



## **BRIEF ANALYSIS OF HEALTH AND SAFETY REGULATIONS OF PAKISTAN**

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**AUTHOR NAME:** MOHAMMAD SAWAB

**KEYWORDS:** HSE, OSHA, Pakistan, ISO.

### **ABSTRACT**

In the United States, the Occupational Safety and Health Administration (OSHA) was made to improve well being in the working environment. Managers are dependent upon OSHA site examinations and must fit in with a lot of far reaching rules and guidelines. Interestingly, in Pakistan, thorough and widespread security guidelines have not been innovated. Laborers are commonly untalented or semiskilled, inadequately paid, incidentally utilized, display low creation (efficiency) rates, and frequently relocate in a gathering starting with one spot then onto the next looking for work. Normally, workers are not prepared in safe work rehearses, and there will in general be an absence of the board promise to security programs and different wellbeing methodology. In nations like Taiwan, the proprietor and the temporary worker are allocated joint obligation regarding claims coming about because of word related mishaps. A fundamental wellbeing control framework, stressing the foundation of a security board of trustees and self investigation, has been created to control venture wellbeing. The legislation in Pakistan is a continuation of the one which was formed decades ago. The paper has evaluated the present legislation being implemented in the country associated to health, safety and environment (HSE). Moreover, it has also given suggestions.

## **INTRODUCTION:**

All through the world, the development region of the structural building is one of the most perilous businesses (Suazo and Jaselskis 1993). The significant reasons for mishaps are identified with the novel idea of the business, human conduct, troublesome work-site conditions, and poor security the board, which brings about dangerous work techniques, gear, and strategies (Improving 1988). In any case, wellbeing isn't an extravagance and might be viewed as a significant capacity to be utilized against superfluous loss of property, damage, or passing. Counteracting work related wounds and ailment ought to be an essential worry of everything being equal. Particularly in creating nations, there must be a push to raise the degree of mindfulness among the two representatives and managers of the significance of wellbeing and security at work locales. Accentuation in both creating and created nations ought to be put on preparing and the usage of far reaching wellbeing programs (A Bill 1993). This paper examines the methodology toward security in a created nation, the United States (OSHA 1983; Zero 1993), furthermore, a commonplace creating nation, India (Gajare 1992). Correlations are made and recommendations are offered for accomplishing security during the development of an undertaking. A study of the U.S. development industry shows that most of the temporary workers every year spend under \$25,000 on wellbeing training (Korman et al. 1990). This is generally little consumption. All things considered, as indicated by a Business Round Table report, the expense of a powerful development security and wellbeing program in the United States is roughly 2.5% of direct work costs (Improving 1988). It has additionally been discovered that administration support is imperative for any fruitful security program (Zero 1993). In such manner, thinks about have indicated that perils on destinations can be controlled and mishaps can be forestalled through the execution of fundamental security rehearses prompting a sound development security program. The execution, activity, and checking duty of the program ought to be obviously characterized toward the start of development exercises.

Mishaps in the common/development industry will in general be exorbitant in both human and budgetary terms. These costs might be gathered in the territories of social insurance, suit, the executives' time, laborers' remuneration, and Occupational Health what's more, Safety Administration (OSHA) sanctions. Different costs

incorporate transportation costs, loss of profitability of laborers, cost of fixing or supplanting harmed<sup>121</sup> gear or materials, and the expense of employing new specialists (Hinze 1992). In such manner, apparently associations pay for the expense of wellbeing either through the uncontrolled expense of mishaps or through the controlled expenses of a security program. It shows up, consequently, that mishap counteractive action ought to be a prime worry for any constructor. To stress wellbeing during the development procedure, it is suggested that a development firm working in the United States think about the accompanying (Amrien 1992):

1. Knowing about the specific OSHA rules and guidelines associated with the work under development
2. Setting up strategies and techniques and safeguarding that they are practiced per plans and details
3. Booking wellbeing preparing for development laborers, chiefs, and plan experts
4. Building up a composed security program and including punishments for inability to pursue OSHA guidelines
5. Directing standard security gatherings
6. Posting suitable material security information sheets (MSDS), if important

The safety of project staff and construction workers can only be guaranteed by law, and safety should not be the responsibility of the employer, the contractor. Employees must be involved. Safety at work must be ensured by employees and can be ensured by training and higher education. The organizational benefits of an effective security program include higher profits, a better reputation and image, and lower insurance premiums. Above all, the number of accidents on the site is decreasing.

## **RESEARCH AIM:**

The paper aims to discuss the current legislation being implemented in the country and will also highlight the major reasons of adverse conditions of HSE in Pakistan.

## **METHODOLOGY:**

The paper will highlight the current legislation through Quantitative approach. This approach is further categorized as: exploratory and attitudinal. Exploratory research will gather data as it is related to the subject as

there is limited information available before the research initiates. The research is exploratory research<sup>122</sup> and will be confined only to the secondary data.

## **LITERATURE REVIEW:**

### **OCCUPATIONAL HEALTH & SAFETY IN PAKISTAN**

Much has been written on health and safety issues in Pakistan, but none of these reports is exhaustive. Most of these reports are regional and job-specific reports, which are small samples. To date, the government has not considered any findings in these reports that still pose a professional threat to today's society (Hisam, 2007). There are generally two ministries involved in the Pakistani government. the Ministry of Economy and Statistics and the Ministry of Human Resources to collect work-related data (pakistan.gov.pk, 2012). To maintain labor statistics, the Ministry of Economics and Statistics conducts a nationwide labor force survey, while the Ministry of Personnel Development collects data from its provincial offices. Well-being at work ”(see Figure).



