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# OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM: A CRITICAL SUCCESS FACTOR IN THE INTRODUCTION OF THE PRINCIPLES OF SUSTAINABLE DEVELOPMENT IN BRAZILIAN ORGANIZATIONS

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## ABSTRACT

The concerns of government, businessmen and unions in improving the health, safety and environmental conditions of the work-place are increasingly gaining in importance. Improvements in the health, safety and environment of the work-place, in addition to increasing productivity, reduce the cost of the final product, because they reduce process interruptions, absenteeism and occupational accidents and/or sickness. For this reason it is necessary to have a plan that allows for the participation of top management and of employees when it comes to finding economically viable and practical solutions. This work presents some considerations about the safety performance on a construction site, as a result of social responsibility practices, people management and environmental management. These management systems constitute the nucleus of what is currently called organizational sustainability. From examples collected in field research, bibliographic research and from consolidation of work from the research groups to which the authors belong contributions are presented for improving Occupational Health and Safety Management as an integral part of Business Management. This is a partial result of the research being developed by LATEC, the Laboratory of Technology, Business Management and Environment and indicates it should continue in order to define the indicators of eco-efficiency in production processes and of business effectiveness.

**Keywords:** Corporate Social Responsibility; Sustainable Management; Safety Performance.

## INTRODUCTION

### Initial considerations

Providing a safe and healthy working environment is much more than just complying with current legislation; it is a question of sustainability for the continuity of company operations. Nowadays organizations are looking to improve by using management models that incorporate concepts of good practice in their relationships with employees, society, shareholders, suppliers and competitors. The scope of this way of operating, as shown in Figure 1, has been recently called “organizational responsibility” (ALLEDI, 2002).

This environment of pro-activity as far as accident prevention and protection of workers’ health are concerned is the result of a commitment and mutual collaboration between employers and workers.

When planning and constructing new work places and production systems, or modifying the existing ones, the factors that may compromise carrying out a certain task because of existing personal and operational limitations must be taken into consideration.


Figure 1: “Organizational Responsibility” as one of the indicators of good relationship practices. Source: Alledi, 2002

Increasingly the concerns of government, business-men and unions in improving the health, safety and environmental conditions of the work-place are being highlighted. Because of this planning is necessary that allows for the participation of top management and employees when it comes to finding practical and economically viable solutions (ARANTES, 2005).

Improvements in work-place health, safety and environment, in addition to increasing productivity, reduces the cost of the end product, because it reduces process interruptions, absenteeism and occupational accidents and/or sickness.

The preventive aspects involved in work safety seek to minimize risks and unsuitable conditions and to incorporate continuous improvements in working conditions by introducing minimum, and increasingly rigid, safety requirements.

The risk of accidents resulting in injuries and ergonomic and organizational problems may be identified by the systematic inspection of the work-place. Safety inspections are just one of the many important preventive measures taken for ensuring a safe place of work. The nature of the work will determine how frequently the inspections should be carried out.

Some companies have occupational medical and nursing professionals linked to the ‘SESMT’ – Specialist Safety Engineering and Work-place Medicine services, who manage the health service, medical centers and rehabilitation installations. In small companies these services are outsourced. This outsourcing must be analyzed in terms of the effectiveness of its results when it comes to the health and safety of the workers.

The main function of the occupational health service is to cooperate with management and with the workers, by acting in a preventive capacity and contributing to the continuous improvement in safety and working conditions.

Good practices in occupational safety and hygiene are important for avoiding accidents and guaranteeing the health of the workers. Good safety practices are associated with improvements in working conditions. Underestimating, or being indifferent to the risks in the working environment, creates an environment that is susceptible to the occurrence of accidents.

Many organizations in Brazil still have a restricted vision when it comes to safety, work-place medicine and occupational health. These issues are dealt with only by collecting statistical data, reacting when there are accidents in the work-place and defending any labor-related legal actions. Occupational health and safety began as a management system with norms like the OHSAS 18001/99 (Occupational Health and Safety Administration Systems – Specification) and BS 8800/96 (Directives for Occupational Health and Safety Management Systems), in addition to the National Occupational Health and Safety Prize.

**The aims of this study: A contribution to OH&S practices for the sustainability of civil construction companies.**

As a pre-requisite to the sustainability of organizations (PRAHALAD, 2006) it is necessary to have a guarantee that their operations are not going to cause future actions as far as their practices in relation to their workers (labor-law liabilities), the environment (environmental liabilities), the continuing availability of good suppliers, the construction of a positive image vis-à-vis public opinion, compliance with legislation and the payment of taxes and dues are concerned (ARANTES, 2005).

As authors of this work we have tried to consolidate the concepts and conclusions developed in the research groups with which we work and by mentioning and describing cases collected in field research.

Starting from an analysis of the occupational health and safety practices of two small building companies that have no formal management systems the objective is to assess how far the reality of these construction sites is from the ideal proposed by the norms. We have made suggestions as to how the organization can adapt to the BS 8800/96 and OHSAS 18000/99 norms.

The final result is a contribution to management thinking that is in developing apace as far as Sustainable Construction is concerned.

Among the main assumptions presented in this article some questions stand out to help in the analysis proposed. These are:

- What attitudes do those in charge of the construction site have? Do they seem to be concerned with safety? Do they have a systemic view?

- Among the workers is there a culture of occupational health and safety? Do they have a conduct policy that guides them? If they do, is it well understood?

- Are processes standardized? If they are, does this effectively contribute to occupational health and safety?

- Is the reality of the work adjusted to the legislation?

## REVIEW OF LITERATURE: SUSTAINABILITY AND OH&S PRACTICES

The main structure of this review is the presentation of concepts relating to organizational (or corporate) responsibility, business ethics, sustainable management, the management of occupational health and safety and the foundations of the Triple Bottom Line (BOWDEN, 2001).

Equally important to an understanding of the contribution this work makes is visualization of the PDCA [*see below]* with its steps didactically explained to make up a management cycle that guarantees continuous improvement and maintenance of the routine.

