

AN INTRODUCTION TO

# OCCUPATIONAL HEALTH, SAFETY & ENVIRONMENT



**ENGR. ANWAR H. SIDDIQUI**  
**ENGR. C. L. NANKANI**



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**THE INSTITUTION OF ENGINEERS PAKISTAN**

**AN INTRODUCTION TO  
OCCUPATIONAL HEALTH,  
SAFETY AND ENVIRONMENT**

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# Dedication

We dedicate this book to all the Engineers  
Of present and future generations  
On whose shoulders rest the responsibilities of  
Occupational Health, Safety and Environment  
For an all round sustainable development

We also dedicate this work to  
The Institution of Engineers Pakistan  
For providing opportunities  
To disseminate the awareness on  
These vital issues through a series of  
National Seminars on  
Occupational Health, Safety and Environment

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**A.**

## **FOREWORD**

**Engr. Syed Jamshed Rizvi**  
**President, Institution of Engineers Pakistan**

In the past two decades Occupational Health, Safety & Environment-HSE has received its overdue importance in the workplaces. It acquired added impetus when it became a part of WTO protocols since January 2005, requiring the exporters to comply with the basic HSE norms in their manufacturing and production units. Even otherwise, HSE culture is an essential part of good housekeeping and good business practices all over the world.

The Institution of Engineers Pakistan, in line with its prime objectives initiated a series of National Seminars in 2001 to pre-empt the WTO conditionalities later in 2005. These National Seminars were largely attended and it laid down the beginning of an HSE culture, followed by such seminars by other organizations. Engr. C L Nanakani and Engr. Anwar ul Haq Siddiqui were amongst the pioneers of this national service. And that they have authored “An Introduction to Occupational Health, Safety and Environment” consolidating their valuable experience in the book. I very strongly commend their efforts.

This book will provide an opportunity to the readers, the manufacturers, the managers, the supervisors and persons engaged in workplaces, a first-hand knowledge on this subject. Perhaps this is the first Pakistani book, written in the local perspective, specially covering the legislations: enactments, rules and regulations applicable in the land.

I am glad that IEP Karachi Centre is sponsoring its publication, while the two esteemed authors have given the copy rights in favor of the Institution. I do hope it will provide impetus to the engineering fraternity to come out with volumes on other engineering subjects. Let us promote this book- writing culture too.

Institution of Engineers Pakistan,  
IEP Head Quarters Building, Gulberg, Lahore

18<sup>th</sup> November, 2013



## **B.**

### **THE INSTITUTION OF ENGINEERS PAKISTAN**

The Institution of Engineers, Pakistan came into existence on 7<sup>th</sup> May, 1948 with the blessings of Father of the Nation Quaid-e-Azam Muhammad Ali Jinnah. It was established as Successor in interest to the Institution of Engineers India earlier incorporated by the Royal Charter of 1937 in then British India. Its Headquarters was at Dhaka, then East Pakistan. In 1972 the Headquarters were shifted to Lahore. The name was amended as 'The Institution of Engineers, Pakistan', by substitution of 'Institution' for 'Institute' in 1979, in line with the international trend.

IEP is the largest and oldest body of professional engineers in Pakistan established providing a forum for the professional development of engineers through a wide range of activities and programs. The Institution comprises 14 divisions presently covering the maximum range of engineering disciplines. At present, IEP has over 50,000 members out of whom around 20,000 are corporate members. The membership of the Institution carries with it the pride of the profession. It has nine Local Centres, situated in the four provisional capitals and also at places where there is a large concentration of engineering activities. It has two overseas chapters.

The Institution has an approved 'IEP Constitution, according to which its affairs at the Headquarters are managed by its elected President, Vice Presidents and Secretary General. The IEP Central Council elected for a 3-years term has been vested with the powers of the Governing Body.

The IEP has bilateral relations with 32 professional societies and institutions abroad. It acts as a National Committee of the World Federation of Engineering Organizations (WFEO), the Commonwealth Engineers Council (CEC) UK, American Association for Advancement of Science (AAAS), a founder member of Federation of Engineering Institutions of South and Central Asia (FEISCA) as well as Federation of Engineering Institutions of Islamic Countries (FEIIC) and Consortium of Affiliates for International Program (CAIP).

### **Aims and Objectives**

The Institution's main goal is to '**Build Better World**' reflected in its logo. The aim and objectives of the institution are to:

- Promote and advance the science, practice, and business of engineering in all its branches throughout Pakistan.
- Promote efficiency in the engineering practice and profession.
- Regulate the professional activities and assist in maintaining high standard in the general conduct of its members.
- Lay down the professional code of ethics and to make it mandatory for its members in their professional conduct.
- Help in the acquisition and exchange of technical knowledge
- Promote professional interest and social welfare of its members
- Encourage original research in engineering, conservation and economic utilization of the resources of the country.
- Foster coordination with similar institution in other countries and educational institutions in Pakistan and abroad for mutual benefits.
- To disseminate information and knowledge among engineers through lectures, conferences, seminars and publication of journal and papers.
- Cooperate with various government agencies and industrial enterprises advising them in matters concerning the profession and practice of engineering and promotion of technical education.

The Institution has been taking concerted efforts to upgrade the professional knowledge and technical know-how of its member engineers by undertaking various technical activities. IEP has conducted studies on various national issues and technical problems; and submitted its recommendations to the government.

To update the knowledge of professionals, IEP publishes a journal and conducts various technical discourses such as lecturers / continuing education courses, seminars and symposiums, workshops, round table group discussions through its vast network of Local Centres. The Institution also invites foreign experts to the country during the International Congress so that Pakistani engineers can interact with them to exchange scientific and technological knowledge.

## C.

### **GENESIS OF THE BOOK**

It was a pleasant April evening, the newly elected Local Council of the Institution of Engineers Pakistan, Karachi Centre in its regular monthly meeting was discussing the Calendar for its 3-years elected term (2001-2003). The members were told that the Central Council at Head Quarters, Lahore, has decided that IEP Karachi Centre would to arrange the holding of yearly International Congresses for Civil Engineering and Mechanical Engineering disciplines. Engr. C L Nankani, who had earlier presented his Technical Papers in several technical seminars on “*Occupational Health, Safety and Environment- HSE*”, proposed to initiate a series of National Seminars on this subject. This proposal was welcomed and later the Central Council also appreciated this initiative.

