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ENVIRONMENT AND HEALTH: CHALLENGES FOR MANAGEMENT

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ABSTRACT

Environmental and health problems present challenges for organizations, demanding new production processes, products and management policies. These are issues that demand new integrated actions within organizations, public institutions and the community in general, in such a way as to be able to produce, by causing the least impact, either as far as the sustainability of the organization is concerned, or for the health of society. The aim of this article is to present some of these points and contribute to the debate on the new needs that are being presented to management professionals.

Key words: environment, health, environmental problems, environmental and occupational health management.

INTRODUCTION

Environmental and health problems are at the very center of issues that have been presenting challenges for the management of organizations and the formulation of public policies. These are increasingly complex problems that have been dealt with in different spheres by a set of institutions and within a whole raft of legislation.

Many of these problems, involving health and environment issues, are not new. The great epidemics and pandemics, like the plague, cholera, influenza and even yellow fever have already been associated with the environmental conditions in cities. The concentration of populations in the same space under precarious conditions led to the proliferation of disease. These epidemics were also attributed to environmental changes, either because of the devastation of forest areas, or the domestication of animals that brought insects and micro-organisms to live alongside humans. The displacement of mercury as a result of cutting down natural vegetation and forests affected rivers and the places where river-bank communities lived, contaminating fish, their principal food and only source of protein, thereby causing disease among these people.

The process of heavy industrialization and urbanization as from the mid-XXth century, with its production process standards and consumption patterns, has been having an impact on the environment and affecting the health of society. Waste and pollutants in the air, soil and water have been contaminating various areas and causing diseases among the population. Many of these negative impacts are irreversible, causing as they do problems for society and throwing into question the sustainability of companies.

In this context there emerges a concern with actions that involve various sectors of society and various areas of competence and knowledge. The National Policy for the Health and Safety of Workers has itself been discussed since 2004 and involves sectors that are implicated with the issues, from government institutions, corporate organizations, public and private institutions, representatives of the health professionals, unions and other industry organizations. These are actions that have obliged the involvement of various government organizations that represent the various areas, from the Ministry of Labor, Social Security, Environment and Health to Trade and Industry, Agriculture, Education, Justice, Science and Technology and others.

To take actions on these health and environmental problems implies developing integrated policies, whether between the public policies of the various areas that are the responsibility of the State, between public policies and companies from the production sector, between the management policies of public and private companies or between actions involving the various areas. They also imply the development of knowledge that makes it possible to have greater supremacy over production processes and over innovation in production and management processes.

The aim of this text is to present some of the issues, thereby seeking to contribute to the discussion about the management processes that involve health and environment issues.

ENVIRONMENT AND HEALTH

How can we understand the relationship between health and environment?

The debate on environmental and health issues is the subject of reflection, above all in the sphere of a concern with collective health, driven as it is by the environmental impact on health¹. We can briefly mention some of the points that may lead to this relationship between health and environment. The problems of environmental health have been present in Brazilian society, mainly since the end of the XIXth century. The very emergence of public health as a question of hygiene and State first appeared with the epidemics of the XIXth century, like yellow fever, typhoid, cholera and others. They turned cities into a place for the State to take actions relating to sanitation, as well as a stage for social manifestations.

It is the environmental conditions of cities that make it possible for the rapid transmission of viruses and bacteria in contaminated water and food. Since the end of the XIXth century and the beginning of the XX century the agglomeration of populations, concentrated in urban spaces in the disordered expansion movement of cities, and springing up around factories, has also led to the proliferation of disease vectors. The populations that live in precarious conditions and in unordered spaces are the most affected by these illnesses.

¹ Researchers like A.M.Tambelini, 1998, L.G.Augusto, 1998, Moreira and Peres, 2003, C.M.Freitas, 2003, M.F.Porto, 2005, Saldiva, 1995, among others.

The discovery of viruses and bacteria made possible the development of prevention measures, vaccines and public sanitation programs. The construction of water treatment stations, the use of chlorine, the construction of collective facilities, like water mains and electric light, and the introduction of public sanitation measure, like sewers and garbage collection, were fundamental in the control of these transmission vectors. Hygiene programs and actions for urban populations, as well as child vaccination programs, also made it possible to control major epidemics.