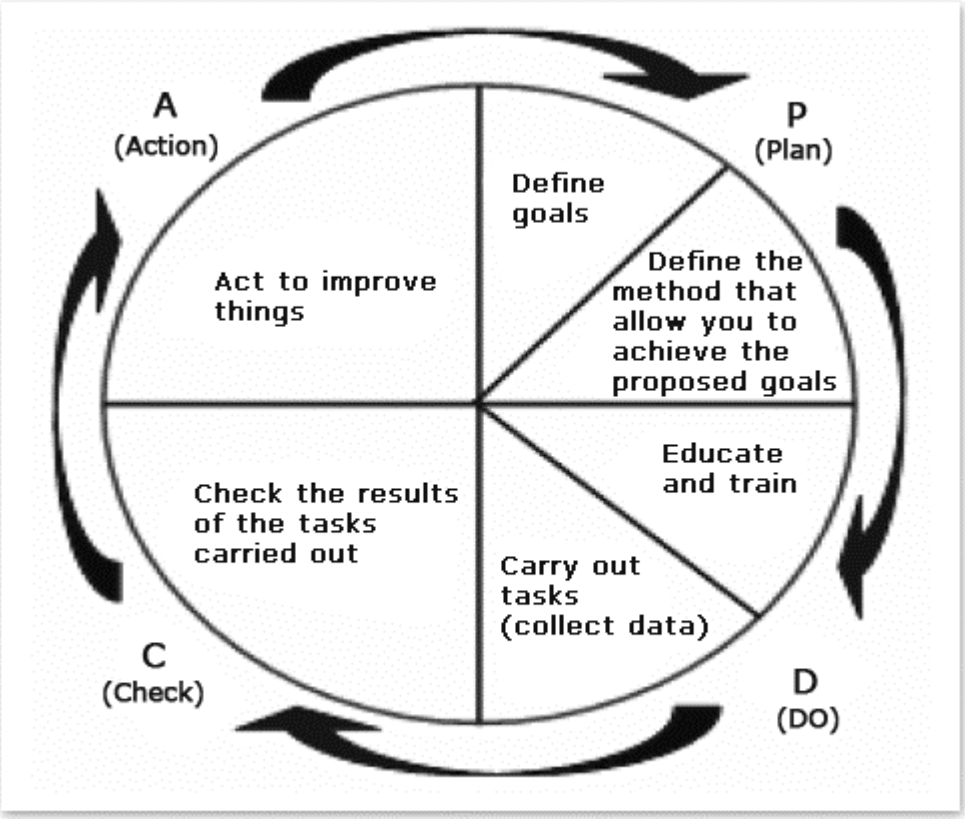


Figure 2: PDCA process control cycle

**Organizational Social Responsibility.**

An organization's social responsibility consists in the decision to participate more directly in community actions in the region in which it finds itself and to reduce any possible environmental damage arising from the type of activity it exercises. But supporting community development and preserving the environment are not enough to be able to characterize a company as socially responsible. It needs to invest in the well-being of its employees and their dependents and a healthy working environment, in addition to giving shareholders a return and guaranteeing the satisfaction of its customers and/or consumers.

The exercise of social responsibility presupposes that the organization operates effectively on two fronts: the management of its internal responsibilities and the management of its external responsibilities.

Internal social responsibility characterizes the initial stage in corporate citizenship. However, this movement does not always occur. Many organizations commit a serious corporate strategy error and invert this process, causing great dissatisfaction among their employees and creating a serious situation of conflict, anxiety and demotivation.

The focus of internal social responsibility is to work with the organization's internal public and to develop a participative management and employee recognition model, by promoting transparent communication and motivating employees to perform at an optimum level. This management model comprises actions that are directed at employees and their dependents and at the employees of sub-contractors, out-sourcing companies, suppliers and partners.

In the link between social, political, economic and cultural reality of the organization, internal social responsibility actions may begin by:

- Taking care of the employee's quality of life and investing in sanitary installations;
- Meeting the basic needs of the employees by creating a canteen infrastructure for the internal public, outsourcing companies and sub-contractors and supplying a basic food hamper for employee dependents;
- Creating the habit of wearing a uniform, thereby contributing to improving safety conditions at work;
- Seeking out a Health Insurance and Dental Plan that meets the needs of all employees and the members of their families;
- Taking care of the employees' living conditions;
- Introducing a Job and Salary Plan;
- Introducing programs for recognizing and valuing employees, such as: breakfast with the President, Employee of the month, working out in the company, profit sharing;

- Investing in employee qualifications, by introducing internal and/or external training and improvement programs, with the aim increasing their professional qualifications and ensuring they all achieve a minimum level of education.

Development of these actions is also called 'endomarketing', where the organization instills a degree of motivation into its internal environment and creates relationship of trust with the employees. In doing this the organization earns the dedication, effort, loyalty and increase in productivity of its employees.

From the development and introduction of these internal management actions the company can then move on to carry out social actions that benefit the community, by beginning to exercise its external social responsibility. Through its social marketing planning the organization, in line with its mission, beliefs and the demands of community needs, operates in the areas of education, health and social and ecological assistance, thereby developing corporate actions that are aimed at improving its image and getting a more positive return in terms of publicity.

The organization may carry out these actions by:

- Donating products, equipment and material, in general;

- Transferring resources, in a partnership arrangement, to public bodies and NGOs for the benefit of public schools, with the aim of providing quality education, making feasible technical courses, traineeships and preparing future professionals;

- The provision of voluntary services to the community by the organization's employees, renovating crèches and old peoples' homes;

- The investment of resources in activities for preserving the environment, 'adopting' a square, recycling the company's waste, or through selective waste collection;

- Sponsorship for the government's social projects;

- Direct investments in social projects created by the organization itself;

- Investments in cultural programs, via the culture incentive law [*tax breaks]*.

In participating in social actions the organization, in addition to adopting ethical behavior and contributing to economic development, acts in the social dimension of sustainable development, improving the quality of life of its employees and their families, the local community and society as a whole, thereby exercising its social responsibility.

Through its commitment to promote citizenship and develop the community a responsible company achieves a competitive differential, seeking in this way to be an organization that invests financial, technological and labor-force resources in projects that are of public interest. It is an organization that creates a pleasant working environment, by valuing the talent it has, and it is capable of developing an integrated management model where the people have a decisive role to play in the company's commitment to the community and society, in general.

**Safety at work**

The main reasons for introducing improvements in the conditions of the working environment and working practices are to reduce the social cost associated with work-related accidents, to value self-esteem and to provide continuous improvements in the quality of life of the workers.