The First National Seminar on “Occupational Health, Safety & Environment” was a 2-days event held on 21-22 September, 2001. There were some 280 paid delegates from all over Pakistan representing the major industries, defence services, research institutions, and universities from the public and private sectors, HSE consultants and practitioners who attended that seminar. 21 technical papers were presented by very learned and highly experienced scholars. A follow-up and exclusive Seminar on Fire and Disaster Control was held soon after on 12 November, 2001.

The great success of the seminar on this newly emerging multi-disciplined subject over-spilling engineering domains and involving medical doctors, psychologists, insurance mangers, lawyers, city planners and developers, and scientists from several disciplines; it was decided to make it a regular annual feature of the IEP Karachi Centre’s Technical Activities.

The Convener of the First Seminar, then Vice Chairman (Mechanical) Engr. Anwar ul Haq Siddiqui, the Seminar Coordinator Engr. C L Nankani and Engr. M, Abdullah Farooqui formed an HSE Core Committee and since then, the IEP Karachi has held 8 successful seminars in this series (see Appendix-1).

We are glad to note that HSE Culture has been picked up and since then some other institutions like Quaid-Awam University of Engineering, Science & Technology (QUEST), organizations like Fauji Fertilizers,

Engro Chemicals and several HSE consultants have also started regular seminars and training courses on these topics.

We felt that there was hardly any book on the subject in the context of Pakistan scenario. Engr. C L Nankani has spent his life time in the Department of Labour Welfare, Government of Sindh; he had pursued training with ILO and attended several courses abroad on HSE. He finally retired as the Joint Director in-charge of Occupational Safety and Health Centre at Karachi. He had presented his technical papers on various aspects of HSE. So we thought why not to present these technical papers in the book form? However it was suggested that obvious duplication and repetition should be removed and the text material may be converted in the book format with requisite additions to fill in the gaps wherever required. Engr. Anwar ul Haq Siddiqui agreed to undertake this task. The proposal was readily accepted in the Local Council Meeting held April 2008 but the project got delayed due to one reason or the other.

This book is now in your hands, we have first introduced Occupational Health, Safety and Environment, HSE, its total perspective. In Chapter 1 we have tried to lay down a Historical Background; and in Chapter 2 a glance though the general Issues and their Solutions. Then we have developed HSE in each of its components one by one some larger perspective.

We believe that spending in HSE is not an unnecessary cost burden but an investment leading to improvement in the productivity, in the quality of products and a satisfied workforce. Apparently the money spent on Fire Safety Equipment lies dormant but during an emergency a small investment may save the entire industrial complex. Chapter 3 explains this economic aspect 'HSE at Workplace Improves Productivity'.

Chapter 4 deals with the most important subject 'Management of Health & Safety Function'. The commitment of the management from the top level is a key to the success of HSE programs. In Chapter 5, the core subject 'Industrial Safety and Workplace Hazards' have been addressed in greater details. Risk Assessment and Safety Audits do require professional approach for the effectiveness of HSE programs.

Chapter 6 'Occupational Health and Occupational Hygiene' deals the basic health issues in workplace. Only an adequately healthy and robust workforce can deliver the targeted organizational objectives. In Chapter 7 'Industrial Accidents: Causes and Prevention' has been the focus of discussion. Accident can be avoided and must be avoided with diligent attention for own and others life. An accident-free environment provides high morale amongst workforce.

Safety is the ‘first principle of engineering’ and therefore this aspect has been dealt in some larger details in the Chapter 8 ‘Machine Safety at Workplace. In situations where work does require extra measures to protect the working person the use of ‘Personal Protective Equipment’ becomes imperative; explained in Chapter 9. ‘Fire Safety’ in Chapter 10 draws attention to this important hazard in all situations but specially the industrial workplace. Properly lit work area insures not only safety but it does improve work efficiency. Chapter 11, ‘Safety through Proper Lighting’ deals the subject with recommendations for requirement of light in various work situations.

‘Noise and Vibration Control’ dealt in Chapter 12 have been somehow remained not well attended subjects but increased incidents demand corrective measures. ‘Ergonomics and Human Factor Engineering’ in Chapter 13, has drawn attention of the workplace designers and planners to reduce the human stress factors in design of tools, machines, furniture and layouts. The due diligence in the use of Ergonomics principles definitely improves work efficiency leading to better productivity.

Chapter 14 deals with a very delicate and important aspect of HSE ‘Behavior Based Safety – Human Element’, a key approach in the development of HSE Culture. The Factory Inspector or Health & Safety Officer of the government regulatory body is empowered to implement the laws and regulations; his role would actually provide and determine the soul and spirit; it has been discussed in Chapter 15 ‘Industrial Pollution – Role of Factory Inspector’.

We have included Chapter 16 ‘Safety of Transportation in Pakistan’ mainly based on the technical paper by late Engr. A. R Qureshi, a very thorough gentleman, well read engineer and experienced trainer. A good transportation system is vital for the industrial development of the country and needs utmost attention of the Economic and Financial Managers.

Textile Industry is the largest industrial sector in Pakistan, as such we have selected it and discussed HSE training needs therein in Chapter 17 under the caption ‘Safety Training in Textile Industry’. It is a cursory discussion, no replacement of a Training Manual.

We have mentioned in the Historical Background, that it was the great benevolent ruler Hammurabi, who first enunciated the concept of equitable compensation for loss to an employee. In Chapter 18, ‘Humanitarian Consideration – Compensation of Loss’, we have tried to capture the spirit of a good humanitarian, just and benevolent scheme of a welfare oriented society.

‘National Legislation on Occupational Health, Safety & Environment-Current Review’ in Chapter 19, is an attempt to explain the current position and prospective legislation under the purview of national lawmakers – now long awaited.

Under the Constitution 1973 reinforced by the 18<sup>th</sup> Amendment, the Health, Safety and Environment are provincial subjects, therefore in Chapter 20, we have discussed ‘Labor Directorate –Health and Safety Laws’ as the enforcement authority in the jurisdiction of Sindh Province; other provinces too have similar state apparatus.

Quality dimension in any business, industrial or commercial is crucial to its survival and expansion. Quality and Health & Safety are inter-twined as such ‘ISO-9,000: Standards of Quality Management’ is briefly discussed in Chapter 21. And in natural extension in Chapter 22 ‘ISO-14,000: Standards for Environment Management’ follows. Gradually the big industrial concerns especially in the petroleum, chemicals and fertilizers sectors are adopting OHSAS-18,000. We have discussed this in Chapter 23 under the ‘Need of OHSAS-18,000 in Present Day Business’.