In this sense environmental health problems are not recent, but there are new problems that emerge, above all arising from changes that have developed over the last few decades, notably because of new production models - mass production - as from the middle of the XXth century. They are above all attributed to the technological innovations introduced into the production system. These also comprise new inputs that involve new chemical elements and the development of new materials that produce new solid, liquid and gaseous pollutants.

Changes in the industrialization process and urbanization should have produced better living conditions, represented by the well-being and better health of populations. The increase in the number of health risks, both a greater occurrence of work-related accidents and a greater incidence of professional diseases in the work place, are some of the facts that have shown the opposite, in fact, to be true. The negative effects of extremely poor working conditions have been analyzed and described in studies that can be found in literature on this topic since the mid-XXth century.

There is also the rise of new environmental damage, as is the case with the high concentrations of industrial pollution in urban areas and illnesses caused by industrial contamination and pollutants, both in the workers directly involved, as well as in the community that lives around these industrial activities, like cases of saturnism [*lead poisoning*], asbestosis and others. In the case of Brazil, we can mention environmental problems that have been in the public eye since the 70s, with emblematic cases like that involving companies in the Contagem region in the 70s and those in the industrial district of Cubatão. In the 80s and 90s there were also major cases, like those in Volta Redonda and São Vicente that caused unprecedented damage. Major cases are still appearing, like those in Bauru, Paulínia, and others.

It is, therefore, an undeniable fact that the chemical products and metals used in production processes, as well as the various pollutants emitted by industry and its products, whether they are particulate materials, ozone, sulfur dioxide, nitrogen oxides, carbon monoxide or others, cause environmental as well as health problems.

Attention to the health of the worker implies controlling working conditions and the established way in which work is organized, in short working relationships as they unfold in each of the work places. This attention to health means also controlling the speed at which systems and processes develop, and controlling and eliminating pollutants, process and equipment noise and waste.

Attention to collective health also includes taking care of the quality of the environment, since the current industrial development process involves a whole group of physical and chemical elements, various pollutants and waste in a solid, liquid and gaseous state, in addition to noise from industrial systems and processes. The same noises, pollutants and waste affect the workers involved directly in the industrial activity itself, as well as the neighboring community, whether via the air, water or soil. Many of these substances also affect consumers.

In this sense to separate health problems and the environment is to hide the issues surrounding this problem. Understanding the problematic issues involved with the effects of handling and using these products and materials, as well as the pollutants produced, means analyzing each of them and their effects as a whole, which then makes it possible to contribute to the discussion and to outline policies and actions for improving and eliminating their negative impacts.

RISKS AND CHALLENGES

The increase in environmental problems and in the complexity of the risks involved has been presenting a challenge. Production processes and products that have increasingly more diverse physical and chemical components have meant a greater quantity of pollutants and waste with negative effects and real damage to the environment. These

effects can be seen in environmental health; they produce environmental illnesses and damage. These processes give rise to various hazards and risks that may produce negative effects that affect the working community directly involved in the production process, as well as the community living close to these activities.

There is the damage arising from contamination, with effects caused by direct contact with the products, or from exposure to the pollutants in the work place; these have been analyzed in studies on the health of workers. There is the damage related to the indirect contact of populations with pollutants in the air, soil and water; these also have been analyzed in studies on environmental and collective health. There is no lack of damage arising from the effects of products and food produced in contaminated areas, as is the case of areas contaminated with organo-chlorates in São Vicente. There is the damage to entire countries resulting from industrial regions that use chemical products and metals that undergo transformation in contact with air, soil and water, or even by contact between themselves, producing even more toxic effects, as is the case with Cubatão. There is the damage that affects the communities that live in places these pollutants may affect, like the banks of contaminated rivers or along highways where goods, which may be considered as hazardous, inflammable or contaminating and that may present some risk to the health of these populations, are transported.

There are also the hazards and risks that some products represent for consumers, both in terms of safety, as well as in food terms, as is the case with lead-based and transgenic products. There are contaminated areas that will also affect communities of future generations that may live in them, as in the case of São Vicente and Cubatão, where there are children affected by the damage caused to their mothers during pregnancy by mercury, organo-chlorates, lead, agro-toxins and other substances. This is damage that involves both present-day generations as well as future ones.