Source: International Labor Organization

The figure shows the mechanism of data collection by public institutions of industrial and construction companies. Representatives of the Pakistan Active Population Survey and Labor Human Resources Statistics coordinate with construction companies, collect and collect data and transmit it to authorities, counties, provinces and federal agencies. Important areas such as economic data, information on the workforce, training and professional experience, data on expatriation, professional associations, job offers, employee welfare and their empowerment are included in labor and human resources statistics (Azim, 2010) , while the labor force survey includes work, unemployment, underemployment, hours of work, wages and literacy level. The authenticity of these figures has been questioned for several years because construction companies have no legal obligation to participate in surveys or share their data with government agencies (T. Awan, 2007).

The only state institute that trains workers in Pakistan on occupational safety and health is the “Center for Improving Working Conditions and the Environment” (Sheikh, 2011). The center was founded in Lahore, Pakistan in 1988 by the Punjab Provincial Labor Directorate, the Finnish Institute of Occupational Medicine and the ILO (Pasha, 2003). The only private institute in Pakistan is the prevention of job loss "Safety and security". One center in Lahore, Pakistan ([www.osalp.com.pk](http://www.osalp.com.pk), 2011). Prepared by the United States Department of State, UU., The National University of Science and Technology of 12 and the University Commission, Pakistan ([nationalacademies.org](http://nationalacademies.org), 2009) .These institutes only indicate improvements in Pakistani society because they are not the majority Staff can serve ([www.itglwf.org](http://www.itglwf.org), 2011) These institutes charge high fees and do not have branches in other cities. The minimum wage an employee can receive is Rs. 7,000 converted 61 euros (Bibi, 2011). This amount is not enough for him, since he has a lot of dependents and inflation increases regularly, he barely manages to meet his daily needs. Construction workers are not permanent, which is why their respective companies do not invest in it to participate in training (Lazarevic and Perry, 2004). However, governments had proposed OSH ombudsman advice and monitoring of tripartite in labor policies in 2001 and 2010, but no action has been taken so far (Hisam, 2007). In addition, the Factories Act of 1934 confers on the district judge of each district supervisory power. In Punjab, the largest province in Pakistan, however, there are only two factory inspectors and an industrial hygienist to monitor 36 districts of Punjab (Pasha, 2003)

Lack of understanding, fewer inspections, dull reporting and laws has exaggerated the health and safety problem in Pakistan (Raheem, Azhar, Choudhary & Riaz, 2011). The need to address health and safety issues is now inevitable, and more and more workers will be affected daily.

## **LABOUR FORCE OF PAKISTAN**

Masses dwell in Pakistan. As far as populace, it is the 6th most populated nation on the planet with a development pace of 2.07% and a complete ripeness pace of 3.5 per lady. In the event that a similar pattern proceeds, Pakistan will arrive at 191.7 million and 242.1 million by 2030. Pakistan will be the fourth biggest nation on the planet in 2050 (Bibi, 2011). The absolute populace of Pakistan is 54.92 million, 33 percent of the all-out populace is identified with work. This makes Pakistan the ninth biggest nation on the planet as far as the quantity of representatives in 2010.

In Pakistan, an expected 3.05 million specialists were jobless from 2009 to 2010, the joblessness rate was 5.6% (Bibi, 2011). For that year 2009/2010, the investment rate was 94.45 percent; 51.87 million specialists were utilized in different work connections (see Figure 2). As can be found in Figure 2, the joblessness rate expanded in 2009-2010 contrasted with the earlier year 2008-2009. The reasons can change, from the worldwide downturn to peace in the nation. All divisions are influenced by the circumstance. The development business has seen the most exceedingly awful of these years. The powerlessness of development organizations to create capital, advance interest in their ventures, and the significant expense of crude materials and temporary workers are a portion of the fundamental purposes behind the decrease in development action in the nation (Hasan, 2011). , The breakdown of the development area has likewise influenced development laborers, which is the reason the joblessness rate in the nation has risen.

## **CONSTRUCTION INDUSTRY OF PAKISTAN:**

Development is a procedure where the structure is manufactured utilizing materials, hardware and machines. There are a few stages associated with the development; Starting, sorting out and arranging, completing and

support. Much of the time, the task is overseen by the venture director and observed by a few subordinates<sup>125</sup>, including the site chairman, the planner, the designer, the material specialist, the studying engineer and the quality confirmation administrator, the arranging engineer, the structural architect, the coordination's chief, and the boss. The development area has extraordinary possibilities in Pakistan. There are 1,016 enrolled designing specialist co-ops, 84,224 architects and 22,784 authorized development organizations identified with the development part in Pakistan. The development segment represents 2.4% of (GDP) (Mazhar, 2006). The complete workforce in the development division adds up to 3.7 million, which relates to 6.7% of the nation's financial movement. Contrasted with other financial segments, the development division is the second to toward the end regarding the business rate. The farming segment is the most significant part, the vast majority is identified with horticulture. Practically 24.75 million specialists are utilized in agribusiness, while divisions, for example, exchange, assembling, administrations and transport represent 16.5%, 13%, 11.2% and 5.2%, separately. The quantity of individuals identified with these divisions is 9 million, 7.1 million, 6.1 million and 2.8 million, separately (Bibi, 2011).