The social evolution in work relationships must not be seen by the State as yet another government program, but as an on-going national objective, associating development to improvements in the living conditions of society. This national commitment demands the exercise of citizenship, because it is the responsibility of each one of us (potential agents for transformation as we are), government, employers or workers, to contribute to improvements in the quality of life and the formation of a healthier and more productive society.

Specifically in the area of occupational health and safety, the Government is concentrating its inspection efforts on economic sectors that have the greatest accident frequency rates (the incidence of accidents, including occupational sickness), by

broadening the participation of productive society in proposals for the modernization of labor legislation, with the aim of reducing risk situations. We cannot forget that meeting the basic needs of the worker is fundamental for a healthy and productive society.

**BS 8800/96 norm**

The British, BS 8800 norm was the first attempt at establishing a normative point of reference for implementing a health, safety and environment management system. This norm has been used in implementing health and safety management systems with the aim of continuously improving the conditions of the working environment. The principles of this norm are in line with the concepts and directives of the ISO 9000 (Quality System) and ISO 14000 (Environmental Management) series norms.

The British BS 8800 norm, which is still valid, was the reason why in 1988 various normative bodies prepared a set of norms entitled the Occupational Health and Safety Assessment Series (OHSAS), with the aim of carrying out audits and certifying health, safety and environmental management programs.

The basic principle of a management system based on normative aspects involves the need to determine assessment parameters that incorporate not only operational aspects, but also the policies, the management style and commitment of the senior managers to the process of change and the continuous improvement in health, safety and working conditions. This aspect is of fundamental importance because in the majority of cases these improvements demand, in addition to commitment, major investments that need short, medium and long term planning for carrying them out.

With this new vision that many companies have been adopting, everybody within the production process is equally important in terms of responsibility, particularly the managers and supervisors. The management must identify the risks and guide the workers with proactive attitudes, setting an example to be followed within the organization, because not every company is obliged by legislation to have a safety professional on the staff.

According to the British BS 8800 norm, organizations do not operate in isolation, in other words, various parties may have a legitimate interest in introducing a management system. These parties are employees, consumers, customers, suppliers, the community,

shareholders, and contractors, as well as government agencies charged with ensuring compliance with the regulations and laws.

The BS 8800 norm is a guide to help organizations develop an approach to the management of occupational health and safety that allows them to protect employees whose health and safety may be affected by the organization's activities. Many characteristics of occupational health and safety management become confused with strong management practices defended by those who put forward the ideas of quality and business excellence.

The elements in the norm are essential to an effective management system. Human factors, including the culture, politics and others within organizations, are decisive factors when it comes to the effectiveness of the management system and they need to be considered when implementing the norm.

A cycle of continuous management improvement and its integration into the global management system are shown in Figure 3, considering all stages of implementation.

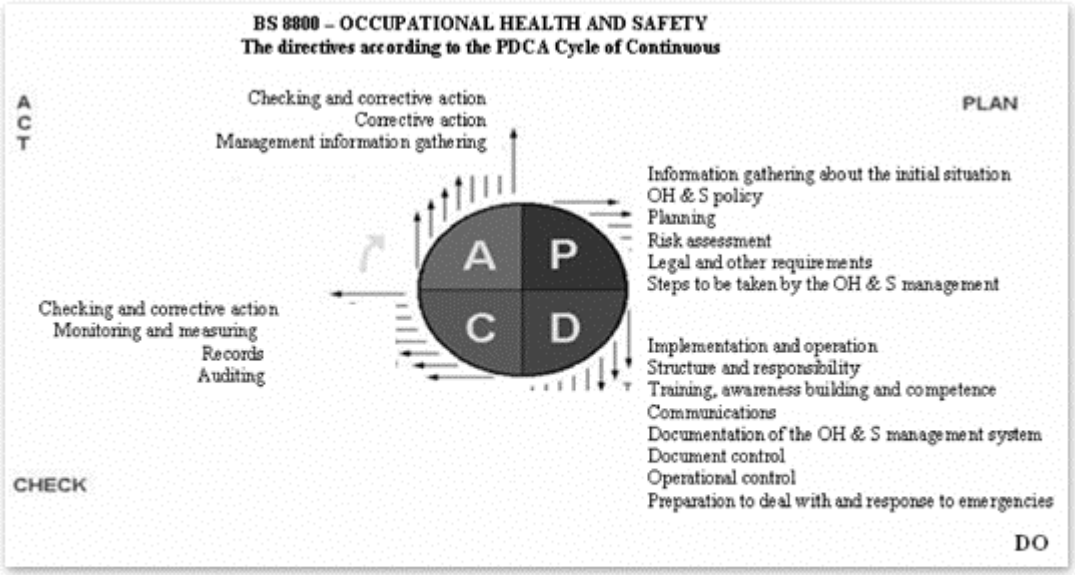


Figure 3: PDCA applied specifically to Occupational Health and Safety Management
Source: BS 8800/96 – adapted

## SUSTAINABILITY OF ORGANIZATIONS

### Sustainable development

There are countless definitions of Sustainable Development, as prepared by different sectors in society. The concept of sustainable development was presented by the World Commission on Environment in April, 1987, at the United Nations General Assembly. The main product of this Commission was the "Our Common Future Report", also known as the "*Brundtland Report*", where sustainable development is presented as "the development that fulfills the needs of the present, without compromising the ability of future generations to fulfill their own needs" (ONU, 1988).

Sustainable development presupposes inter-disciplinarity, to the extent that its evolution leads us to work with three macro-topics that comprise the so-called *Triple Bottom Line*, in other words, environmental, social and economic aspects. The synergy between these aspects runs through the application of the concept of Sustainable Development, or Sustainability, regardless of whether it is applied at the government, civil society or corporate level. Other dimensions of sustainable development can also be worked with, such as, for example, cultural, technological and political aspects.

### Sustainable management

Sustainable management, a concept applied to organizations as an essential development, is closely linked to Organization Social Responsibility and must be understood as a continuous commitment of the organization to its ethical behavior and economic development (BOWDEN, 2001), promoting, at the same time, improvements in the quality of life of its work force and their families, the local community and society as a whole.

Sustainable management attributes fundamental importance to aspects previously considered as being mere compliance with legislation, such as occupational health and safety, environmental accident prevention and proactive positioning in relation to the eco-efficient products project.