After 9/11 episode at World Trade Centre, New York, terrorism has posed greatest setback to the business and development in Pakistan and internationally. We have tried to cover this external threat and internal workplace violence in Chapter 24 ‘Workplace Violence and Preparedness against Terrorism’.

Failure of diligent observation of HSE Culture can some time lead to catastrophic disasters. In Chapter 25, we included three examples: Union Carbide Gas Tragedy, Bhopal, India; Nuclear Radiation Leakage at Chernobyl-Ukraine, Russia and latest British Petroleum- Offshore Petroleum Rig-mishap in Gulf of Mexico. These accidents show the enormity of consequences for ignoring even what may seem a minor hazard at the workplace.

Finally, in Appendix 1, we have included ‘Technical Papers/ Authors of the 8 IEP Seminars’. IEP administration has been advised to make these technical papers on-line on IEP Karachi Centre website: [www.iepkc.org](http://www.iepkc.org). Appendix-2, ‘List of National Institutions and HSE Consultants’, it is not exhaustive but whatever best we could get. Appendix-3 lists the ILO Conventions related to HSE while Appendix-4 provides an example of Material Safety Data Sheet- MSDS, now a legal requirement for the marketing of chemical products with likely health hazards.

We would like to place our thanks to the IEP Karachi Centre Local Council for sponsoring this project specially Engr. Syed Jamshed Rizvi,

President IEP and past Chairman IEP Karachi Centre for his encouragement, Engr. Farhat Adil, Chairman, IEP Karachi Centre and Engr. Ayaz Mirza, Secretary IEP Karachi Centre for providing administrative support; Engr. M. Abdullah Farooqui, Engr. Akhtar Quddus HSE Consultant and Engr. Abdul Muqtadar Siddiqui (Attock Oils) for their technical review of the book; Engr. Zaffar A Zuberi, IEP Past Chairman and President, Engr. Parvez Sadiq, Engr. Suhail Bashir and other IEP Council Members for their team spirit and support.

We would like to pay our special thanks to Engr. Rear Admiral (R) M. I. Arshad, as then Vice President IEP (2001-03) for his very valuable, ardent and personal initial support in paving the way for introducing HSE Seminars. Thanks are also due to Mr. Saifuddin, Asst Director in computerization of the text, M. Sharif Khan, Asst Director (Events Management) for the Seminar Programs and Mr. Skindar Mannan, Deputy Director for overall logistic support in the printing and publishing of this book.

Engr. Anwar Siddiqui would separately like to thank his son Abrar Siddiqui for providing books through Amazon.com, daughter-in-law Sarah Zia, an officer in Canadian Federal Government for Canadian 'Work Manual' while in Toronto, his son Izhar Siddiqui for reviewing the linguistic merits, daughter-in-law-law Marium Gul, an Architect for designing the cover page, his daughter Amna Wajih and son-in-law Wahih Khan for providing HSE books and other facilitation while completing this book in Southampton UK. He particularly appreciates his wife Farhana Bano for bearing with patience the drab hours during our long vacations and otherwise, during the completion of this arduous work.

We bow our head before God Almighty for giving us courage to undertake this first ever book on a technical subject sponsored by the Institution of Engineers Pakistan. We hope it will encourage other brother engineers to use this platform to enlarge the engineering profession by writing books on different subjects of professional interests.

Engr. Anwar ul Haq Siddiqui

Engr. C.L. Nankani

## D.

### ABOUT AUTHORS

#### ENGR. ANWAR UL HAQ SIDDIQUI

Engr. Anwar ul Haq Siddiqui is a senior Fellow of the Institution of Engineers Pakistan (IEP). He was elected as a member of the IEP Central Council for two consecutive terms (1995-2000) and then Vice-Chairman (Mechanical), Karachi Centre for the term 2001-03. He became member of Central Advisory Council, IEP (2004-08); was appointed Member Technology (2005-07) in the World Federation of Engineering Organizations (WFEO).

He did his B.Sc. Honors (Maths) from the Government College, Lahore (1961), B.Sc. Honors (Mech) from the University of Engineering & Technology, Lahore (1965) and Masters in Educational Planning & Management from Allama Iqbal Open University, Islamabad (2006). He has attended over a dozen courses on Management and Engineering in Pakistan and abroad

He was commissioned in the Pakistan Army, EME during the 1965 war. Later in 1967, he joined Burmah-Shell (now Shell Pakistan) where he specialized in the Aviation Petroleum Engineering. As Project Engineer, he designed and executed Aviation Hydrant Fuelling Systems at Karachi and Islamabad airports; Keamari Oil Storage facility after the 1971 war devastation. He was General Manager, RCD Ball Bearings Limited from 1976 to 1978 where he carried out the company's economic turnaround to make it a model high precision engineering institution. Since 1979, he had been associated with a business group in the petroleum lubricants sector.

He has been a Member Board of Governors, Sindh Board of Technical Education representing IEP (2002-06) and (2009-11). He is a Founder Member of Pakistan Branch of the Royal Aeronautical Society, a Life Member of the Pakistan Institute of Management.

He was appointed Chairman, FPCCI Standing Committee on Science, Technology and Technical Education (2007-08) and then served as its Adviser since then.

He has been a regular contributor to the IEP Journal 'Pakistan Engineer' and has published articles in technical journals He has translated the book 'A Chronology of Islamic Civilization' in Urdu under the title '*Islami Tehzeeb ka Aik Taqweemi Jaiza*'.



## **ENGR. C. L. NANKANI**

Engr C L Nankani got his graduation in Mechanical Engineering in 1968, from Sindh University Engineering College, Jamshoro, Sindh.

In January 1970, he joined as Technical Inspector of Factories in the Directorate of Labor Welfare, Government of West Pakistan. His prime assignment was Health and Safety of workers employed in the factories as per provisions of Chapter-III of the Factories Act 1934 and the Rules framed that of, along with Hazardous Occupation Rules 1969. He was later awarded ILO Fellowship twice; first a one-month visit to United Kingdom and Finland and second time six-month stint at Australia and New Zealand with a short stay for briefing at Bangkok, Thailand.