Notwithstanding the development division, there are different businesses. Around 40 enterprises, for example, concrete, iron, steel, wood and wood, marble, tiles and stones, electrical and sterile works, glass, paint and varnish, electrical lighting, power and gas, cultivation, inside plan, transportation, development Lightweight, development hardware, plastics, filaments, furniture, machines and significantly more go connected at the hip here (Rana, 2003). Thus, this segment is viewed as a significant business asset in the nation. The pace of building a nation is an indication of its advancement. The connection between the pace of development and the advancement of the land is legitimately relative (Baig and Hussain, 2011). The segment likewise adds to administrations, for example, transport, stockpiling, land and account. The development part is presently known as "constribusiness" (Plessis, 2002). Each penny utilized in the development area directly affects various enterprises. An expansion in development speculations per unit has a multiplier impact and the plausibility of producing multiple times the benefit of the unit (Baig and Hussain, 2011). The development part can develop by 14% if the economy develops by 10% and can make 3.2 million new openings in the decade. The development segment has the ability to accomplish collaboration impacts on the grounds that different segments are

influenced by this area. The pace of the development part additionally invigorates other financial areas<sup>126</sup> and this relationship is sure. A strong development organization offers monetary and metropolitan advantages, for example, destitution easing, more reserve funds for shoppers and more ventures (Nenova, 2010).

In construction sector one can likewise make low-paying occupations, for example, security protects, bricklayers, woodworkers, circuit testers, painters, handymen, and so forth., just as lucrative employments, for example, designers, engineers, temporary workers and so forth that make 19.3 million homes that are inadequate to address the issues. In the most recent decade, numerous large names, for example, National Power Construction Company (NPCC), Mechanized Construction of Pakistan (MCP) and National Construction Limited (NCL) have vanished from the open segment. So also, the private division has been influenced by the absence of promptly accessible capital, the absence of gifted work, the legitimate and administrative condition, the absence of outside venture and the swelling in item costs (Mazhar, 2006). National Engineering Service Pakistan (NESPAK) has given building administrations in 32 nations throughout the most recent 30 years. For a similar explanation, this association battles for business (Mazhar, 2006).

## **HEALTH & SAFETY LAWS IN PAKISTAN**

Before World War I, the common belief was that workers were interchangeable, but after World War I, a sense of work was felt. Workers' rights were discovered during that time, but no attention was paid to improving work settings. The most important event that led to occupational safety regulation was the Triangle Shirtwaist fire. It happened in New York City on March 25, 1911. 146 garment workers died mainly as a result of suffocation, smoke inhalation, fire or death. Similarly, in 1930, when construction of the Hawks Nest Tunnel began near Gauley Bridge, West Virginia, workers were exposed to silicon dust. At least 476 miners killed and 1,500 disabled from silicosis. This was probably the worst industrial disaster in the United States. By 1986, the Chernobyl disaster had hit 500,000 workers (Riaz, n.d.).

Safety and health legislation is really a framework associated with regulations which connect specific sections of the people, such as the operating class as well as health, security and wellbeing with community. The law,



government bodies and government bodies usually make sure the execution of safety and health regulations in many countries. People, companies or even cartels tend to be credited or perhaps compensated with regard to personal injury or maybe death depending on health and safety rules and municipal law. Protection laws and also civil legislation usually interact. The Working Atmosphere Act generally contains conditions on carelessness and expert responsibility. These types of provisions enter force and they are referred to whenever relevant instances are introduced before the Work Court. These kinds of provisions provide attorneys unique rights to recognize the believe and penalize the responsible. As mentioned above; Authorization, monitoring along with enforcement would be the core beliefs of any kind of regulation. America passed the actual Occupational Security & Wellness (OSH) Take action in 1970, which supplies detailed protection frameworks, as the Occupational Basic safety and Health and fitness Administration guarantees law enforcement via support, schooling and coaching, and by means of review of regulations and requirements. The Commission's Health and Safety Commission rate simplifies the particular assessment regarding administrative discussion and treatments. The Working Surroundings Act is actually a code-based regulation because it consists of detailed techniques for performing duties. The United Kingdom developed the Health and Safety at the office Act within 1974, that outlines typically the core framework and expert to promote, handle and apply health, basic safety and work satisfaction. The actual Director involving Health and Safety performs the same part in the United Kingdom since the US Work place Administration.

Within Australia, the actual Occupational Security & Wellness Act 1984 provides fundamental charters associated with health and safety at the office, while Secure Work Sydney provides appropriate assistance, schooling and coaching. The Earth Rehabilitation Support (CRS) assists people with afflictions and ailments in work cases and the reintegration in to society (weblaw, n. d). The Commission rate on Basic safety, Rehabilitation as well as Compensation (SRCC) facilitates proceedings and also appeals idol judges (see Desk 3). In contrast to the US OSH Act year 1974, Australian files are performance-based legislation meaning that the law is actually flexible, needs-based and concentrates on requirements and gratification requirements (Cole, 2003). Even though 20 percent of worldwide world energy comes from Southern Asia (Anon, 2001) but nevertheless lacks efficient health and safety laws in the region (Carter, 2009), for this reason South Parts of

Asia have had a higher mortality price. mortality prices in Afghanistan, Bangladesh, Indian, Nepal, Pakistan<sup>128</sup> and Sri Lanka tend to be 19. nine, 26. four, 11. five, 29. on the lookout for, 20. seven and eighteen. 3, correspondingly (Hamalainen, Takala & Sareela, 2005). Gulf of Mexico legislation continues to be dissolved and it is in the process to be developed. As opposed to health and safety legal guidelines, explicit guidelines are not instantly available along with exists just in the form of work law generally. There is current legislation within the United Arabic Emirates, however it differs in one emirate to a different and is not really centralized (Redfern, 2010).

