public authorities to help management identify weaknesses in their organisation and in their safety arrangements, as well as to provide advice or details on where further information and assistance should be sought. This may be particularly important in the case of small and medium-sized enterprises.

B.6.13 For monitoring to be effective and credible, the monitoring authorities should be publicly accountable. This can be achieved by making the system transparent. To this end, the monitoring authorities should publicise their objectives, procedures and the results of monitoring the safety aspects of hazardous installations.