He has wide experience of delivering lectures on Occupational Safety and Health, at the Institution of Engineers Pakistan, Karachi Center; Employers Federation of Pakistan, Pakistan Institute of Labor Administration & Research and National Institution of Administration Training for short courses and diploma classes.

He has organized and attended many seminars on the topic of HSE theme in the Institution of Engineers Pakistan, over a decade starting with the new Millennium. In this series the 8<sup>th</sup> National Seminar on Occupational Health, Safety and Environment was conducted recently in October 2011.

In August 2005, he retired from the Government Service Joint Director Labor (Occupational Safety and Health), Labor Department, Government of Sindh. At present he is working as a Director in M/s TAG Group Karachi and actively participating in the promotion of HSE Culture in the corporate sector.

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# 1

## **OCCUPATIONAL HEALTH, SAFETY AND ENVIRONMENT:**

### **A Brief Historical Background**

#### **1.1 INTRODUCTION**

Health, Safety and Environment are three major subjects by their own entities with several specialized branches in each sector but we are restricting their scope to the workplace, that is, in the situations applicable to occupations, both in the industrial sector as well in the services. Hence the pre-fix “occupational” and as such it should be understood that our main focus will be “occupational health, occupational safety and occupational environment”. From this point of view these wider subjects get intertwined into one single multi-disciplined subject “Occupational Health, Safety and Environments”. This multi-discipline subject attracts attention of several branches of modern professional knowledge such as engineering, health, psychology, medicine, insurance, administration, ergonomics, international trade and industry to name a few of those more involved.

#### **1.2 HEALTH, SAFETY & ENVIRONMENT - HSE**

For the sake of brevity we will henceforth refer “Occupational Health, Safety and Environment” as **HSE**. The subject has been also approached as SHE – meaning Safety, Health and Environment but we would avoid this gender-sensitive term. There are others who prefer the term OSH that is Occupational Safety and Health; and EHS that is Environmental Health and Safety. HSE has received due attention in the last two decades and it has rapidly developed through the need of Human Resource development to meet the international, expanded, global trade and business requirements. The World Trade Organization- WTO demands globally healthier, safer and environmental friendly workplaces so that quality products are made available without interruptions. As such it has received an added stress from the engineering profession. A quick historical perspective will not be out of place on this important and upcoming multi-discipline engineering profession.

### **1.3 AGRARIAN PHASE OF CIVILIZATION**

Hammurabi, the Babylonian ruler (1792-1728 BC) developed a 280 paragraph 'Code of Conduct' which perhaps can be described as the forerunner of present day 'workers compensation laws'. However by and large during the agrarian phase specially in its most developed form the feudalism the worker was a serf, a slave and he was treated only a little higher than the animal force and sometimes employed as the brute animal force. According to Alvin Toffler, in his famous book 'The Third Wave' this First Wave of 'Civilization Development' lasted for some 12,000 years starting from the time when homo-sapiens left the cave life and developed initial settlements along the river-sides for availability of water for the crops.

### **1.4 INDUSTRIAL REVOLUTION**

The Second Wave of 'Civilization Development' started from the period (1760-1840) that renowned historian Arnold Toynbee, first described as 'Industrial Revolution' when significant discoveries and invention changed the human life patterns. Till then, the production methods were labor-intensive with work being done by hand in cottages. Three developments were to change this way of life. In England, inventors developed the 'spinning jenny' in 1764 and perfected the 'power-loom' in 1784. In America, Eli Whitney added his invention, the 'cotton gin' in 1792. These inventions along with the discovery of steam and electrical motive powers ushered in the Industrial Revolution - changing the craftsman into factory worker and work cottages into factory.

### **1.5 SATELITE COMMUNICATION ERA**

Toffler's Third Wave of the 'Development of Civilization' is the new era of internet satellite communication since 1980s that has shrunk the world into a 'Global Village'. Once again the human life pattern has added new dimensions, never imagined before when the inventions have multiplied manifolds and now the personal computers, lap-tops, i-pads, mobile telephones, television, and color-photo camera, plastic money are in the hands of common man. Bill Gates has aptly described this new life pattern by naming his book 'Business @ Thought'.

### **1.6 MASS PRODUCTION**

Mass production with large number of industrial workers created hazards never before encountered. Initially, the condition of these workers was pitiable in terms of human values, health and safety. Feudal mindset treated these industrial workers to the neo-capitalist advantage. The chronicles from the American Industrial History provide a grim picture. The 1900 census showed 1,750,178 working children between 10 and 15 years age including a large number working in mines and quarries. These children often worked 12 to 14 hours a day, there were no health and

safety guidelines in effect, even children less than 10 years age had become victims of the feudal mindset.

### **1.7 INDUSTRIAL SAFETY IN UK**

In United Kingdom, the first regular statute was enacted as the Factories Act 1833 with the main objective to protect health and well being of industrial workers. Medical service was also introduced in the industrial plants as a result of Workmen's Compensation Laws. Eventually, the **Health and Safety at Work Act - 1974** in Section-7 clearly states that: "It shall be the duty of every employee while at work-(a) to take reasonable care for the health and safety of himself and of other persons who may be affected by his acts or omissions at work; and (b)as regards any duty or requirement imposed on his employer or any other person by or under any of the relevant statutory provisions, to co-operate with him so far as is necessary to enable that duty or requirement to be performed or complied with."

### **1.8 INDUSTRIAL SAFETY IN USA**

It was in 1913 US General Election that 'Industrial Safety' became an issue resulting in a compulsory Workmen's Compensation Act that became effective in mid-1914. 'Industrial Safety' gathered momentum by the formation 'National Safety Council' in 1913; American Engineering Standards Committee (AESC) in 1918, and later in 1928 as the American National Standards Institute (ANSI). In 1939, the American Industrial Hygiene Association was established to promote the recognition, evaluation and control of environment stresses arising in or from the workplace. **Occupational Safety and Health Act: OSHA-1970** made it mandatory for private sector employees in the United States to keep occupational injury and illness records in accordance with these regulations; that each employer 'shall furnish to each of his employees employment and a place of employment which is free from recognized hazards'.

### **1.9 INDUSTRIAL SAFETY IN SUB-CONTINENT**

In the sub-continent, the first law to regulate working conditions was enacted in 1881 and was called Factories Act. It was replaced by another legislation in 1911, but finally **Factories Act 1934** was enacted which continues to be enforced with due amendments from time to time.