## **THE FACTORIES ACT 1934**

One of the founders of the WTO was Pakistan. In 2006, the quota system was abolished and every nation was granted trade rights on equal terms. Following the globalization of trade, critical criteria for the environment and health and safety were repeated by a number of organizations. In accordance with the WTO, it is now mandatory for foreign investors and importers to comply with the International Standards Organization (ISO) codes. New legal requirements were incorporated into existing federal laws in the surrounding republics. Similarly, laws related to work environment and safety were introduced in Pakistan, such as the Factory Act 1934, the Dangerous Occupational Code 1963, the Mining Act 1923, the Ordinance on Shops and Facilities in West Pakistan 1969, the Ordinance on Provincial Workers 'Social Security 1965, the Workers' Compensation Act 1923 and the Act on dock workers 1934. However, the current regulations have limited applications, and it is not a comprehensive document on health and safety in the workplace and all commercial sectors (Riaz, nd).

The 1934 Factory Act is the only Health and Safety (OHS) Act in Pakistan; Health and safety are dealt with in Chapter 3 of this Act. The Factory Act 1934, which applies to plants where ten or more workers work and all production procedures are given. It proposes important measures that should be taken to ensure the safety and prevention of workers' disease against occupational disease. It requires the provision of better healthcare, adequate resources, continuous ventilation, proper lighting, dust control, emissions and exhaust, 16 fire protection, occupational hygiene, sanitation and maintenance. In addition, there are general clauses about

clinical controls in special cases, hiring a social worker for 500 or more workers, establishing a fire<sup>129</sup>place in a company with 250 or more workers, and rest rooms where there are 150 or more workers (M. Khan, 1988 ). Factory Act 1934 also covers working hours and working conditions in factories. It limits working hours per week to forty-four, with the exception of double hours, a day break of one week and an anniversary of ten days. It also restricts workers under age, children under twelve cannot work in factories and those under fifteen cannot work more than five hours a day (Keddie, 1957). The Factory Act 1934 contains very rudimentary goals for health and safety measures in the workplace. It only checks certain occupations as dangerous and contains special regulations to regulate the work settings in these fields and ignores the rest. The above measures are not in practice now, especially in prosperous nations. This law does not cover many sectors with enormous dangers and large quantities, such as agriculture, construction and informal / self-employed. There are no contours for the lowest qualifications of health professionals (Riaz, n.d).

Country/ Region	Occupational Health & Safety Law	Concerning Bodies
European Union	Directive 89/391/EEC	European Agency for Safety & Health at Work (EU-OSHA)
Malaysia	Occupational Safety & Health Act 1994	National Council for Occupational Safety and Health
China	Occupational Work Safety Act 2002	Regional Health Departments – Institute of Health Inspection, State Administration of Production Safety
Korea	Industrial Safety & Health Act 1981	Korean Occupational Safety & Health Agency (KOSHA)
Singapore	Workplace Safety & Health Act 2006	Ministry of Manpower
Australia	Occupational Safety & Health Act 1984	Safe Work Australia, The Safety, Rehabilitation and Compensation Commission (SRCC)
New Zealand	Health and Safety in Employment Act 1992	Department of Labour
Source: International Labor Organization, 2012		

The Occupational Health and Safety Assessment Series (OHSAS-18001), is an internationally recognized standard for occupational health and safety management systems, established to address a variety of safety and health issues. health problems that workers often experience (Zeng, Tam & Le, 2010). . The system is a complete documentation that can be reformed and adapted to meet the needs of organizations, sectors or regions (Remmen, Jorgensen and Mellado, 2005). It provides a framework for detecting, mitigating and mitigating risks in combination with health and safety. It defines the requirements for a work environment and security management system to facilitate an organization's ability to mitigate professional risks and improve its effectiveness. It does not specify performance criteria and does not contain general requirements for designing a control system. Rather, it is used to test the effectiveness of the health and safety management system and to build confidence that the management system meets legal and political requirements. To be effective, the management system must be tested in accordance with the guidelines of the recognized standard, and OHSAS-18001 may be beneficial in achieving this (Zeng, Tam & Le, 2010). The basic motive behind OHSAS-18001 is to systematically reduce the threat / risk in the workplace, which in turn enriches the productivity of the business and reduces production costs (Singh, 2009).

Thirteen leading professional organizations, international standards and accreditation boards created this system to fill a gap where there were no specifications certified by independent organizations (Philips, Mors & McDonald, 2003). In 2006, approximately 25,000 organizations in 82 countries were certified to this standard. The OHSAS-18001 method allows companies to identify gaps in their management system, identify the dangers, and identify risks that cannot be tolerated and must be described (Smith, 2008).

Instead of being reactive, OHSAS-18001 is a proactive approach because the system can assess risk and analyze danger before an accident occurs. After assessing the risk, inspectors propose control measures. These control measures can be technical or administrative or both. Thorough identification of hazards and assessment of the likelihood of potential harm are fundamental to this standard.

