



Targeting Occupational Health and Safety*

Introduction

Occupational health and safety (OHS) management protects the safety, health, and welfare of people at the workplace. In 1950, the first session of the joint International Labour Organization (ILO) and the World Health Organization (WHO) Committee on Occupational Health adopted a definition of occupational health. The definition was subsequently revised in 1995 and states:

- Occupational health should aim at the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention amongst workers of departures from health caused by

their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological capabilities and, to summarize: the adaptation of work to man and of each man to his job. (Guidotti 2011, 5)

All occupational health and safety programs aim to foster a safe work environment, including the protection of employers, suppliers, customers, family members, nearby communities, and other members of the public who could be affected by a company's operations. Such programs draw on disciplines such as occupational medicine, occupational or industrial hygiene, public health, safety engineering, chemistry, health physics, ergonomics, toxicology, epidemiology, and environmental health.

Description and Application of Targeting Occupational Health and Safety

Typical occupational health and safety risks common to the industrial sectors may be categorized as physical, chemical, ergonomic, and biological risks. Slips, trips, falls, noise, and vibration are examples of physical risks. Fires, explosions, leaks, spills, and exposure to gases, vapors, mists, dust, and fumes are common chemical risks. Muscular-skeletal problems resulting from repetitive activities such as lifting and carrying, or from spending long periods in one single position such as sitting at desks and working with computers, are typical ergonomic risks. Lastly,

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exposure to bacteria, viruses, biogenic toxins, and allergens is characteristic of biological risks.

To address occupational health and safety, a business should identify the workplace hazards (see Appendix, page 10). A hazard refers to a circumstance that has the potential to cause harm. It may indicate a physical situation or it may indicate the omission of necessary preventative measures. An example of a physical situation would be exposure to equipment with sharp edges that could cause lacerations, while an example of an omission would be the failure to provide a guard to prevent injury from the sharp edges on the equipment.

Modern occupational health and safety legislation usually demands that a risk assessment be carried out prior to making an intervention. Risk management requires risk to be managed to a level that is as low as is reasonably practical. This assessment should detect the hazards, identify all affected by the hazards, evaluate the risk, and offer and prioritize appropriate control measures.

The evaluation of risk is based on the likelihood or probability of the harm being realized and the severity of the consequences. This can be expressed mathematically as a quantitative assessment by assigning integers to denote low, medium, or high likelihood, and assigning integers to indicate the severity of the consequences. The integer assigned for likelihood and the one assigned for severity can be multiplied together to obtain a risk factor. Risk can also be evaluated qualitatively by describing the circumstance in which the harm could arise. Newly

Box 1. Typical Risk-Control Hierarchy

Avoid the risk – this is ideal, but not always attainable.

Replace the dangerous with the less dangerous – for example, replace hazardous materials with safer alternatives.

Prioritize the risk – focus attention on the greater risks, including those where the public is involved.

Control hazards at their source – deal with the hazard directly, do not use a secondary control; for example, control noise by repairing or maintaining the machine, not by using hearing protectors.

Adapt work to individuals' abilities – for example, use stronger people for tasks demanding strength.

Upgrade work equipment as technology improves – newer equipment may be marked to show that it meets tougher safety standards.

Implement a coherent control policy – ensure that the specific risk control does not cause a disproportionate problem elsewhere; for example, do not solve the problem of a noisy machine by relocating it.

Ensure that collective measures have priority over individual measures – for example, it is better to provide a safety roof rather than to rely on individual measures such as hard hats.

Inform, instruct, train, and supervise the workforce.

Provide Personal Protective Equipment (PPE). Although PPE is often essential, all the higher level controls should be considered first before using PPE as the alternative to solve a problem. Appropriate PPE (for example, overalls, safety boots, gloves, and hard hats) should be required even in the safest environments.

introduced controls should lower risk by one level (for example, from high to medium or from medium to low). Risk increases as the seriousness of resulting harm increases, and as the likelihood increases that



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the circumstance will occur. Ideally, all risks would be mitigated; however, this is usually not feasible. Box 1 lists a typical risk-control hierarchy.

Implementing an occupational health and safety management system, which can be carried out in-house or by specialized consultants, is a reliable way of improving occupational health and safety performance in the workplace. These health and safety systems promote, facilitate, and enable consistency throughout workplace activities and processes. It is important to note that the system alone will not produce safe behavior or a safe workplace. System effectiveness comes from complete commitment to the health and safety system. This includes proper implementation, follow-up, and training.