### **1.10 INTERNATIONAL DEVELOPMENT**

Internationally, the International Labor Organization (ILO) has made tremendous efforts for the health, safety and welfare of the workforce throughout the world. International Conventions first started through the Conferences in Berne in 1905, 1906 and 1913 are becoming acceptable to the progressive nations. Pakistan is also a signatory to several ILO Conventions related to HSE, detailed in Appendix-3, however, their

enforcement in the industrial establishments especially in the small and medium enterprises (SMEs) needs monitoring.

### **1.11 WTO REGULATIONS**

World Trade Organization (WTO) regulations are now enforced effective January 2005 in Pakistan. ISO Standards have also been adopted to provide the quality parameters of the products, produced by the manufacturer. The international buyers usually appoint inspectors to check housekeeping / cleanness, ventilation, use of personal protective equipments by workers against hazardous chemicals and dyes, hygiene card, vaccination certificate, child labour employed, working hours and limits of the overtime taken by employers, emergency exit system, fire fighting equipments, and fire alarm system etc., some of the basic safety requirements. In some cases they also check environment in which the workers are supposed to work for eight hours, noise level emitted by the machine and lights installed in the factories.

An international audit organization, World-Wide Responsibility for Apparel Production- WRAP, specializes in the checking of Health and Safety of the workers in garment production units. Pakistan, as a garments export county, is supposed to adhere to the international HSE regulations to maintain its presence and to compete with other regional countries like Bangladesh, India and China, through imparting awareness at all levels.

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some new laws promulgated since the independence from the British Rule in 1947.

- (1) Factories Act 1934 and Sindh Factory Rules 1975, Occupational Hazards Rules 1969.
- (2) West Pakistan Shops and Establishment Ordinance 1969.
- (3) Dock Labour Act 1934(for workers employed in seaport).
- (4) Mines Act 1923 (for workers employed in mines)
- (5) Environment Protection Act 1997
- (6) The Explosive Act 1884 and Rules 1940
- (7) The Petroleum Act 1934 and Rules 1937
- (8) Oil and Gas (Safety in Drilling and Production) Regulation, 1974 issued under Mines Act
- (9) Pakistan Nuclear Safety and Radiation Protection Ordinance 1984
- (10) Boiler and Pressure Vessel Ordinance 2002
- (11) Electricity Act 1910 and Rules 1937
- (12) The Workmen Compensation Act 1923 and Rules 1961

The above mentioned laws have been enacted for the protection of general workers or those employed in specific fields or processes. The Government has also set-up various departments to implement these laws for the welfare of the workforce employed and to protect the machines, building and other installation from damage by any accidents. One may think that much importance is being given by the Government to protect the huge investments made in purchase of such equipment, machinery and construction of building but the hidden facts behind this is that the Government also wants to protect the worker-force, by ensuring better knowledge about the operation of machines, better health conditions and safety from the accidents so as to have a better civil society.

One can also observe that the government has given special importance to the health, safety and welfare of the those workers engaged in hazardous manufacturing, mining, exploration and at sea ports etc by enacting specific laws for their safety and by establishing various departments to look after the interest of the health of workers, the safe guard of machines and infrastructure investment made by the employers and healthy growth of trade unions in the workforce.

Let us survey the Factories Act, 1934 and Rules framed there under along with Hazardous Occupation Rules 1969. One can easily see that every element has been clearly defined such as factory, worker, employer certifying surgeon, factory inspector, working hours, holidays, how shift can rotate working hours, when the medical checkup of the workers are to take place, vaccination system, the process which come under the hazardous occupation, which machines are to be provided with guards; where, how and at which height workers are allowed to work, system of prosecution of the employer, where the prosecution to be lodged, the amount of fine etc. The general health and safety provisions of the Factories Act 1934 are given in the table shown as “Annexure -A”.

The occupational hazardous processes are detailed in the Hazardous Occupation Rules 1969. There are nine defined processes and the last miscellaneous covers a wide range of the chemicals as well as processes. These are given in the table shown as “Annexure-B”.

### **2.3 EMPLOYER - THE SECOND PARTNER**

The second partner of any HSE scheme is the employer who has made huge investment by putting up the factory/manufacturing unit. His priority duty should be to provide adequate training to the workers who have to perform the job, must be informed about the operation methods, hazards associated with the particular machine or process, who has to maintain and who is to supervise workers. Employer’s policy must be to keep the factory safe and well cleaned with a better housekeeping. The important points of better housekeeping are given in the table shown as “Annexure - C”.

Where all the engineering process or methods fail to provide safety to the worker, then comes the turn to use of the personal protection equipment. The important principles are laid down in the table shown as “Annexure - D” for guidance of the employer. It is the responsibility of the employer to provide personal safety equipment, however if it is misused or lost the worker may be asked to pay the full or part of the replacement costs.

Safety Committee should also be formed of the workers with the Production Manager, Maintenance Manager, and if possible a person from the Finance Department of the establishment should be included too so that funds are released for timely implementation. Safety Committee(s) should hold meetings periodically and review the progress.

### **2.4 TRADE UNION - THE THIRD PARTNER**

Now comes the turn of the third and last but most important partner of the HSE- the Trade Union. The trade union is the collective body of work



force and where such a position is not obtained we would consider here the workforce itself. The trade union has to guide the workers from time to time, provide them training or cooperation with the management in getting the training to the workforce, ask them for better housekeeping, cleaning, proper attendance, cooperation with the management, supervisors in maintenance of the machine, fittings mad facilities etc, putting in the safety guards on the machine after the repair/maintenance and should not do anything without authority from the department /section competent person.

So for the effective implementation of any good HSE scheme, to achieve higher quality of products, better productivity of workforce and higher indicators of success this tripartite relationship has to be established in overall best interests of the three partners.

## **2.5 THE ISSUES:**

In the context of HSE in a workplace, major focus is drawn on the following issues:

- (1) Employer should be made aware of Occupational, Health and Environment, HSE
- (2) Training of the workers for HSE
- (3) Purchase of machines with safety provisions
- (4) Erection of machinery in healthy and safe environment
- (5) Construction of building with safety and health provisions
- (6) Personal protection equipment wherever required
- (7) Factory and general lighting for safe work environment
- (8) Fire safety and fire-fighting equipment and training
- (9) Occupational and general health of the establishment

## **2.6 THE SOLUTIONS:**

We will try to forward brief solutions to the above issues; meanwhile the topics arising out of this discussion will be dealt in the remaining chapters of this book.