As stated in Section 4.3.1 of the 2007 version: "When establishing controls, or considering changes to<sup>131</sup> existing controls, the risk should be assessed in accordance with the following hierarchy: a) elimination, b) replacement, c) technical controls, d) signs / warnings and / or administrative controls; e) Personal protective equipment "(Smith, 2008)

The OHSAS-18001 specifications apply to an organization that wants to: a) Introduce an OHS management system for eliminating or mitigating risks that employees and other stakeholders whose business may cause OHS events. b) Implementing, maintaining and continuously improving an OHS management system. c) Ensure that the specified OHS guidelines and contract obligations are followed. d) Show compliance with competitors or customers. e) Seek certification / registration of the OHS management system by an external organization. f) Make a Self-Determination and Declaration of Compliance with the OHSAS Specification (Pheng & Kwang, 2005).

Most foreign clients doing business with Pakistani companies require that some meet the OHSAS 18001 standard and be certified by OHSAS 18001. OHSAS-18001 is the only tool available in the market to test the effectiveness of the OHS management system. Since most construction companies do not have an HSE department, they also lack safety management systems. Implementation of an SSO management system is not possible without the HSE department. Wherever there is HSE evaporator in Pakistan, they use OHSAS-18001 to test and evaluate the effectiveness of OHS management systems.

## **PAKISTANI LABOR POLICY 2010**

Labor policy is a temporary draft developed by the government in consultation with other shareholders and describes comprehensive codes and plans related to labor and labor rights. Securing economic, municipal and political rights is at the heart of labor policy. This policy also includes promises to all citizens of the Republic's constitution, international treaties and ILO agreements. Proposes an important guideline for legislative changes (Hisam, 2010). Labor Policy 2010 was released on May 1st and the assessment is for HSE. • Three-party committees at district, provincial and federal level should be set up to monitor the implementation of labor laws,

especially regarding pay, pay cuts and deadlines (Nishapuri, 2010). the experts are not happy; According to them, this policy is extremely deficient in research and vision on fundamental issues, deficient in all aspects and reflects a lack of will in the past and present of the state. Labor policy was largely disturbed and separated from the legislation in Pakistan. None of the five former workers' politicians of 1955, 1959, 1969, 1972 and 2001 were included in the Labor Preparation Act. Agricultural and civil engineering workers for union laws and collective bargaining were not included in labor policy 2010 (Hisam, 2010).

## **ROLE OF HSE DEPARTMENT**

Work-related health, safety and the environment (HSE) is the usual, cerebral and corporate comfort for workers, their relatives and the community. Workers, trade unions and other bodies are obliged to achieve this cooperation and contributions from the authorities. Less attention is paid to work-related health, safety and environmental problems, but it will cost tremendously if ignored. The most important thing is to have the understanding and ability to protect ourselves, our loved ones, the community and the environment that we so reliably trust. Workers and their relatives, communities, owners and the state can be severely affected by occupational accidents and illnesses (Kirby & Hurst, 2004). Table 2 illustrates the effects of occupational accidents on individuals, communities and the authorities.

<b>Affectees</b>	<b>Effects</b>
<b>Workers and his family</b>	The grief and suffering of the injury or sickness, The loss of salary, The conceivable loss of a job, Treatment costs
<b>Community</b>	Seeing a adored and praised-worthy individual suffering from an injury or ailment, anxiety and tension, Time and effort to look after for the person, Financial damages and hardship, Loss of life
<b>Employer</b>	Payment for task not done, treatment and compensation expenditures, Repair or replacement of damaged machinery and equipment, Decrease or a provisional halt in production, High training expenditures and administration costs, Potential decline in the quality of work, Negative impact on morale of other worker
<b>Government</b>	Decrease in Gross National Product (G.N.P)
<b>Source: ILO, 2004</b>	

Today, many companies have HSE departments as part of their organizational structure or administrative wings.

The main goal of HSE departments in all organizations is to reduce work-related health, safety and environmental accidents and illnesses. Some of the responsibilities for HSE departments are listed in Table 3.

These responsibilities have been assigned to limit the environment, occupational health and safety, public health and safety, construction and reconstruction, and issues related to sustainable development in the workplace.

Areas of Interest	Responsibilities
<b>Environmental</b>	Water Conservation, Hazardous Materials Management, Waste Management Noise Control, Contaminated Land and Remediation, Air Emissions and Ambient Air Quality, Energy Conservation, Wastewater and Ambient Water Quality
<b>Occupational Health &amp; Safety</b>	Personal Protective Equipment (PPE), Special Hazard Environments, Monitoring, General Facility Design and Operation, Communication and Training, Physical Hazards Protection, Chemical Hazards Protection, Biological Hazards Protection, Radiological Hazards Protection
<b>Community Health &amp; Safety</b>	Traffic Safety, Transport & handling of Hazardous Materials, Disease Prevention, Emergency Preparedness and Response, Water Quality and Availability, Structural Safety of Project Infrastructure, Life and Fire Safety (L&FS)
<b>Construction &amp; Decommissioning</b>	Environment, Occupational Health and Safety, Community Health and Safety
<b>Sustainable Development</b>	Reduction in Carbon footprint, Reduction in Energy footprint, Reduction in Water footprint, Conducting Lifecycle assessment, Industrial symbiosis
<b>Source: World Bank, 2007</b>	

## SUSTAINABLE CONSTRUCTION

Sustainable development has been one of the most talked about issues in the industry over the last decade.

Today, most of us understand that we have not inherited the environment from our ancestors, but must share it with future generations. It is the fundamental right of all people to have a clean and healthy environment.

Today, the world's resources are more expensive than ever. The researchers are looking for a very efficient technology that uses less raw materials and energy and produces finished products in the shortest possible time with minimal waste and without impact on the environment. The environments act as a source and sink, and the resources on earth are limited. Among the resources, some resources take less time to recharge, while others

take a lot of time to replenish. All these facts have affected companies and forced them to do business in a friendlier way. Industry is now more concerned with the availability and costs of raw materials and production costs. Sustainable development is a long-term strategy for companies. Sustainable development is one of these disciplines that cover everything from phytoplankton to humans and profits to the planet (Hauff, 2007).