Behavior-Based Safety. Behavior-based safety (BBS) is an approach used to reduce workplace accidents and fatalities. It is set on the premise that safety in the workplace is a combination of three measurable components: personality, environment, and behavior. Only when these three elements are combined can the workplace be “accident free.” BBS argues that by observing and analyzing the interactions between people's behavior and the work environment, it is possible to identify factors that support safe or unsafe behavior. BBS also maintains that by changing the environment to support safe behavior and implementing proven behavioral safety processes, a business can dramatically reduce the number of lost-time and minor injuries.

Advocacy for behavior-based safety has also stimulated controversy, with some arguing that a behavioral focus puts excessive responsibility on the workers, and that BBS is too limiting and should aim for a more holistic or culture-focused approach. In any case, behavioral safety has provided a platform for constructive debate, and the conflicting opinions have provided the opportunity to learn more about the psychology of injury prevention (Cooper 2007; Geller 2004).

To be successful, the BBS program must include all employees from the CEO to the most basic job position, since the changes needed cannot be accomplished without buy-in and support from all involved in making those decisions. Central elements of a BBS program include (a) common goals for the employees and the managers, (b) behavioral observation and feedback processes, (c) formal review of observation data, (d) improvement goals, and (e) reinforcement for improvement and goal attainment. Other aspects that can contribute to a BBS program's success include (a) multilevel teams for the assessment phase, the observation and the review phases, or for all three phases; (b) placing the focus on site observation; and (c) recognizing that BBS is not a quick fix, but rather a commitment to a safer environment and injury reduction.

OHS Application in Small and Medium-Sized Enterprises. Small enterprises are commonly defined as having 1–49 employees and medium-sized enterprises as having 50–249 employees. As key drivers in the world economies, small and medium-sized enterprises (SMEs) need to have their safety and



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health performance on a par with that of larger companies. If an SME did not understand its health and safety risks, then it would lack the knowledge to manage its health and safety performance, and as a result may not assign needed resources to provide adequate training.

Typical occupational health and safety management for SMEs includes the following: meeting legal responsibilities, establishing an organizational health and safety structure, developing a written health and safety policy, assessing risks, training the workforce, consulting with the workforce, monitoring and improving safety performance, and providing safe facilities. The requirements for the safe environment of an SME are not different from those for any other business. However, the economic impact of an accident is more severe on a SME than on a big company, since an SME has less working capital. Mechanisms to overcome SMEs' occupational health and safety issues might include organizing to obtain collective training from the government, or participating in sector-specific OHS initiatives.

Practicalities of implementation. It is a good business practice for all operations, regardless of size, to have an occupational health and safety management system commensurate with their risks. However, implementing such a system may involve costs that businesses had not anticipated and may be unwilling to bear. Businesses should quantify the costs associated with accidents that cause harm to people or property. Deciding whether to allocate resources to develop an occupational health and safety management system should be based on the

system's potential to reduce the human cost of physical harm and the financial cost of the accidents, in relation to the costs associated with the management system.

Sometimes, the lack of clear health and safety regulations may hinder the implementation of

Box 2. Basic Elements for Good Health and Safety Management Systems

Management Commitment and Employee

Involvement. The manager or management team leads the way by setting policy, assigning and supporting responsibility, setting an example, and involving employees.

Worksite Analysis. The worksite is continually analyzed to identify all existing and potential hazards.

Hazard Prevention and Control. Methods to prevent or control existing or potential hazards are put in place and maintained.

Training for Employees, Supervisors and Managers. Managers, supervisors, and employees are trained to understand and deal with worksite hazards.

Follow-up. To determine what is working well and what changes are needed.

management systems. In such cases, it is a good business practice to refer to established sector-specific benchmarks for good health and safety practices, and established occupational health and safety regulations from other regions.

If the workforce has low literacy or educational levels, and/or lacks the appropriate skills set (for example, farmers becoming factory workers, and women or



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youngsters becoming part of the labor force), it is highly advisable that businesses focus additional efforts to train the labor force so as to minimize the likelihood of accidents and unsafe working conditions.

In a few circumstances, cultural beliefs may prevent some health and safety controls from being applied (for example, in the United Kingdom, Sikhs required an exemption from the regulation that drivers of motorcycles wear crash helmets). Where such constraints occur, it is especially important that technical solutions are found to minimize health and safety risks in the workplace.