However, the responses have not been sufficient to solve the problems involved, nor prevent the occurrence of new incidents. Many of the response actions have proved to be controversial. Others turn into bigger problems for the companies and institutions involved. In short, the challenge to prevent damage and risks has been thrown down. These challenges are presented both to organizations and public institutions alike, in short to society in general.

Understanding these risks is also problematic. The complexity of the damage and the risks can be understood from the mass of issues involved, as well as from the number and diversity of their effects. The risks arising from the impact of production system activities that may produce incidents, accidents, environmental damage and occupational disease result from the way such processes are structured and organized. Risks are considered as the possibility of the occurrence of facts that cause damage. They are not a part of the nature of production processes. Therefore, they are facts that may be broken down into quantifiable, assessable and foreseeable data. The accidents, diseases and damage produced in these processes are considered, in this sense, as socio-professional accidents and diseases and socio-environmental damage. These effects are controllable and the vast majority of them can be eliminated.

In addition to the environmental legislation and the activities of pollution control bodies positive measures have been developed with good results. We can mention the case of the Precaution Principle, as one of the production directives that has contributed to the development of new production practices for avoiding the occurrence of a lot of foreseeable damage and for evaluating risks throughout the production process. Neither can we deny the positive results of the negotiations arising out of the actions of associations and multilateral committees, like those of the chemical workers with health professionals and owner associations, as well as the non-governmental organizations involved with collective health, in their collective search for solutions to the problems that affect workers, communities, companies and public institutions.

From this perspective risks reveal themselves as increasingly complex problems that need to be analyzed within the set of issues involved, with the aim of evaluating the uncertainties imbedded in the production system - in its entire process - from product conception and the extraction and use of raw materials to the end product, its consumption and disposal. However, these risks imply greater knowledge of the process stages, an understanding of the aspects that are involved in production and the effects of the physical and chemical products and metals used throughout the process. They also imply a complete control over the effects of the products when being consumed and in the populations involved, as well as the consequences that each one of the stages may represent and the populations may become implicated.

The need for developing other production processes, other ways of work organization and other working processes has been firmly stated. This also involves promotion and methodology construction programs that make possible an analysis of the processes and the introduction of prevention programs, with the active involvement of institutions and the application of public policies, as a set of integrated actions. Therefore, this implies other and new knowledge, comprising different disciplinary areas for its understanding, as well as mastery of accumulated experiences from analyzing the occurrence of facts within context, over a particular period of time and in different places.

RESPONSIBILITY IN THE SOCIAL PRODUCTION OF HEALTH AND THE ENVIRONMENT

If we understand health as the result of a continuous and daily production process, responsibility for it is society's, both individuals and different groups, like the State via its institutions, public policies and collective facilities. This responsibility also belongs to corporations and institutions that are part of the production system as a whole. It is expected that individual citizens develop daily actions for taking care of their own health and that of their families by seeking out the resources and facilities available for this end. On the part of the State it is expected that, by means of legislation, public policies and convincing actions, it will be more effective. On the part of organizations they are required to adopt policies and actions for preventing damage, processes with new technologies and work and community relationship policies; they should also make public the implications of their processes.

Nevertheless, there are effects that counter-productive as far as health is concerned. These are the effects of production and consumption processes that have negative implications for those populations involved. There are effects that may also affect populations at different levels; at the local, regional, national and world level, like those that affect air and water, the contamination of food and other exported products. We must not forget that some things may affect present-day life, as well as future generations.

Health production actions include those that eliminate points that involve risks and hazards. To begin with the populations involved need to know about them. They need to know about the effects of the production activities and this must be part of the knowledge of everyday life of these populations. This means they must dominate the knowledge, as they develop what they know about risks and hazards in their upbringing and education processes at different levels and for different groups.

In this process of spreading information about the true conditions of the spaces they live in the State also has to be involved via public policies. This information is about activities that were developed - and are still being developed – in the place where they live, above all the risks that are involved with these activities, the actions necessary in the case of something out of the normal happening, or in situations where the production process systems do not function correctly.