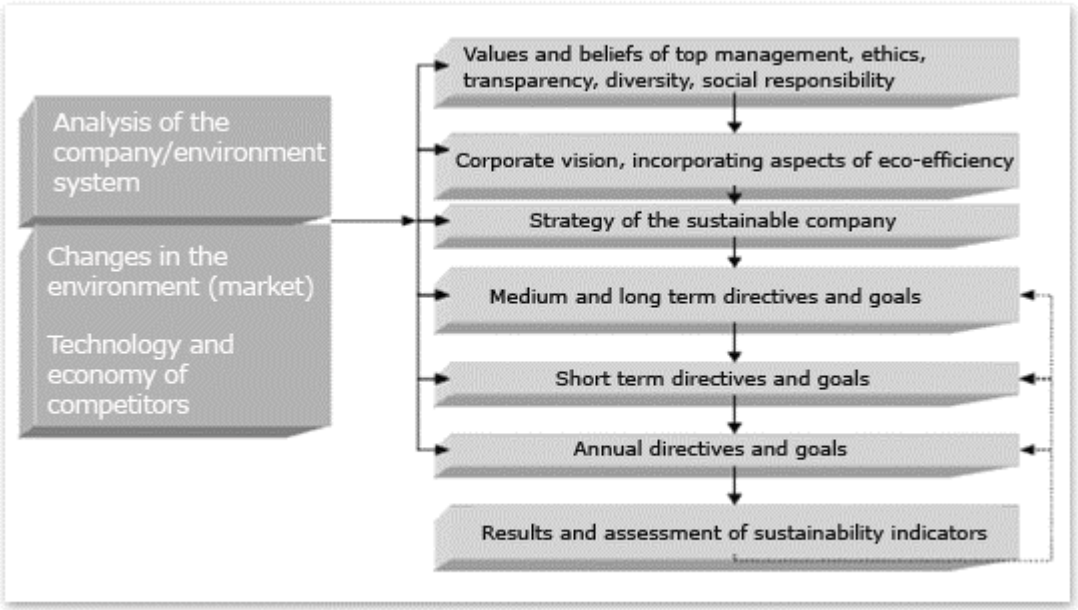


Figure 4: Strategic management of the organization

Eco-efficiency, central to the concept of Sustainability, is achieved by means of the supply of goods and services at competitive prices that satisfy human needs and that produce quality of life, while at the same time progressively reducing environmental impact and the intensity of consumption of resources over their life cycle, to a level at least equivalent to the estimated capacity of the Earth to support this. Returning to the PDCA mental model, these concepts are considered an indispensable tool for management effectiveness in preparing and implementing a system of indicators. In the case of this work we adopted the *Balanced Scorecard* as the conceptual basis and added the *Triple Bottom Line* concepts, resulting in a sustainable scorecard as shown in Figure 5.

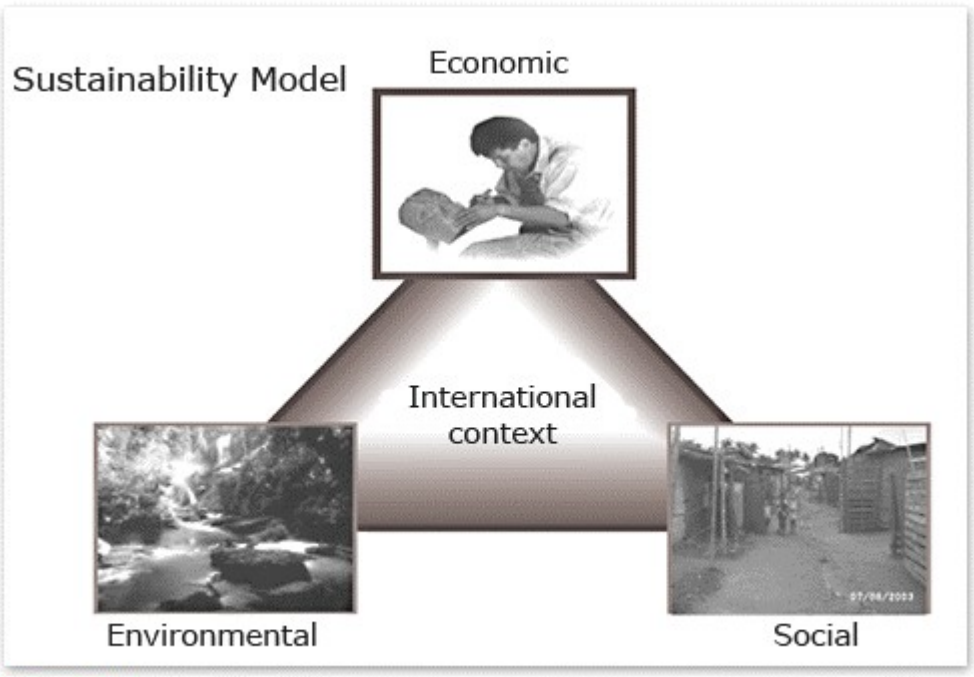


Figure 5: Sustainable Triple Bottom Line: Balanced Scorecard

As shown in the above figure the inter-relationship of the vertices of the substantiality pyramid make it possible to identify the sustainability indicators, among which the following stand out:

- Political aspects (economic-social axis): relationship with government, society, institutions and other organizations;

- Economic (socio-environmental axis): effect of projects on local communities, technology transfer, training of agents in the community, revenue vs. expense balance and generating revenues;

- Social (socio-economic axis): creation of opportunities for personal and professional growth for people and their families; education and training, health and safety in the community;

- Ecological (socio-environmental axis):minimization of impacts on the physical and biotic environment, attributing maximum value to renewable energy resources, focus on eco-efficiency;

- Technological (economic-environmental axis): suitable quality and reliability and minimization of accident risks.

## RESEARCH STRATEGIES.

We conducted a review of literature and did field research with two small companies. We applied an observation routine in order to identify their OH&S management practices. We interviewed the managing engineers of the building sites we researched and the directors of these companies.

We also observed how the safety engineers and technicians operated.

From the observations we analyzed the data and prepared the final considerations.