Prerequisite Factors for Targeting Occupational Health and Safety

New businesses sometimes fail to include occupational health and safety within their management priorities. Thus since management may not carry out early identification and proper assessment of health and safety risks, it cannot make its employees aware of the workplace risks, and training programs may not be properly established. New businesses should begin addressing health and safety from day one (see box 2).

Open communication with the employees is crucial to the success of an occupational health and safety system. The employees' cooperation depends on their understanding of the system's goals, why it is important to them, and how it affects their work. Additionally, documentation of the activities in all elements of the safety and health program is important. Essential records, including those legally

required for workers' compensation, insurance audits, and government inspections, must be maintained as long as the actual need exists or as required by law. Keeping records of all activities, such as policy statements, training sessions, safety and health meetings, information distributed to employees, and medical arrangements made, is greatly encouraged.

Maintaining essential records will demonstrate sound business management as supporting proof for credit applications, for insurance and other audits. Furthermore, such records help in the review of ongoing safety and health activities for better control of current operations and to plan improvements. Records of accidents, related injuries, illnesses, and property losses are essential to developing procedures to prevent recurrence.

Any good management system requires periodic review to determine what is working well and what changes are needed. A widely accepted way to identify hazards is to conduct safety and health inspections. Using checklists is a good way to get an indication of where to begin taking action towards a safer and more healthful business. The self-inspection checklist in Appendix 1 includes a basic, but not exhaustive, list of areas to be considered when assessing health and safety risks.

Advantages and Limitations of Targeting Occupational Health and Safety

Businesses may establish good occupational health and safety systems for ethical reasons, to realize



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economic benefits, and/or to satisfy legal requirements. Economic benefits are secondary to human health and safety as a rationale for health and safety protection. However, businesses may consider calculating the total (direct and indirect) costs of work-related injuries and illnesses to determine the economic benefits that may be achieved by preventing injuries and illnesses. Conversely, businesses may recognize the economic disadvantages of poor occupational health and safety performance in terms of lost productivity, and the requirements to pay compensation and fines.

When operating with appropriate occupational health and safety systems, businesses may recognize that these systems improve staff performance and availability for work, help in recruiting and retaining key skills and expertise, avoid possible disability discrimination, reduce workers' compensation insurance costs and medical expenditures, and produce fewer faulty products. Other indirect benefits may include increased morale, better labor and management relations, reduced turnover, and better use of human resources.

Governments experience the disadvantages of poor occupational health and safety performance through lost tax revenue, through increased welfare costs for social security payments and medical treatments, and through the social costs of accidents. Governments respond through the enactment of legal instruments to enforce minimum health and safety standards.

The complexity of a business's occupational health and safety management should be directly

proportional to the business's occupational health and safety risks. There is little to be gained from a management system that generates paperwork and takes up significant time and effort, but results in little or no risk reduction. To help businesses in identifying work-related hazards, there are commercially available software tools.

Established businesses with a good safety record may become complacent and overlook the inherent risks associated with their operations. If there is a long period with zero accidents, management might wrongly relax safety practices, assuming that the workplace is safe. Established operations should carefully implement occupational health and safety principles and closely monitor occupational health and safety performance data, including reports of near misses and incidents.

Interaction with other Tools and Possible Substitutes

There is an ongoing tendency to integrate the occupational health and safety management system with other structures typically used to manage businesses successfully. These other structures include the environmental and social management system and the quality management system. This approach allows a business to address the key aspects of its operations through a coordinated approach by integrating all of the business's systems and processes into one complete framework.



A good practice is to benchmark a business's occupational health and safety performance to establish the system's level of effectiveness. Good sources include the benchmarks published by some countries' regulatory agencies responsible for health and safety enforcement, for example the U.K. Health and Safety Executive's Corporate Health & Safety Performance Index (HSE Web site), the industrial trade associations, IFC environmental guidelines, the EU Best Available Technique Reference Notes (BREF), the ILO small and medium enterprise toolkits, Occupational Health and Safety Advisory Service (OHSAS) 18001:2007, the American National Standards Institute (ANSI) and American Industrial Hygiene Association (AIHA) Z10-2005, and British System (BS): 8800:2004.

Certification to the standard may confer a marketing advantage and be of commercial benefit to some businesses, particularly to satisfy the supply-chain requirements of clients that have their own occupational health and safety management system certified to the standard.

National governments may take a prescriptive approach to occupational health and safety legislation, or they may embrace the concept of risk assessment, which aims to identify hazards and implement reasonably practical measures to reduce risks to the lowest possible level. Judgments about what is "reasonably practical" include economic analysis of costs and benefits as well as consideration of the range of available technology.