**(1). Employer awareness** in respect of HSE is a MUST as he is the authority to release the funds for the development of Occupational Health, Safety and Environment. He should attend refresher courses to update himself on HSE matters. An HSE manager may be assigned to plan program, to assist the employees, to provide training in this respect and to look after the day to day issues related to Occupational Health, Safety and Environment.

**(2). Training of the workers** before assigning them on the work is absolutely essential. First step must be to inform the worker about the hazards associated with that job/work. How to start and stop the machine; how to remove safety guards and with whose permission? In this way accidents which take place due to the lack of knowledge are avoided. Many work hours otherwise lost, would be saved indirectly contributing to profitability of the project.

A copy of certificate of training about the worker from the organization or trainer should always be kept in custody of the departmental manager or section in charge so that he can produce the same when enquired.

**(3). Purchase of Machinery / Equipment:** It should be prime responsibility of the employer to purchase safe machinery/ equipment and get the manufacture certificate in this respect. In case of second hand machine no such certificate can be had. Further second hand machinery agents always try to dismantle machine within the shortest possible time. In this way at times they lose the proper guards, locking system etc provided for the safety purpose. In such machine production can be had but safety of the worker is ignored. It is not advisable to use second hand machinery/ equipment without originally designed safety features.

**(4). Construction of Building:** Design and construction of building should be got done by a well qualified architect and designed according to the foreseeable production requirement, the floor compactness, the provisions of the safety exists, requirement of light in the day time to manage the electric bills and keep the production to the maximum level under the safe working atmosphere which do not create stress for the workers' health. Fire protection systems, noise control system, heat absorption system are fitted where duly required and electric power points are allocated properly on the production area wherever necessary. Passages are properly designed for movement of raw material and finished goods. Raw material godown and finish goods godown is planned in such way that little transport is done. Not only time is wasted in long distances but accident risk increases if the distances in between are long.

**(5). Erection of Machinery:** Machinery should be got erected by qualified engineer / supervisor properly, so that minimum and safe working areas are used. Safety devices are properly color painted and fitted nuts and bolts are tightened, guards are placed at proper points, inter locking system are made functional and proper passages are earmarked so that worker can move easily and safely.

**(6). Personal Protective Equipment:** Initially the employer must provide safety guards to the machine and work process. The use of personal protective equipment (PPE) is only last resort for protecting the worker.

As in our country the climate is too hot for use of the PPE is considered inconvenient. It is human psychology that the worker feels anything extra on his body during working as a burden. So it is the Trade Union responsibility to make worker use PPE to keep him safe from any accident. Trade Union must co-operate with the management if any worker in avoiding to use the PPE. One can have a look at the cricket players using lot of safety guard to protect them during batting and wicket keeping etc. Hence PPE is to protect the worker from injury.

**(7). Lighting:** Basically, it is the job of the building designer to make maximum utilization of natural light in the building and try to save in the electric bills while keeping in view the production processes. As every production process needs different requirement of light it also at the same time varies for the worker age group. Building Designer should follow U.K. Illumination Engineers Associations recommended standards, the lighting affects the quality of the product secondly working in sub-standard light would create eye tension in that work force.

**(8). Fire Safety:** Building designer should keep in his mind of this important factor of the safety and provide a good capacity of water in the underground tank. Similarly an over head tank with hydrant pipe points is installed in the building. The passages, doors and windows should be designed in such an order that in case of fire emergency the same can be used as fire exit. Alternate stair case has to be provided to the floors over and above the ground floor and this alternate safety stair case should be connected to the safe opening place so that the workers who are in top floor (s) should land in the safe place.

**(9). Occupational Health:** This is affected in the long period varying from the process to process as well as worker's own personal physique. Notice of the effect sometimes takes place after 15 to 20 years period of time. If the worker is checked periodically the remedial action can be had earlier. Similarly person working with different hazardous chemicals should also be checked periodically. As the law provides for the hygiene cards, these may be studied to check the effect of the process, and the health position of workers from time to time.

Concluding we may suggest that all that has been explained in the foregoing are the general principles and minor variation from the process to process and area to area will take place. Qualified HSE Consultants may be addressed for specific programs. Remember life is one time game; it is too precious to be lost or wasted for lack of safety or hazardous environment. Let us, the government, the employers, the workers and the trade unions chart out policies, plans and programs to promote sustainable development, Health, Safety and Environment not only at our work places

but at our homes, on the roads and in the schools, everywhere, HSE becomes a part of our culture.

## ANNEXURE – A

**Following are the Section related to Health and Safety in Factories Act-1934:**

<b>S No.</b>	<b>SECTIONS</b>	<b>RELATION</b>
1	13	Cleanliness
2	14	Disposal of Waste and Effluents
3	15	Ventilation and Temperature
4	16	Dust and Fumes
5	17	Artificial Humidification
6	18	Over Crowding
7	19	Lighting
8	20	Drinking Water
9	21	Latrines and Urinals
10	22	Spittoons
11	23	(1)Precaution against contagious or infectious disease. (2)Compulsory vaccination and inoculation
12	24	Provision of Canteen
13	25	Precautions in case of Fire
14	26	Fencing of Machinery
15	27	Work on or near Machinery in Motion
16	28	Employment of Young Persons on Dangerous Machines.
17	29	Striking Gear and Device for Cutting of Power
18	30	Self Acting Machines
19	31	Casing of New Machines
20	32	Prohibition of Employment of Children Near Cotton Openers
21	33	Cranes and Other Lifting Machinery
22	33A	Hoists and Lifts
23	33B	Revolving Machinery
24	33C	Pressure Plant
25	33D	Floors, Stairs and Means of Access
26	33E	Pits, Sumps and Opening in Floor
27	33F	Excessive Weight
28	33G	Protection of Eyes
29	33H	Powers to Required Specification of Defective Part of Test of Stability
30	33I	Safety of Building Machinery and Manufacturing Process.
31	33J	Precautions against Dangerous Fumes
32	33K	Explosive or Inflammable Gas etc.