## STUDY OF EXPERIENCES IN TWO CIVIL CONSTRUCTION COMPANIES

### Report of the problem in the experience studied.

In structuring this study we carried out field research on two construction sites being managed by companies that operate in the market in Niteroi, Rio de Janeiro State, with the participation of the engineers responsible for managing the building work and directors of the companies. The two companies compete in the small constructions market and their competitors are other organizations who limit themselves to complying with occupational health and safety legislation. At first sight, there are some relevant aspects that indicate the urgent need for improvement and that are related to the production process and to the way in which the tasks are carried out: the ergonomic project of the work station, how the working day is planned, psychical and social aspects and occupational fatigue. These factors, which have an influence on productivity, must be evaluated with the aim of suggesting measures for adjusting the work to fit the workers' own personal limitations.

As for the existence of planning in the occupational health and safety practices in the companies we analyzed, it is clear that the professionals who carry out the health inspections need to be made responsible for organizing first aid measures in the case of

accidents or occupational diseases and for providing advice about the purchase of equipment and the organization of places of work and tasks. In other words, it is essential that management tools are used, such as indicators, information systems and the training of these health and safety professionals in the concepts of business management and strategic planning so that they are able to review and argue the case for developing a culture of proactive prevention.

An important element that works in favor of heath, safety and improvements in working conditions is information. The company must have internal mechanisms for publicizing the objectives, performance indicators and results, thus encouraging the workers to participate. A well prepared piece of information contributes to making workers and their superiors aware of safety issues. Besides information, mechanisms must be created, for example, suggestion boxes, which allow the workers to present their proposals; workers whose suggestions are put into practice must be recognized.

In the companies we analyzed the information that existed was limited to what is strictly necessary for complying with legal and labor obligations.

The main challenge of the supervisors is to obtain and maintain compliance with legislation and the company's internal norms.

The main aspect in this issue is to guarantee that these leaders are seen as examples within the organization through their proactive attitudes as far as the question of health, safety and improvements in working conditions are concerned. The company's top management, in turn, must determine the directives by means of a health, safety and environment policy. People are much more disposed to comply with norms and procedures when they have the example of the organization's leaders at all levels to follow.

**Data analysis**

Critical analysis of the planning of the constructions as far as their environmental, occupational health and safety aspects are concerned, as well as the simple evaluation of the causes of accidents does not exist as a management practice in the companies we looked at.

We saw that the workers are very lacking in information, motivation and training. It is the responsibility of the companies to create alternative mechanisms for guaranteeing the continuous improvement of the human resources because they are their biggest asset.

Table 1 explains the occupation health and safety practices in the companies, comparing them with the BS 8800/96 directives. We constructed a table where the first column shows the BS 8800 directive, the second the practice on the construction sites and the third the deficiency of the second in relation to the first.

Table 1: Construction site practices vs. BS 8800 recommendations.

| BS 8800 NORM DIRECTIVES | OH&S PRACTICES ON THE CONSTRUCTION SITES | DEFICIENCIES TO BE OVERCOME |
|---|---|---|
| 4.0 INTRODUCTION<br><br>4.0.1 General aspects<br><br>All the elements of this guide should be incorporated into the OH&S management system, but the way and the extent by which the individual elements must be applied will depend on factors like the size of the organization, the nature of its activities, the hazards and the conditions under which it operates. | | |
| 4.0.2 Gathering information about the initial situation<br><br>The organizations should consider carrying out an initial | a) as far as the items of relevant legislation that deal with OH&S management matters are concerned, they are all | We suggest the active participation by the contract manager as far as issuing guidelines on management of OH&S is concerned. The |

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| information gathering exercise of the existing devices for managing OH&S. This should be done in order to provide information that will have an influence on decisions about the scope, adjustment and implementation of the current system, as well as providing a master line against which progress can be measured. The initial situation information gathering exercise must respond to the question: “Where are we now?”.<br><br>It must compare existing devices with:<br><br>a) the requirements of relevant legislation dealing with OH&S management matters;<br><br>b) the OH&S management guidelines that exist in the organization;<br><br>c) best practice and performance in the organization’s employment sector, and in others (for example, from relevant H&S industrial committees and guidelines from industry associations); | concerned, they are all practiced.<br><br>b) the existing guidance about OH&S management is exercised by the safety engineer and the safety technician, but very little by the contract manager.<br><br>c) this item is practiced by the organization to a minimum extent, in other words, merely informal guidance.<br><br>d) as to the efficiency and effectiveness of existing resources dedicated to management and OH&S it is said that resources exist but as they are linked to the contract manager and he, in turn, is aiming to earn a bonus based on making savings in his construction they always end up becoming scarce. | of OH&S is concerned. The setting up of relevant committees and a constant interchange with industry associations with the idea of preparing talks and courses to clarify doubts. Delegate full powers to the safety engineer over the resources earmarked for OH&S so that the contract manager can fully comply with what he decides. |

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| d) the efficiency and effectiveness of the existing resources dedicated to OH&S management.<br><br>A useful starting point would be to gather information about the existing system and compare with these master lines. The information from the initial information gathering exercise can be used in the planning process. | | |
| 4.1 – OH&S policy<br><br>**THE ORGANIZATION'S TOP MANAGEMENT MUST DEFINE, DOCUMENT AND ENDORSE ITS OH&S POLICY. MANAGEMENT MUST ENSURE THAT THE POLICY INCLUDES A COMMITMENT TO:**<br><br>a) recognize OH&S as an integral part of business performance;<br><br>b) obtain a high level OH&S performance, meeting the legal requirements, as a minimum, and continuously improving; the performance must be economically effective; | a) top management recognizes OH&S as an integral part of its performance and intrinsic to the business, however it is neither defined nor documented.<br><br>b) nothing can be said as to the performance level, because there are no indicators. However it is said that they meet the minimum legal requirements with continuous improvement and economic performance effectiveness. | We suggest that an OH&S policy be defined and endorsed by the organization's top management. Formulate indicators to obtain performance parameters. Create an internal bulletin to publish the OH&S objectives, in addition to other means for ensuring their understanding, introduction and maintenance at all levels in the organization. It is also very important to nominate a top executive for managing OH&S.<br><br>Establish problem solving groups, risk analysis circles, |