One of HSE's main tasks is to explore business opportunities that are more sustainable and environmentally friendly. In the construction industry, sustainable building structures are the focus of discussion among architects and designers, but in addition to the human factor, systems and technology are also considered. Market leader in energy and environmental design (LEED) and certification of BREEAM (environmental assessment method) for building research institutes. These certifications serve as instruments for measuring the durability of buildings. The HSE departments also monitor water, carbon and energy footprints and continuously look for steps to reduce this footprint. International Standard Organization (ISO) ISO 15392 addresses sustainability principles in construction planning. The standard covers ecological, economic and social aspects of design. Sustainable development is an interdisciplinary theme that covers economic, social and ecological aspects of every product or project. Since building practice is a mix of social (people), ecological (natural resources) and economic (investment) aspects, both building and sustainable development can be linked (Pearce, 2003). The two concepts are now merged into one and are called sustainable construction. It is defined as a comprehensive strategy that focuses on renovating and maintaining synchronization between the natural and built environment and the original neighborhoods that ensure human pride and promote economic justice. People and nature are interdependent and both have a great influence on each other. In order to maintain the balance between themes for construction and the environment, the concept of sustainable construction was developed. Sustainable construction encompasses all stages of construction from feasibility to disposal. It includes environmentally oriented designs as well as nature-friendly processes and maintenance methods. This includes sustainable production of environmentally friendly building materials (Plessis, 2002).

Relative terms that refer to sustainable building are sustainable buildings, green buildings and green structures (Cole & Lorch, 2003). In rich countries, 10 percent of the country's GDP is spent on construction (Costantino, 2006). In the EU, 40% of the available energy is used in buildings, which corresponds to 3% of total carbon



dioxide emissions and 40% of all artificial waste. At a macroeconomic level, construction contributes<sup>135</sup> to the country's GDP, at economic level, the construction sector consists of services and materials manufactured by other divisions, and at a microeconomic level, and construction is associated with personal expectations, including real estate and market value (bon & Hutchison, 2000). Sustainable building consists of three main parts. Management and organization, product and design problems and resource consumption. Occupational safety, community, environmental monitoring, environmental impact assessment and life cycle assessment are linked and organized, while construction and demolition as well as industrial symbiosis, energy content and recyclability are part of the design and the ecological footprint, carbon and energy balance, resource productivity are the components of the resources. Management and organization mainly cover social, legal, economic and political aspects. Both HSE and sustainable development are interdependent, with sustainable development being a concept that goes beyond HSE and is a mechanism by which sustainable building can be implemented (Plessis, 2002). Unsafe production is unsustainable production (Velasco, 2002)

## **HAZARDS TO CONSTRUCTION WORKERS IN PAKISTAN**

According to the ILO, work risk is referred to as "the latent cause of injury - including materials or equipment, processes or functions or other aspects of the organization", while the risk is defined as "potentially identifying the damage caused by a particular hazard" (Alli, 2001). The ILO reports on the number of people who die each year from work-related accidents and illnesses, about two million and about 270 million work-related accidents and 160 million occupational diseases that collect workers annually (Somavia, 2003). Working conditions vary enormously between countries, economic segments and social groups. In developing countries, where a large number of people are involved in dangerous activities such as construction, mining and fishing deaths, the ILO projection is just a taster of the problem, as the actual number of work-related illnesses in developing countries is actually very high than the figures indicated (Somavia, 2003).

Generally workplace hazards are cataloged in six groups as shown in table 4

Types of Hazard	
<b>Mechanical Hazard</b>	Confined space, equipment related injury, slips & trips, falls from height, falling on a pointed object
<b>Physical Hazard</b>	Noise, vibration, lightning, electricity, radiation, magnetic fields
<b>Biological Hazard</b>	Bacteria, Virus, insects, animals, birds, plants, animals, humans
<b>Chemical Hazard</b>	Acids, bases, heavy metals, particulates, explosives, ignitables, fumes
<b>Psychosocial Hazard</b>	Stress, violence, bullying, sexual harassment, mobbing, burnout,
<b>Ergonomic Issues</b>	Musculoskeletal disorders, repetitive movements, improper setup of workstation
<b>Source: Canadian Center for Occupational Health &amp; Safety, 2009</b>	

Work on occupational diseases and accidents are very high in Pakistan, as thousands of workers are regularly exposed to a hazardous working environment. Health and Safety Information (OSH) is not available in Pakistan as most accidents are not observed (see Tables 9 and 11). Unlike the EU, the United Kingdom, the United States, Malaysia, China, Singapore, Australia and New Zealand, which have strict OSH legislation such as; Directive 89/391 / EEC, law on safety and health at work of 1974, law on safety and health at work of 1970, law on safety and health at work of 1994, law on safety and health at work in 2002, workplace law of 1984, occupational health and safety law of 1992, and safety and infrastructure regulations of Pakistan is very bad. Regulators have neither effective implementation policies nor strict requirements regarding the reporting of workplace accidents (Riaz, n.d). Another study conducted in 2005 concluded that Pakistan had a mortality rate of 20.7 (Hamalainen, Takala & Sareela, 2005). This incidence is much higher than the incidence in Romania.