Therefore, health is the result of a social care process, or responsibility programs from a group of institutions and organizations, in short from society as a whole. This is care in preventing and protecting the health of the community that results from collective policies and programs and from systematic and continuous action on the part of the State, as well as from the populations, both individually and collectively. These are points that involve a set of actions and also include knowledge of the effects of the production activities being developed in certain places, thereby establishing rhythms in time and space, because the populations involved, whether they are groups of workers, consumers or the surrounding communities, are in control.

ORGANIZATION MANAGEMENT POLICIES

The management policies of organizations follow standards established by production models. The imposition of new standards by means of management systems since the 90s has brought organizations in-line with the need to attend to new norms. International institutions, like the International Organization for Standardization, with its ISOs, the BSI British Standards Institution, with its OHSAS - Occupational Health and Safety Assessment series and Social Accountability International, with its AS Social Accountability have established norms that, in Brazil, have been developed, translated and

adapted by the Associação Brasileira de Normas Técnicas [*Brazilian Association of Technical Norms*] that created the NBRs.

In fact, these standards have been evolving since the start of the XXth century, with the systematized production line standards in North American industry, following the Taylor model, and scientific administration. The productivity obtained with the introduction of major industries in the post-war period (First World War) made it possible to create mass production and consumption. The subsequent period was one of quality control, which established quality control standards using statistical control criteria. In the post-Second World War period the Taylorist model was maintained and perfected, with Quality Control Circles spreading along the production lines.

The mass production model crisis in the 1980s demanded new perspectives for production models that introduced issues of flexibility, quality and, more recently, the social responsibility of corporations. The degradation of environmental conditions and ways of life and the consequent prospect of environmental changes beyond the limits of the natural resources have directed our attention to the care needed to avoid the degradation of ecosystems, environmental impact and damage, destruction of the ozone layer, global warming and air and water pollution.

Because of this health and environment issues have started being part of the management agenda of organizations. They are in the whole production process, from extraction of the raw material, planning, production itself, through to waste disposal. It is a fact that this content is referenced to a self-regulation process within an international market marked by established standards. But it does not end here. In the search for certification seals, among other things, the introduction of norms altered the ways of producing. We must emphasize that it is the positive results of the norms, the actions of the institutions and the application of public policies, which have avoided the occurrence of greater negative impacts.

However, what we see in the reality of organizations is that the content of management processes cannot end with merely falling in line with the norms. Many actions have proved to be controversial in their results, even if they have been coherent in the application of the norms. They are contradictory to the extent that the results are not always positive and do

not avoid or prevent risks, contamination, disease, accidents or damage, in general. There are also the actions of those responsible for public institutions and who, in the exercise of their functions, have even created difficulties for the lives of individuals and groups, by obstructing the development of activities important for their survival, as in the case of the communities in the Ribeira Valley.

We can also not deny some of the positive results arising from a new set of ethics with regard to health and environment issues, such as the creation of new production process development alternatives at lower environmental cost; the directive, today called cleaner production, is one of them. There are various others for developing energy production alternatives that have a reduced environmental impact, also known among the ec-efficient management instruments. There are also actions by companies to control and manage toxic effluents and acids and to recover polluted waters. There are actions for eliminating and controlling the use of harmful products, like pesticides, fungicides and even solvents that produce pollutants and diseases, control of the production of electro-domestic appliances (white goods) that emit chlorofluorocarbons (CFC), to mention just a few.

This new agenda is also beginning to be part of the new ways of being an entrepreneur. In it are included everything from product quality demands, customer service, care with work relations to the management of environmental issues. They start to reflect the image of the productive efficiency of organizations, like a brand, and establish their legitimacy values in the market and in society. These are new ways of producing that appear from various concepts like, among other things, quality, corporate social responsibility and the social balance sheet. This is an agenda that has taken on a strategic planning and management role in organizations.

THE ROLE OF MANAGERS IN ORGANIZATIONS

What is expected of managers in this context?

It is expected that the managers construct a new scope for their actions in organizations, like strategic management, to the extent that this represents the best image of the companies, as well the very survival of organizations.

Initially, it is expected that directives, policies and strategies are outlined, thus constructing new content for their roles as managers, within the principles of ethics and responsibility, which looks after an ethics of closeness and distance and that considers local, national and world spaces in the lifetimes of current and future generations.