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| c) provide suitable and appropriate resources for introducing the policy;<br><br>d) establish and publish the OH&S objectives, even though this is only by means of internal bulletins;<br><br>e) make OH&S management the fundamental responsibility of line management, the executives who are hierarchically above the supervision level;<br><br>f) ensure its understanding, introduction and continuation at all levels in the organization;<br><br>g) encourage the involvement and interest of the employees in order to obtain their commitment to the policy and its introduction;<br><br>h) periodically review the policy, the management system and the auditing of compliance with it;<br><br>i) ensure that employees at all levels receive suitable training and are competent to carry out their tasks and responsibilities. | c) adequate and appropriate resources are applied in OH&S management, but not for introducing the OH&S policy.<br><br>d) item not practiced.<br><br>e) the organization's OH&S management is not a responsibility of the hierarchically most senior executive at the supervision level.<br><br>f) item not practiced.<br><br>g) employees are not involved with OH&S<br><br>h) item not practiced.<br><br>i) we noted that employees receive periodic training at all levels. | etc. These are resources that can be applied for making the decision process more appropriate to the possibility of workers participating. |

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| 4.2 Planning<br><br>4.2.1 General aspects:<br><br>It is important that the success or failure of the planned activity can be clearly seen. This involves identifying OH&S requirements, establishing clear performance criteria, defining what must be done, who is responsible, when it should be done and the desired outcomes. Although it is recognized that, in practice, organizing, planning and implementing functions will be imposed, despite this the following key areas need to be addressed. | | |
| 4.2.2 Risk assessment<br><br>The organization must carry out a risk assessment, including the identification of hazards. | The organization presents the risk assessment, including the identification of hazards by means of the risk map. | |
| 4.2.3 Legal and other requirements<br><br>The organization must identify legal requirements in addition to evaluating the risks that apply to it and any other requirements it | The organization meets the legal requirements applicable to it, for example: PPRA,PCMSO,CIPA, etc. | |

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| considers applicable to OH&S management. | | |
| 4.2.4 Measures to be taken for managing OH&S<br><br>The organization must take the necessary measures for covering the following key areas:<br><br>a) general plans and objectives, including staff and resources, for the organization to introduce its policy;<br><br>b) having access to sufficient knowledge about OH&S, capabilities and experience, to manage its activities safely and in accordance with legal requirements;<br><br>c) operational plans for introducing the risk control actions identified in 4.3.2 and meeting the requirements identified in 4.3.3;<br><br>d) planning of organizational activities covered in 4.3.6;<br><br>e) planning for measuring the efficiency, audits and information gathering of the situation (see 4.4.1, 4.4.2, 4.4.4 | a) there is no planning for the organization to introduce its policy.<br><br>b) the organization shows sufficient knowledge of OH&S and preparation, however it has little experience for managing its activities safely.<br><br>c) item not practiced.<br><br>d) despite practicing some of the activities described in 4.3.6, these are not planned.<br><br>e) item not practiced.<br><br>f) corrective actions are applied, although they are, by nature, an immediate [knee-jerk] reaction. | a) we suggest that the organization, via the executives responsible, plan to introduce an OH&S policy, including people and resources.<br><br>b) set up a joint partnership with consultancy companies in order to acquire knowledge and experience to gradually evolve.<br><br>c) immediately prepare operational plans for introducing actions for controlling risks and the requirements identified.<br><br>d) we suggest that these activities should be planned.<br><br>e) plan for measuring the efficiency, audits and information gathering of the situation, in order to create indicators that are useful for the organization.<br><br>f) use indicators for creating standardized corrective action procedures. |

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| and 4.5);<br><br>f) introducing any corrective actions that may prove to be necessary. | | |
| 4.3 Introduction and operation<br><br>4.3.1 Structure and responsibility<br><br>The first responsibility as far as occupational health and safety is concerned lies with top management. Here the best practice is to attribute to the highest hierarchical level (for example, in a major organization to a member of the Board or the executive management) particular responsibility for guaranteeing that the OH&S management system is implemented and works in accordance with the requirements, in all places and spheres of operation within the organization. At all levels in the organization people need to be:<br><br>a) responsible for the health and safety of those they manage, of themselves and of others with whom they work;<br><br>b) aware of their responsibility | a) the organization has a responsible technical body, comprising a work safety engineer and a technician.<br><br>b) the vast majority of people are aware of their responsibilities as far as OH&S is concerned.<br><br>c) top management is not involved or active in the continuous improvement of OH&S performance. | b) we suggest increasing the amount of training done in order to raise the awareness of all, or almost all the people involved, until the indicators are presented, at which time this should be adjusted to the system.<br><br>c) it is vital that top management shows their commitment to OH&S. The involvement of its executives, who should be aware of the influence they exercise over the employees and consequently on the effectiveness of the system. |

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| for the health and safety of people who might be affected by the activities they control, such as for example, building contractors and the public;<br><br>c) aware of the influence that their action or inaction may have on the effectiveness of the OH&S management system.<br>Top management must show, by example, its commitment, behaving in an involved way and acting to continuously improve occupational health and safety performance. | | |
| 4.3.2 Training, awareness building and competence.<br><br>The organization must take measures to identify the necessary competences at all levels and organize any training that is necessary. | Item not practiced. | We suggest the formulation of indicators for the organization to identify the competences necessary for organizing any needed training at all levels. |
| 4.3.3 Communications<br><br>The organization must have mechanisms, whenever appropriate, for:<br><br>a) providing effective, and when appropriate, open information about OH&S; | a) item not practiced.<br><br>b) item not practiced.<br><br>c) the organization's technical body involved with OH&S becomes involved with employees and provides them with clarification when | a) we suggest the immediate creation of communication channels.<br><br>b) gather information about needs and take steps to obtain specialist consultancy help. |

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| b) taking the necessary steps for obtaining consultancy help from specialists;<br><br>c) involving employees, by providing clarification, when appropriate. | appropriate. | |
| 4.3.4 Documentation of the OH&S management system<br><br>Documentation is the key element for preparing an organization for introducing a successful management system. It is also important when putting together and retaining OH&S knowledge. However, to be effective, it is important that documentation is kept to the minimum necessary. Organizations must ensure that sufficient documentation is available for fully introducing the OH&S plans and that it is proportional to its needs. | Item not practiced. | We suggest a partnership with consultancy companies as being a key element for preparing an organization for the introduction of a successful management system. |
| 4.3.5 Document control<br><br>Organizations must take steps to guarantee that the documents are up-dated and applicable for the purposes for which they were created. | Item not practiced. | We suggest a partnership with consultancy companies as being a key element for preparing an organization for the introduction of a successful management system. |