33	33L	Power to Exclude Children
34	33M	Notice of Certain Accidents

## **ANNEXURE – B**

### **OCCUPATIONAL PROCESS DECLARED HAZARDOUS**

- The West Pakistan Hazardous Occupation (Lead) Rules
- The West Pakistan Hazardous Occupation (Aerated Water) Rules
- The West Pakistan Hazardous Occupation (Rubber) Rules
- The West Pakistan Hazardous Occupation (Chromium) Rules
- The West Pakistan Hazardous Occupation (Cellulose Solution Spraying) Rules
- The West Pakistan Hazardous Occupation (Sand Blasting) Rules
- The West Pakistan Hazardous Occupation (Sodium and Potassium Bichromate) Rules
- The West Pakistan Hazardous Occupation (Petrol / Gas Generating Plants) Rules
- The West Pakistan Hazardous Occupation (Miscellaneous) Rules.

## Annexure C

### GOOD HOUSEKEEPING PRINCIPLES

- Maintain corridors, fire exits, stairs, walk ways. Ensure all exits are unobstructed and clearly marked.
- Maintain all floor surfaces in good condition and clean; polish with only a non-slip preparation.
- Clean up spillages and breakages immediately. Pay particular attention to flammable solvents, broken glassware and strong acids / alkalis which may have to be neutralized before removal.
- Make sure not to interfere / obstruct first-aid boxes, breathing apparatus, safety showers, eye washes, fire extinguishers / hydrant points, fire blankets, protective clothing, electric panels and circuit breaker boxes.
- Keep all lockers clean and unwanted equipment disposed off or returned to stores.
- Keep oily rags and cleaning materials in a metal container with a close fitting lid.
- Do not smoke except in designated or safe areas and be sure to use ashtrays.
- Store and label all chemicals according to recommended procedure.
- Dispose of scrap and waste in proper receptacles, separately marked for various kinds of materials.
- Do not overfill racks, bins or storage areas.
- Clean and store tools properly after use.
- Rectify immediately all wastages, leakages of steam, compressed air, process fluids, fuels and lubes.

## Annexure - D

### PRINCIPLES OF PERSONAL PROTECTIVE EQUIPMENTS

- **Standard Operating Procedure** governing the use and selection of Personal Protective Equipment (PPE) shall be established and displayed.
- **Selection** of PPE shall be done on the basis of hazards to which the worker is exposed. Only approved / accepted PPE shall be used during operations.
- **Training:** The user shall be instructed and trained in the proper use of PPE and made aware of their limitations.
- **Individual Use:** Where practicable, the PPE shall be assigned to individual workers for their exclusive use.
- **Cleaning & Maintenance:** PPE shall be regularly cleaned and disinfected.
- **Storage:** PPE shall be stored in a convenient, clean & sanitary location.
- **Inspection:** PPE used routinely shall be inspected during cleaning and worn or deteriorated parts shall be replaced. PPE for emergency use shall be inspected at least once a month and after each use.
- **Work Area Surveillance:** Appropriate surveillance of work area conditions and degree of employee exposure for stress shall be maintained.
- **Medical Standards:** Persons shall not be assigned to tasks requiring use of PPE unless it has been determined that are physically able to perform the work and use the equipment.
- **Program Evaluation:** There shall be regular inspection and evaluation to determine the continued effectiveness of the program.

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**APPENDIX - 1**

**TECHNICAL PAPERS PRESENTATIONS**

**IEP NATIONAL SEMINARS  
ON  
OCCUPATIONAL HEALTH,  
SAFETY & ENVIRONMENT**

**1<sup>ST</sup> NATIONAL SEMINAR ON  
OCCUPATIONAL HEALTH, SAFETY & ENVIRONMENT  
7<sup>TH</sup> -8<sup>TH</sup> SEPTEMBER 2001**

- 1.1 “Ergonomics”**  
Dr. Huma Abbasi, Caltex Oil Pakistan
- 1.2 “Major Hazard Control Oil Spill at Sea”**  
Capt. N. A. Farooqui, Caltex Oil Pakistan
- 1.3 “Need of Safety Training in Textile Industries”**  
Engr. C.L.Nankani, Joint Director Labour, Government of Sindh
- 1.4 “Respiratory Protection”**  
Mr. Shahid Khan, HSE Industrial Distributors
- 1.5 “The Occupational H & S Assessment Series”**  
Engr. Dr. Mahmood Naeem, Lloyd’s Register
- 1.6 “Accident Reporting and Investigation”**  
Ms. Zulekha Soorma, Glaxo Welcome Pakistan
- 1.7 “Long Working Hours Its Effects on Health, Efficiency and Society Life”**  
Mr. Mohib K. Habib, Dy. Director Labour, Government of Sindh.
- 1.8 “Risk Based HSES Management System”**  
Murad A. Khan, LASMO Oil Pakistan, Karachi
- 1.9 “Petroleum Products & Refining (Environmental Pollution Impacts of Petroleum) Products & Suggestions for Improvements”**  
Shaikh Zaheeruddin, National Refinery Limited, Karachi
- 1.10 “Training for Environmental Protection”**  
Mr. M. Yousuf Khan, Sindh Abadgars Sugar Mills
- 1.11 “Data Validation in Safety Culture Surveys”**  
Engr. Akhtar Quddus, Maxsafe Engineering, Karachi

- 1.12 “Achieving Health, Safety & Environment Objectives by Behavioral Improvement”**  
Mr. Jahangir Piracha, Engro Chemicals Pakistan
- 1.13 “Behavioral Based Safety”**  
Engr. Syed Ali Ashraf Naqvi, Government of Sindh
- 1.14 “Institutionalization HSE in Pakistan”**  
Mr. Ronald Hallmark, British Petroleum
- 1.15 “Chemical Hazards and their Control”**  
Engr. M. Abdullah Farooqi, Pakistan State Oil
- 1.16 “Loss Prevention”**  
Mr. Khurram A. Khan, EFU Insurance, Karachi
- 1.17 “Risk Management Program at Hub Power Station”**  
Mr. Haroon R. Tabani, Hub Power Station
- 1.18 “Risk Management, Hazards and Mitigation in Textile Industries”**  
Mr. Naseeruddin Humayun, Adamjee Insurance, Karachi
- 1.19 “Occupational Health Standards”**  
Dr. A.H. H. Tahir Alvi, Engro Chemicals Pakistan, Karachi
- 1.20 “Safety, Health & Environment in Prospector”**  
Engr. Rear Admiral (Retd) M.I. Arshad
- 1.21 “Safety Provisions in High Rise Buildings”**  
Mr. Ghani Ismail, FDAP

