

# Editorial

## Sustainability and prevention in occupational health and safety

### Introduction

Over the past decade, encouraging trends have been observed in many parts of the world showing a decrease in the annual number of occupational injury claims, while occupational diseases have been shown to be on the rise and can now be considered as the main cause of death at work. While preventive actions to mitigate the risks have been shown to be effective in many situations, one must acknowledge the fact that isolated actions that are taken in reaction to a hazardous situation may not always be the most efficient to prevent its recurrence. It appears that preventive actions that are taken within the workplace need to rely on much broader perspectives to ensure that their effects will be most susceptible to be permanent or long-lasting in providing a healthier and safer environment for the workers.

In today's world, the concept of sustainability is attracting considerable attention as many governments have integrated it in their economic development strategies. According to the World Health Organization (WHO), sustainable development is defined as a strategy to “meet the needs of the present world population without causing adverse effect on health and on the environment, and without depleting or endangering the global resource base, hence without compromising the ability of future generations to meet their needs”. Sustainable development relies on several principles for framing its actions, many of which can clearly be applied to occupational health and safety. These principles include the necessity for attention to be given to the health and quality of life of people, to the prevention of known risks and to the application of precaution when there is uncertainty with regard to the risks. It may thus be considered that occupational health and safety (OHS) and prevention of injuries and diseases are issues of concern with regard to sustainability. The question that now arises is how can sustainable prevention in occupational health and safety realistically be achieved? While not being exclusive, it is believed that three avenues are worth considering: 1) integration of health and safety during the

design stage of equipment and buildings; 2) incorporation of occupational health and safety concerns within the organization's business or management plan; and 3) creation of a health and safety prevention culture through training and job knowledge transmission.

### Design of Equipment and Buildings

Not surprisingly, eliminating the risks at the design stage is seen to be the most effective in the hierarchy of controls in industrial hygiene. For equipment manufacturers, this supposes taking into account right at the design stage the potential hazards that can be associated not only with the operation but also with the maintenance of the equipment. This also means having to take into account the interactions and limitations of the human body with regard to the physical loads and stressors and environmental contaminants in order to ensure their optimal control and the ergonomic design of the equipment. Once incorporated into the design stage, the health and safety of the persons operating the equipment does not have to rely exclusively on judgment, decision making, protective equipment or training since features have already been incorporated within the product (ex. safeguards, roll-over protection systems for vehicles) to make it safe. The Directive on machinery adopted by the European Parliament and the Council of the European Union (2006/42/EC) has brought incentive for the manufacturers to design the equipment so as to prevent putting persons at risk under the conditions foreseen throughout the estimated lifetime of the machinery. In that sense, it complies with the requirements for achieving sustainable prevention. Hand-held power tools designed with lower noise and vibration emission values, lower weight, better handling characteristics and machines offering better access for maintenance and better control of dusts and other contaminants have found their way on the market as a result of the application of such a Directive.

Preventing injuries and deaths through better design of buildings is another avenue which has gained attention for achieving sustainable prevention. While building sustainability has thus far been more concerned with environmental issues (i.e. the need to conserve energy resources and

materials; ex. LEED certification: Leadership in Energy and Environmental Design), the concept of sustainability needs also to consider the “conservation” of human resources. The health and safety of the workers that will carry out their work inside the buildings, including those involved in their construction, and maintenance need to be considered at the design stage. To achieve sustainable OHS prevention, architects and building design engineers must take into account in the design the protection of the health and safety of the workers (ex. set anchor points for fall hazard control, plan ventilation with respect to the location of the workstations, position windows to meet lighting requirements, etc.), and not only concentrate on the conservation of energy resources.

## Management and OHS

One of the key components in the socio-economic development of enterprises is its workforce and the necessity for it to be healthy, productive and motivated. Occupational health and safety needs to be incorporated within the management and business plan of organizations to take into account the fact that the healthy production of materials, goods and services can only be achieved if the health, safety and well-being of the working population is ensured. Putting emphasis in the management plan on the protection of the human resources and on promoting health and establishing a safety climate is certainly one way of achieving sustainability. Occupational accidents and diseases can have a major impact on productivity, competitiveness and reputation of enterprises. The overall costs, taking into account the human and financial components, can by far exceed the compensation costs (including indemnities and medical costs). The investments in OHS have thus social and economic benefits for the enterprises and recent economic studies and surveys have confirmed the benefits of a top-down approach to OHS on business productivity and competitiveness. More and more, it is being recognized that occupational health and safety should be seen as an investment rather than an expense and that it should be a key component of the management and business plan of the enterprises. The title of the 2016–17 campaign launched by the European Commission and EU-OSHA on OHS speaks in that regard. Entitled “Healthy Workplaces for All Ages”, it promotes the fact that “safe and healthy working conditions throughout the whole working life are good for workers, business and society”, thus supporting the concept of sustainable prevention.

## Training and Job Knowledge Transmission

In the context of important demographic changes taking place in various parts of the world, major challenges are being faced by organizations to ensure the safe integration of new and inexperienced young workers starting new jobs and the transfer of experiential and prudent knowledge from experienced to novice workers. Furthermore, considering that the longer working lives associated with the aging population are bound to result in longer exposure to risks, it will become increasingly important to adapt the training approaches to ensure that prevention is sustained throughout the working life. Learning an occupation or trade is a complex process and the best strategies to acquire and share knowledge to ensure the use of safe and healthy work practices are instrumental for creating a health and safety prevention culture that will be maintained over time, thus complying with the sustainability principle.

## How Can Research Help?

Although three different avenues have been addressed through which sustainable prevention in OHS can be achieved, there is still a need to develop further the knowledge that could come in support of their implementation. Equipment design raises the need for studies to come in support of manufacturers in the development of robust and reliable machinery risk assessment tools, methods for characterizing the various hazards (ex. noise and vibration emission values of machines and tools) and for measuring the physical constraints (ex. biomechanical measures) associated with the operation of the equipment.

With regard to the design of buildings, research can play an important role in contributing to the development of tools, models and guidance to assist the architects and design engineers in achieving proper integration of OHS at the design stage.

Studies to investigate different approaches to integrate OHS in management, develop tools to measure the benefits that might be expected from their implementation and determine the impact of individual and organisational factors on the overall results are but a few examples of research needs for which the results could assist the enterprises in their efforts to achieve sustainable prevention in OHS. In view of the important demographic changes that have started to take place, research will also clearly be needed to identify for the enterprises the best training approaches in OHS that could be adapted to the work context and the most appropriate strategies to adopt to ensure

knowledge transmission from experienced to novice workers. In consideration of the undeniable value of human resources for the productive operation of enterprises, it is to be hoped that prevention in OHS will become as important a part as the conservation of the environment in the efforts that are being made to achieve sustainable development and that more research will be initiated to come in support of these actions.

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