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| 4.3.6 Operational control<br><br>It is important that OH&S, in its broadest sense, is entirely integrated into the whole organization and in all its activities, despite the size or nature of its work. In organizing itself to introduce a policy and effective management for OH&S, the organization must take steps to ensure that the activities are carried out in accordance with the measures defined in 4.2.4, and also:<br><br>a) define the allocation of responsibilities and accountability in the management structure;<br><br>b) ensure that people have the necessary authority to carry out their tasks;<br><br>c) allocate resources compatible with its size and nature. | a) the organization defines the allocation of responsibilities and accountabilities in the management structure.<br><br>b) the organization ensures that people have the necessary authority to carry out their tasks.<br><br>c) the organization allocates resources compatible with its size and nature. | |
| 4.3.7 Preparation for and response to emergencies<br><br>An organization must take steps to establish contingent plans for foreseeable emergencies and minimize their effects. | item not practiced. | We suggest the preparation of contingency plans for foreseeable emergencies in order to minimize their effects. |

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| 4.4 Checking and corrective action<br><br>4.4.1 Monitoring and measuring<br><br>Measuring performance is one very important way of providing information about the effectiveness of the OH&S management system. Qualitative measures must be considered, whenever appropriate, and must be specially prepared to meet the needs of the organization. Performance measurement is a means of monitoring the extent to which the policy and the objectives are being satisfied and include:<br><br>a) pro-active performance measurement, which monitors service, for example, by watching over and inspecting the steps taken with regard to the organization's health and safety, such as safe working systems, work authorization, etc.<br><br>b) reactive performance measures that monitor accidents, near accidents, | a) item not practiced.<br><br>b) item not practiced. | a) create proactive performance measures for activities that have an influence on OH&S performance.<br><br>b) create reactive performance measurements that monitor accidents, near accidents, health problems and other historical evidence of health and deficient health and safety performance. |

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| health problems and other historical evidence of health and deficient health and safety performance. | | |
| 4.4.2 Corrective action<br><br>Where deficiencies are found the causes that give rise to them must be identified and corrective actions taken. | Corrective actions are taken, however the cause that give rise to the deficiencies encountered are not identified. | Identify the causes that give rise to the deficiencies encountered and create an indicator for this purpose. |
| 4.4.3 Records<br><br>The organization must keep the necessary records for showing compliance with legal and other requirements. | The organization should keep the records necessary for showing compliance with the legal, as well as other, requirements. | |
| 4.4.4 Auditing<br><br>In addition to monitoring the OH&S performance routine, it will be necessary to carry out periodic audits that make it possible to assess in more depth and more critically, all elements of the OH&S management system. The audits must be conducted by people who are competent and independent, as much as is possible, of the activity to be | a) item not practiced.<br><br>b) item not practiced.<br><br>c) item not practiced.<br><br>d) item not practiced. | We suggest the creation of a team of internal auditors capable of carrying out strict audits, albeit with an approach adapted to the size of the organization (small). Subsequently, the visit of external auditors at predetermined intervals in order to continuously improve its OH&S system. |

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| audited; they may, however, be named from within the organization itself. Although the audits need to be strict, their approach must be adapted to the size of the organization and to the nature of its hazards. On different occasions and for various reasons audits need to cover the following points:<br><br>a) Is the organization's overall OH&S management system capable of helping it achieve the OH&S performance standards required?<br><br>b) is the organization complying with all its OH&S obligations?<br><br>c) what are the strengths and weaknesses in the OH&S management system?<br><br>d) is the organization (or part of it) really doing, and carrying out, what it alleges it is?<br><br>The audits must be extensive or tackle selected topics, according to the circumstances. Their results must be divulged to all relevant people and corrective actions taken as necessary. | | |
| 4.5 Management information | a) item not practiced. | We suggest that the |

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| gathering<br><br>The organization must define the frequency and scope of the periodic gathering of information from the OH&S management system, according to its needs. The periodic gathering of information about the situation should consider:<br><br>a) the overall performance of the OH&S management system;<br><br>b) the performance of individual elements of the system;<br><br>c) the audit conclusions;<br><br>d) the internal and external factors, such as changes in the organizational structure, pending legislation, the introduction of new technology, etc., and identify what action is necessary to remedy any deficiencies. The OH&S management system must be designed to accommodate or adapt to internal and external factors.<br><br>The periodic gathering of information about the situation also provides an opportunity for making forecasts. The | b) item not practiced.<br><br>c) item not practiced.<br><br>d) item not practiced. | organization defines the frequency and scope of the periodic gathering of information from the OH&S management system , in accordance with its necessities. |

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| information in a) to d) above may be used by the organization to improve its proactive approach to minimizing risks and improving business performance. | | |

Table 1: Construction site practices vs. BS 8800 recommendations

In an analysis of the aspects covered in the above table, which consolidates the directives of BS 8800/96 Norm (OH&S practices on construction sites – deficiencies to be overcome) we can see that one of the basic management issues is not concentrating efforts on consequences and symptoms, but on causes, trying to understand why people fail to comply with the performance standards, according to the Sustainable Management model suggested in Figure 6, below.

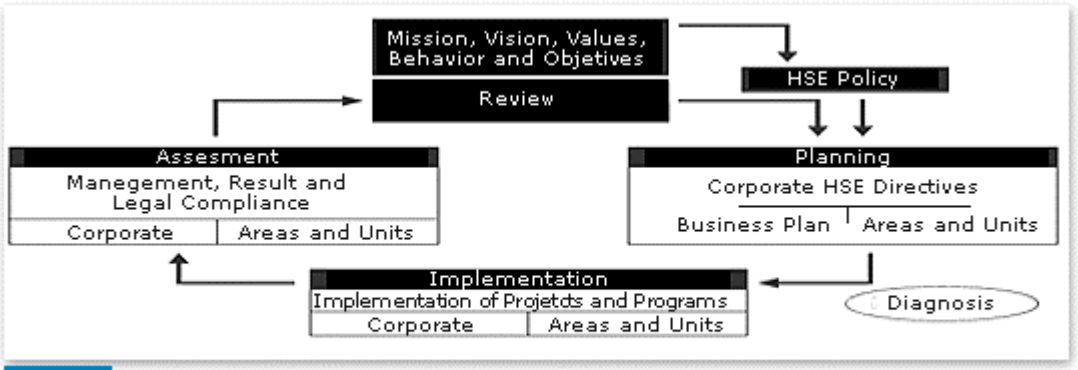


Figure 6: PDCA cycle proposed for Sustainable Management

As suggested in Figure 6, the organizations in question, even though they are small, need to adopt a scientific approach to occupational health and safety, and despite what is missing, we see it is possible to implement an Occupational Health and Safety Management System (OHSMS), on the road to Sustainable Management.