<b>Nature of Accidents</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
<b>Total</b>	354	404	415	438	460	439	<b>326</b>
<b>Fatal</b>	32	34	38	50	85	108	<b>45</b>
<b>Serious</b>	103	68	101	106	130	92	<b>62</b>
<b>Minor</b>	219	302	276	282	245	239	<b>219</b>
<b>Note: Data of Sindh for year 2009 &amp; Baluchistan 2004-2006 is not available</b>							
<b>Source: Provincial Directorates of Labor Welfare, 2010</b>							

Table 5 clearly shows that the number of reported incident cases in 2009 has decreased. The government authorities and industry management have the main responsibility for emphasizing the importance of 23

incident reporting (Daniels & Marlow, 2005), and this may have been one of the reasons for the decline in the number of reported accidents during 2009.

Year	2006				2007				2008				Total
	Fatal	Serious	Minor	Total	Fatal	Serious	Minor	Total	Fatal	Serious	Minor	Total	
Prime Movers	-	-	-	-	-	-	-	-	62	-	-	62	62
Transmission	2	2	2	6	-	-	-	-	-	-	-	-	6
Lifting	22	37	109	168	15	27	107	149	17	24	107	148	465
Working	3	28	41	72	1	63	71	135	2	24	28	54	261
Rolling Stock On Line	-	-	-	-	-	-	-	-	-	-	-	-	-
Rolling Stock Not on Line	-	-	-	-	-	-	-	-	-	-	-	-	-
Person Falling	4	2	-	6	1	2	5	8	4	-	-	4	18
Falling Object	-	1	1	2	-	-	3	3	-	-	-	-	5
Hand tools	-	-	1	1	-	-	-	-	-	-	-	-	1
Electricity	6	11	29	46	7	9	15	31	10	6	17	33	110
Position Corrosive Substance & Occupational Disease	2	-	-	2	-	-	-	-	-	-	-	-	2
Explosion & Fire	3	8	15	26	10	7	30	47	9	9	31	49	122
Miscellaneous	8	17	84	109	5	26	52	83	8	25	56	89	281
Total	50	106	282	438	39	134	283	456	108	92	239	439	1333

Source: Provincial Directorate of Labor Welfare, 2010

It should be noted that most accidents involve lifting activities. Lifting has caused more deaths than any other activity (Table 7). The authenticity of the data is questionable, as only 333 cases were reported in 3 years and it is not known how many incidents occurred at the construction sites. The total workforce in Pakistan is about 55 million and 1333 cases make up only 0.002 percent of the total workforce. There is no mechanism to counteract them. Relevant health and safety at work statistics due to accidents reported by regional employment agencies will only be reduced if they reduce the workforce. Only accidents are shown, but no indications of occupational diseases. In 2002, there were 10,518 registered factories, of which only 1,680 factories reported the accidents, only 15.97 per cent of the total registered factories. The number of factories that witness the accidents is

gradually declining. In 1993, 30.58 per cent of the total number of factories reported accidents, while<sup>138</sup> in 2002 only 15.9 per cent of the total number of factories reported the accidents. The second official domain, Pakistan Labor Force Survey, which began commenting on safety and health at work in the 2001-2002 annual survey, has omitted this important statistic from its annual reports since 2005. However, data from previous annual surveys suggest regression when reporting of events by craftsmen. In 2001, 3.6 per cent of the total number of workers reported the incidents, while in 2003 they surveyed; the number was reduced to 2.8 per cent. This reflects an increasing tendency among employers to release the number of incidents of occupational diseases and accidents (Hisam, 2007). The leading safety risk in the construction industry is affected by falling objects, falls from heights, serious accidents, car accidents and electrical shifts. Fall from heights is the most important source of damage in the construction industry. The height required for fall protection is not mentioned in the law. The second safety risk is exposure to noise and dust. Motor-driven crashes in the workplace are very common, as most vehicles do not have an emergency braking system and audible warning system. In addition to the lack of proper labeling and protection in the workplace, the marked route or recess cannot be identified, therefore drivers often drive off the track and at high speed (Khan Ra, 2012).

Province	Fatal Accidents		Serious Accidents		Minor Accidents		All Accidents		Total
	Perennial	Seasonal	Perennial	Seasonal	Perennial	Seasonal	Perennial	Seasonal	
2003	32	-	67	-	219	-	318	-	318
2004	41	-	104	-	250	9	395	9	404
2005	37	1	104	-	267	6	408	7	415
2006	49	1	106	-	281	1	436	2	438
2007	113	-	107	-	255	-	475	-	475
2008	46	-	92	-	239	-	377	-	377
<p><b>Note: Data of Baluchistan for years 2004-2006 is not available</b>  <b>Source: Provincial Directorates of Labor Welfare, 2010</b></p>									

## **ANALYSIS AND RECOMMENDATIONS:**

In general, HSE departments around the world see environmental, municipal, SSO and sustainability issues. The HSE departments in collaboration with other departments guarantee a sustainable business practice. Sustainable

development is a matrix of the environment, society and the economy, and the HSE departments already deal<sup>139</sup> with environmental and social problems. If the finance / accounting department and the engineering department support the HSE department in implementing sustainable methods, there will be no obstacles. To achieve sustainability, environmentally friendly business practices, green design, the use of green building materials and energy efficient machinery must be selected, and for these measures to be taken, the cooperation of the Ministry of Finance and engineering is inevitable. The HSE services also monitor greenhouse gas emissions, carbon footprints, water footprints and energy footprints on the sites. They are studying the possibilities of saving water and energy, waste management, noise control and waste management. They implement a road safety plan and guarantee the safe transport and handling of raw materials. They provided on-site disease and incident prevention by providing personal protective equipment (PPE) and training workers.