The prospect is that this might identify and raise problems and that it might know how to articulate the various players, as well as knowing how to seek out the knowledge on which to base their decisions. Managers may discuss their questions and rely on their knowledge of the various areas, by producing new and additional knowledge. They can also involve those responsible for public policies with their problems, which are also of interest to everyone, and which makes it possible to delineate new points in public policies.

It is expected that there will be the development of a planning policy that encourages attention and care with collective health, from the process of producing a quality product to the quality of work relations, quality service and respect for the consumer.

It is also expected that there will be the development of a working life quality policy that will translate into better work relationships, like working conditions that guarantee the worker's safety and health in line with the directives for promoting the health of the worker in the daily process, thereby generating equalitarian processes of challenges and opportunities at every moment in the working process.

Some of the actions that have been carried out and that are part of what is expected of managers are:

1. The outlining of clean production process policies;
2. The development of alternatives and new possibilities for processes, in order to improve the use of inputs, raw materials and resources, like water, electricity and diesel, with a reduction in the amount of pollutants going into the air, water and soil;
3. The development of a policy for taking advantage of and reversing waste within the production processes;
4. The outlining of directives that articulate the public policies in the different instances and spheres of public institutions, with the different private and non-governmental institutions that promote health;

5. Articulation with different stakeholders, with actions focused on the solution of environmental and occupational problems, and coordinated actions, from analysis through action and monitoring;
6. Stimulation and development of the process of managing knowledge, which involves environmental and health education for the different groups and communities, with better data and information about the risk activities of organizations;
7. The development of integrated policies with effective actions, whether they are with service providers, partners or outsourcing companies, above all with small companies.

Each of these actions implies a group of management methodologies and instruments. For example, clean production would imply studies in the assessment and monitoring of the life cycle of the products, thereby continuously improving the process from the source of the raw material and the manufacturing process to the product's use and final destination. The risk analysis, control and management program deals not only with the mapping and constant monitoring, but also relies on the participation of the workers who live with the daily experience of the risk content.

Some of the emblematic facts are the subject of debate in order to understand the management processes that involve health and environment problems and for learning about the various risk implications. Debate on cases from the Cubatão Industrial Center, the cases of contamination by organo-chlorates in São Vicente, the cases of saturnism in Bauru and others, must be encouraged in order to expose the problem involved, the products involved, the risks, effects, impacts, the institutions, the legislation and the populations implicated, with the intention of seeking integrated management prospects for the processes with other institutions and with public policies.

There are also positive experiences of programs for promoting health and some organizations have been having a lot of results. The Ler/Dort prevention programs, including the education and recovery of sick people, are notable. As yet no valuation figure has been put on the health of working environments. Studies on the productivity gains in healthy environments are still rare. However, the high cost of absenteeism of employees, whether because of missing work, or being off because of accidents and illnesses, has shown that there is a significant difference between repair and promotion activities for organizations.

The social balance sheet, with presentation of the results of the year as a dialogue with the different stakeholders who encourage development of the industry, whether they are shareholders, consumers, workers, State agents, directors or suppliers, is also a time for presenting the results of management processes. Social responsibility must be, therefore, the consequence of a management process, involving both the sustainability of the business, as well as the quality of the work relationships, the product and the company image.

Final considerations

In a context of new challenges being presented to organizations that are faced with questions of environmental health, the expectation is that the management professionals will take actions with regard to the production process to introduce clean production and develop strategies and processes that guarantee the prevention of negative impacts on the environment and, at the same time, promote collective health; actions that involve all stages in the production process. This goes from the start of the process to the end product; from the moment of the raw material is collected and the way it is extracted, to the use of natural sources, the industrial processes with their waste and pollutants, the uses and consumption of the product, transport, final destination and treatment of the product, packaging and care with waste management after the product has been consumed. These are professionals who understand the new paradigms of production models and production processes, and who monitor the various facets of these effects over the whole life cycle of the products and the various communities that are both directly and indirectly implicated.

It is the responsibility of managers to look for alternatives for developing management processes that make possible the balance of the sustainability of organizations at new levels. Developing knowledge that makes it possible to understand the environment as a place of production, as well as where health is produced, as the result of a continuous and cumulative process of promoting actions that take care of it on a daily basis, is part of the content of their roles. Management professionals must reposition themselves to perceive the policies of the organizations and public policies, thereby assuming the social

responsibility of the organizations when faced with the current challenges that society as a whole is facing.