We would add to what we saw in the field research that modern management is characterized by concerns relative to sustainability and the risk management approach (BOWDEN, 2001), the focus of which are the *triple bottom line* axes.

## CONCLUSION. SUGGESTIONS FOR NEW RESEARCH.

Bearing in mind the case study we have here presented we can conclude that the organizations in question, even though they are small, need a scientific approach to occupational health and safety, and despite what is missing, we can see the possibility of implementing an Occupational Health and Safety Management System (OHSMS).

In this aspect, we suggest the involvement of top management and the naming of one of its members to manage the OHSMS, as well as to monitor the performance of the actions established by the safety program. To do this it is necessary to define the indicators and the way of accompanying the evolution of each one of them and to divulge its objectives and the results to the whole organization. We recommend the setting up of a team of internal auditors and the hiring of periodic outside audits.

We also believe that standardization will bring improvements, such as the simplification and optimization of processes, like services carried out on the construction site. The efforts to introduce an OHSMS will undoubtedly be rewarded by the potential for synergies in strategic planning and effectiveness, consistency and robustness in the search for global continuous improvement. At the end of the day, people are the essence of any organization.

In this work we have considered the indicators relative to occupational health and safety, in other words, those recommended for the organization's internal public. Other research should be carried out to map the indicators relative to other publics that suffer from the impact of the organization's operations: society, shareholders, customers, suppliers, competitors and governments.

This article is the result of research being developed at LATEC, the Laboratory of Technology, Business Management and Environment and indicates that it should continue, in order to define the indicators of eco-efficiency in production processes and of business effectiveness.

## BIBLIOGRAPHIC REFERENCES

ALEVATO, H. M. R. *Trabalho e neurose*: enfrentando a tortura de um ambiente em crise. Rio de Janeiro: Quartet, 1999.

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS. *Guidelines for integrating process safety management, environment, safety, health, and quality*. New York: Center for Chemical Process Safety, 1996.

ARANTES, E. *Investimento em responsabilidade social e sua relação com o desempenho econômico das empresas*. Prêmio Ethos de Responsabilidade Social, 2005.

ARAÚJO, G. M. de. *Normas regulamentadoras comentadas*. 3.ed. Rio de Janeiro: s.n., 2002.

BERGAMINI, C. W. *Motivação nas organizações*. 4.ed. São Paulo: Atlas, 1997.

BOWDEN, A. R.; LANE, M. R.; MARTIN, J. H. *Triple bottom line risk management*. New York: John Wiley & Sons, 2001.

BRITISH STANDARDS INTERNATIONAL. *BS 8800* [diretrizes para sistemas de gerenciamento de segurança e saúde ocupacional]. London, 1996.

BRITISH STANDARDS INTERNATIONAL. *OHSAS 18001*: occupational health and safety management systems (Specifications). London, 1999.

BRITISH STANDARDS INTERNATIONAL. *OHSAS 18001*: 1999: amendment 1:2002. Disponível em: emea.bsi-global.com/OHS/Standards/18001Amendment.pdf. Acesso em: 27 nov. 2003.

BRITISH STANDARDS INTERNATIONAL. *OHSAS 18002*: occupational health and safety management systems. Guidelines for the implementation of OHSAS 18001. London, 2000.

BRITISH STANDARDS INTERNATIONAL. *OHSAS 18002*: 2000: amendment 1:2002. Disponível em: emea.bsi global.com/OHS/Standards/18002Amendment. pdf_. Acesso em: 27 nov. 2003.

INSTITUTO ETHOS. Disponível em: www.ethos.org.br. Acesso em: 2004.

INSTITUTO McKINSEY. *Produtividade no Brasil*: a chave do desenvolvimento acelerado. Rio de Janeiro: Campus, 1999.

LUCA, S. O.; BERNAL, A. J. Integrando a ISO 9001 e a ISO 14001. *Falando de qualidade*, São Paulo, ano 12, n.135, p.26-29, ago. 2003.

MASLOW, A. H. *Motivation and personality*. 2.ed. New York: Harperg Row, 1970.

PRADEZ, P. A. J. Uma norma pelo trabalho: é irreversível o uso de certificações para demonstrar compromissos. *Gazeta Mercantil*, São Paulo, 8 maio 2002.

PRAHALAD C. K. *A riqueza na base da pirâmide*. Porto Alegre: Bookman, 2006.

REGINALD, B. H. Towards an integrated management of safety, health and the environment. In: *Chemical & Process Engineering Centre*, 1999. Disponível em: www.cpec.nus.edu.sg/myweb/newsletter/news10/SHE.html Acesso em: 21 nov. 2003.

SINDICATO DA INDÚSTRIA DA CONSTRUÇÃO CIVIL DO ESTADO DO RIO DE JANEIRO – SINDUSCON. *Net*, Rio de Janeiro, dez. 2002. Seção Serviços e Produtos. Disponível em: www.sindusnet.com.br/livre/seguranca.cfm. Acesso em: 2004.

SOCIAL ACCOUNTABILITY INTERNATIONAL. *SAI Guidance 1999*: Guidance document for social accountability 8000. New York, 1999.

SOCIAL ACCOUNTABILITY INTERNATIONAL. *SAI SA 8000*: 2001. Responsabilidade social 8000. New York, 2001. Disponível em: www.cepaa.org/Document%20Center/Standard%20Portuguese.doc Acesso em: 27 nov. 2003.

SOCIAL ACCOUNTABILITY INTERNATIONAL. *SAI SA 8000*: 2001. Social Accountability 8000. New York, 2001. Disponível em:

www.cepaa.org/Document%20Center/2001StdEnglishFinal.doc. Acesso em: 27 nov. 2003.

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