Sometimes the regulatory framework combines the two approaches. In the United Kingdom, for example, while there is a movement towards risk assessment in recent laws governing asbestos and fire safety management, prescriptive legislation requires that all dangerous parts on workplace equipment be suitably guarded to prevent harm to people, if such guarding is technically possible.

Many governments have established national agencies whose role it is to carry out research, provide occupational health and safety information and training, inspect workplaces, and enforce regulatory compliance.

Good business practices would also consider the benefits of a sound occupational health and safety system from the perspective of avoiding penalties from lack of compliance with government requirements, anticipating legal challenges, and possibly benefiting from better insurance premiums.

Practical Examples of Targeting Occupational Health and Safety and Lessons Learned

Brazil. A large Brazilian construction company significantly reduced the number of accidents and fatalities by developing a rigorous occupational health and safety program. Key elements of this program included (a) a detailed workers toolkit identifying all job-related risks, typical accident causes, and clear ways to prevent/avoid them; (b) rigorous and focused H&S training for managers and supervisors; (c) constant worker H&S induction and



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training; and (d) monetary rewards to the entire team including project manager and employees. The source of these financial incentives is the money allocated for accidents/fatalities compensation not having to be used for that purpose. The number of accidents and fatalities has been reduced below the typical benchmark for construction operations.

China. To motivate employees to work safely, a Chinese chemical company decided that, in addition to its standard safety procedures and practices, it would ask each employee to bring a family picture to work in order to create a family bulletin board for each work area. The board was located in the room where, each morning, the workers had a five-minute safety talk and pledged to their families to have a safe workday. After introducing these practices, management noticed that workers began talking about safety among themselves, and management credits these innovations as contributing to a reduced accident rate.

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This guidance note is part of World Bank Group publication: *Getting to Green – A Sourcebook of Pollution Management Policy Tools for Growth and Competitiveness*, available online at www.worldbank.org



Appendix: Self-Inspection Checklist

Building and Grounds Conditions – floors, walls, ceilings, exits, stairs, walkways, ramps, platforms, driveways, aisles

Chemicals – storage, handling, transportation, spills, disposals, amounts used, labeling, toxicity or other harmful effects, warning signs, supervision, training, protective clothing and equipment, hazard communication requirements

Electricity – equipment, switches, breakers, fuses, switch-boxes, junctions, special fixtures, circuits, insulation, extensions, tools, motors, grounding, national electric code compliance

Evacuation Plan – establish and practice procedures for an emergency evacuation in response to a fire, chemical/biological incident, bomb threat; include escape procedures and routes, critical plant operations, employee accounting following an evacuation, rescue and medical duties, ways to report emergencies

Fire Prevention – extinguishers, alarms, sprinklers, smoking rules, exits, personnel assigned, separation of flammable materials and dangerous operations, explosion-proof fixtures in hazardous locations, waste disposal, training

First Aid Program/Supplies – medical care facilities locations, posted emergency numbers, accessible first aid kits

Hand and Power Tools – purchasing standards, inspection, storage, repair, maintenance, grounding, use, handling

Heating and Ventilation – type, effectiveness, temperature, humidity, controls, natural and artificial ventilation, exhausting

Housekeeping Program – waste disposal, tools, objects, materials, leakage and spillage, cleaning methods, schedules, work areas, remote areas, storage areas

Lighting – type, intensity, controls, conditions, diffusion, location, glare and shadow control

Machinery – points of operation, flywheels, gears, shafts, pulleys, key ways, belts, couplings, sprockets, chains, frames, controls, lighting for tools and equipment, brakes, exhausting, feeding, oiling, adjusting, maintenance, lockout/tagout, grounding, work space, location, purchasing standards

Maintenance – provide regular and preventive maintenance on all equipment used at the worksite, record all work performed on the machinery and train personnel to properly care for and service the equipment

Personnel – training, including hazard identification training; experience; methods of checking machines before use; type of clothing to be worn; use of guards; tool storage; work practices; methods for cleaning, oiling, adjusting machinery

Processing, Receiving, Shipping, and Storage – equipment, job planning, layout, heights, floor loads, projection of materials, material handling and storage methods, training for material-handling equipment

Provide Personal Protective Equipment (PPE) – type, size, maintenance, repair, age, storage, assignment of responsibility, purchasing methods, standards observed, training in care and use, rules of use, method of assignment

Transportation – motor vehicle safety, seat belts, vehicle maintenance, safe driver programs