REFERENCES

ACKERMAN, M. et al. Saúde e meio ambiente: análise de diferenciais intra-urbanos, município de São Paulo. *Revista de Saúde Pública*, v.30, n.4, 1996.

AUGUSTO, L. G. S. et al. O princípio de precaução no uso de indicadores de riscos químicos ambientais em saúde do trabalhador. *Ciência e saúde coletiva*, v.3, n.2, 1998.

BERLINGUER, G. *Bioética cotidiana*. Brasília: Ed. UnB, 2004.

BRAGA, A. et al. Poluição atmosférica e saúde humana. *Revista USP*, v.51, p.58-71, set./nov. 2001.

DUCLOS, D. *L'homme face au risque technique*. Paris : L'Harmattan, 1991.

CÂMARA, V. et al. Estudo dos níveis de exposição e efeitos à saúde por mercúrio metálico em uma população urbana de Poconé. *Cadernos de Saúde Pública*, v.11, n.1, 1996.

FASSIN, D. *L'espace politique de la santé*. Paris : PUF, 1996.

_____. (dir.) *Les figures de la santé publique*. Paris : La Découverte, 1998.

FREITAS, C. M. Problemas ambientais, saúde coletiva e ciências sociais. *Ciência e saúde coletiva*, v.8, n.1, p.137-50, 2003.

GUTBERLET, J. *Cubatão. Desenvolvimento, exclusão social, degradação ambiental*. São Paulo:, Edusp/Fapesp, 1996.

ITANI, A.; VILLELA JR., A. Labour and environmental health: some hazards issues. In: WORLD CONGRESS OF SOCIOLOGY, XVI. Durban, 2006.

_____. *Saúde e meio ambiente*. In: COLÓQUIO EM SAÚDE E MEIO AMBIENTE. Senac, São Paulo, 2006.

LOPES, J. S. L. (Coord.) *A ambientalização dos conflitos sociais*. Participação e controle público da poluição industrial. Rio de Janeiro: Relume Dumara/ Núcleo de Antropologia Política UFRJ, 2004.

MEDRADO FARIA, M. Mercuralismo metálico crônico ocupacional. *Rev. Saúde Pública*, v.37, n.1, 2003.

_____. et al. Saúde e trabalho industrial: Valores hematológicos de trabalhadores residentes no Pólo Sideropetroquímico de Cubatão. *Revista brasileira de saúde ocupacional*, v.15, n.60, 1987.

_____. Dosagem de Carboxi-hemoglobina e meta-hemoglobina em trabalhadores do município de Cubatão. *Ciência e Cultura da SBPC*, v.38, n.7, 1986.

PERES, F. et al. (Org.) *É veneno ou é remédio? Agrotóxicos, saúde e ambiente*. Rio de Janeiro: Fiocruz, 2003.

PORTO, M. F. Saúde do trabalhador e desafio ambiental: contribuições do enfoque ecossocial, da ecologia política e do movimento pela justiça ambiental. *Ciência e saúde coletiva*, v.10, n.4, 2005.

SALDIVA, P. et al. Air pollution and mortality in elderly people: a times series study in Sao Paulo. *Archives of Environmental Health*, 1995.

SANTOS, E. et al. Diagnóstico das condições de saúde de uma comunidade garimpeira na Região do Rio Tapajós, Itaituba. *Cadernos de Saúde Pública*, v.11, n.2, 1995.

TAMBELINI, A. M. et al. A temática saúde e ambiente no processo de desenvolvimento do campo da saúde coletiva: aspectos históricos, conceituais e metodológicos. *Ciência e Saúde Coletiva*, v.3, n.2, 1998.

TRINQUET, P. *Maitriser les risques du travail*. Paris: PUF, 1996.

VILLELA JR. et al. Saúde do trabalho e meio ambiente: qual a integração possível? (Palestra) In: CONGRESSO LATINO-AMERICANO DE SAÚDE DO TRABALHO, São Paulo, 2005.

DOCUMENTS

BRASIL. MTE. *Política Nacional de Segurança e Saúde do Trabalhador*. Brasília, 2004.

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