Implementation of standards from the International Organization for Standardization (ISO), such as the Work Environment and Safety Assessment Series (OHSAS-18001), Environmental Management Systems (EMS-14001), Corporate Social Responsibility (SA-8000), Energy Management Systems (EnMS-50001) and Sustainable Systems Handling (SMS-20121) is an important responsibility for the HSE department. As the HSE department has strong knowledge of implementing ISO standards, it is your responsibility to formulate standard procedures, perform air surveillance, conduct medical records related to SSO, conduct safety exercises and conduct work meetings on safety, environment and sustainability. Partly, by acquiring certification of Leadership in Energy and Environmental Design (LEED) and Environmental Research Methodology for the Building Research Institute (BREEAM), the organization needs the desired contributions from the HSE department.

The dangers depend mainly on the nature of the projects they are working on and the location of their workplace; While the data suggesting accidents are generalized because they come from the secondary source. It also indicates that the public understands the dangers, the potential dangers in one workplace cannot be considered dangers in the other workplace. For example, some did not report cleaning, deep excavations, clay hygiene, snake bites and hazardous gases as hazards. This reflects that people will work in an area that is not prone to snakes. The literature mentioned also reflects that there is no organizational capacity or capacity to deal

with the hazards associated with HSE. Here it is important to discuss the fact that organizations<sup>140</sup> play an important role in the field of HSE.

It is obvious that a corporate culture is critical and directly affects the accident during the fall from the high, poor operating technology that leads to fatal accidents. The reason may be a lack of awareness as construction companies do not care about HSE and they do not maintain the HSE department, that is why the construction sector in Pakistan still has the problem of work deaths and illnesses. The cause of death due to falls from the height is that most construction companies in Pakistan do not install fall arrest systems, they do not provide PPEs and communication units to the workers. These companies have not hired a doctor in workplaces. Most crane operators are not licensed and do not have training. they lack basic safety knowledge. In most cases, to save time, they overload the crane with the required material, and as a result, the crane loses balance, there are no defined routes for vehicles in the workplace; Most vehicles lack emergency braking systems and audible warning systems, which is why faulty crane operations are considered one of the most important hazards in the construction industry. As labor in Pakistan is illiterate, households are not practiced most of the time. Passages and walkways have scattered building materials and construction tools that cause injury to workers. Use of PPE, conduct training and programs, risk assessment, propose mitigation measures, standard procedures, emergency exit plan, correct position, travel management plan, permit to work, audits are the HMS department's most important tools for controlling work risks. The HSE department must be livelier wherever it exists, as national HSE legislation does not require construction companies to have an HSE department and to report the events, construction companies work freely and do not meet any OHS standards and do not report accidents.

The government has no awareness of health and safety issues. OHS issues are not a priority for them. The establishment of tripartite councils for OHS issues in labor policy was proposed in 2010, but so far the government has not taken any practical steps in this regard. Therefore, the HSE department must highlight what is important every time and should motivate the top management to invest in the HSE department, as it is the only line of defense against the work risks the construction company has. To address the health and safety issue, establishing an HSE department is inevitable for companies. The HSE department has expertise in dealing with problems related to OHS. They are trained for emergency surgery and can carry out the extensive training

programs in the workplace. In addition, they can monitor websites and document all events that occurred on websites. Risk assessment and risk analysis are part of their job, based on which OHS accidents can be significantly reduced and will help formulate or change OHS policy and strategy. The HSE department not only deals with OHS issues, but also concentrates on the environmental problems. This includes noise tests, vehicle emissions tests, blood and drinking water tests and regular food tests. Healthy environment is the most important protection against the transmission of diseases. Like sustainable development, HSE is an interdisciplinary subject. The HSE department focuses on social and environmental issues. Resource consumption is the key concept in both sustainable development and the HSE department. HSE departments encourage the use of building materials that are cheap and environmentally friendly and have minimal environmental impact. During the construction phase, HSE departments monitor air and water quality at regular intervals to make working conditions environmentally friendly and humane. Without the presence of HSE, no sustainable construction is possible.

In addition, unions can play an important role in promoting OHS awareness, as they are well aware of the work environments. The trade union members are also trained and experienced, they understand OHS specifically from the worker's point of view, unlike regulatory agencies, OHS practitioners and prevention services, which only contact a minority of workplaces. In general, documentation of the effectiveness of union participation at OHS is productive. Union develops and values contact between worker and worker. Unions not only highlight the problems, but they are also useful in implementing the solutions. Trade unions also defend workers' rights, but also see all workers at the same level. Unfortunately in Pakistan, most construction companies do not have unions, and the companies that have the unions are more of a formal nature, and work under the strict supervision of top management. There is a need for organizations to be released into organizations so that they can play their role effectively in promoting OHS in workplaces.

## **CONCLUSION:**

In conclusion, the construction industry of Pakistan is exposed to threats as a large number of fatalities are observed. The reason for that is weak legislation and poor organizational culture. Moreover, all the stakeholders are not aware of the safe work place. Furthermore, sustainable structure, which is vital for environmental protection is not adopted. This has resulted in pollution causing different diseases. The labour involved in construction is illiterate which a leading factor of injuries and fatalities is. The paper has suggested implementing OHSAS-18001 which is helpful understanding and improving the organizational culture. Moreover, the formation of Unions is vital as it will help the workforce understand the rules and regulations.

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