**2<sup>ND</sup> NATIONAL SEMINAR ON  
OCCUPATIONAL HEALTH, SAFETY & ENVIRONMENT  
19<sup>TH</sup> - 21<sup>ST</sup> SEPTEMBER, 2002 AT KARACHI**

- 2.1 “The Role of Trade Unions in Occupational Safety and Health”**  
Mr. Shafi Malik, Chairman, Pakistan Workers Training & Education Trust
- 2.2 “An Extinguisher in hand is better than 2 fire trucks on the way”**  
Mr. Tariq Moen, Chief Fire Officer, PIA
- 2.3 “Fire Risk Assessment”**  
Mr. Ghani Ismail, Hub Power International
- 2.4 “The Security and Safety Interface”**  
Wg. Cdr. (R) Nadir Ali Shah, Principal, PIA Training Centre, PIA
- 2.5 “Occupational Safety & Health in Pakistan”**  
Mr. S. Hakim Ali Shah Bukhari, Director General, NILAT
- 2.6 “Disaster Management”**  
Mr. Sajjad Zaidi, Karachi Port Trust
- 2.7 “Major Hazard Control”**  
Mr. Khurram Ali Khan, Senior Vice President, EFU General Insurance
- 2.8 “Emergency Preparedness & Disaster Control Planning”**  
Engr. Mahmood A. Qureshi, Unit Manager, FFC Jordan Fertilizer,
- 2.9 “Role & Techniques of Audit, Inspection & Surveys of Safety, Health & Fire Control”**  
Mr. Jahangir Paracha, Advisor, Engro Chemical Pakistan,
- 2.10 “Role of Health, Safety and Environment Experts in Enhancing Compliance of HSE Standard”**  
Ms. Zulekha A. Soorma, Manager EHS, Glaxo Wellcome Pakistan,
- 2.11 “Training Competency Assessment & Certification in HSE”**  
Engr. Abdul Hanan Al-Fateen, Sr Engr. Chemical & Environment, International Power Global Development
- 2.12 “Safety Inspection, Audits & Survey”**  
Engr. Abdullah Farooqui, HSE Consultants

- 2.14 “Accident Investigation – An Opportunity to Learn”**  
Engr. Akhtar Quddus, Maxsafe Engineering
- 2.15 “Occupational Diseases”**  
Mrs. Sahmim Zafar Zuberi, Liaquat National Hospital, Karachi
- 2.16 “Effects of Stress and Fatigue on Health & Safety”**  
Mr. Zafar Ali Khan, Unit Manager (TTC), FFC Jordan Fertilizer
- 2.17 “Accident Reporting and Investigation”**  
Mr. Mohib K. Habib, Safety Consultant, Former Dy Dir Labour
- 2.18 “Ergonomics – Principles and Applications”**  
Wg. Cdr. Amanullah Khan, HSE Consultant,
- 2.19 “Importance of Safety Committee”**  
Engr. S.A. Ashraf Naqvi, Technical Inspector, Govt. of Sindh
- 2.20 “Occupational Health and Safety Management System”**  
Dr. Mahmood Naeem, Sr. LRQA Rep of Pakistan, Lloyd’s Register
- 2.21 “Environmental Impact of Petroleum Fuels used in Urban Area”**  
Dr. M. A. Quddus, G.M. Hydrocarbon Development Institute
- 2.22 “H.S.E. Matters of Leather Industry”**  
Mr. Arshad Mahmood, M. Shafi & Co
- 2.23 “Mechanical Hazard in Textile Industry”**  
Engr. C.L. Nankani, Joint Director Labour, Govt. of Sindh
- 2.24 “Insurance Requirement & Risk Management”**  
Engr. Mirza Ali Mahmood, General Manager, Admajee Insurance
- 2.25 “FFC Safety Performance”**  
Mr. Sikander Khan, Safety Advisor, Fauji Fertilizer

**3<sup>RD</sup> NATIONAL SEMINAR ON  
OCCUPATIONAL HEALTH, SAFETY & ENVIRONMENT  
14<sup>TH</sup> & 15<sup>TH</sup> OCTOBER, 2003**

- 3.1 “An Overview of Pakistan Laws on HSE”**  
Engr. M. Abdullah Farooqui, HSE Consultant
- 3.2 “HSE National & International Implication”**  
Engr. Rear Admiral (R) M.I. Arshad, Vice-President, IEP
- 3.3 “Risk Management in the Airline Operation”**  
Wing Cdr. (R) Nadir Ali Shah, Principal, PIA Training Centre
- 3.4 “Safety Management Systems at Hub Power Station”**  
Engr. Haroon R. Tabani, Safety Manager, Hub Power Station,  
Baluchistan
- 3.5 “HSE Aspects of a Terminal”**  
Dr. Najeeb Rizvi, Engro Chemical Pakistan
- 3.6 “Gas Safety Rules”**  
Engr. Ali Muhammad, I/C Safety Department, Pakistan Steel Mills
- 3.7 “HSE Training Courses for PPL Workers at Sui”**  
Engr. Syed Owais Zahid, Senior Engineer, Sui Gas Field, Pakistan  
Petroleum Ltd.
- 3.7 “Ignorant Stake-Holders Supplement Safety Hazards”**  
Mr. Mohib K. Habib, Former Addl. Director, Labour Welfare,
- 3.8 “Duties of Confined Space Work Team”**  
Engr. Mahmud A. Qureshi, Unit Manager Safety, FFC – Jordan  
Fertilizer Company Ltd.
- 3.9 “Safety Management System Leading to OHSAS 18001  
Certification”**  
Engr. Kamran Siddiqui and Engr. Ali Akhtar Khan, SGS Pakistan
- 3.10 “Road Safety – How it effects our Business & Communication”**  
Engr. Mahmood Kazim, HSE Advisor, B P Pakistan, Exploration  
and Production, Karachi
- 3.11 “Occupational Health & Safety and Environment Management  
System at NRL”**

Engr. Zafar Pasha Rizvi, General Manager (Technical), National Refinery Ltd., Karachi and Engr. Syed Salman Ali, Chief Executive Officer & Chief Consultant, Qualitas Systems

**3.12 “Environments, Health & Safety in the Telecommunication Service Industry”**

Engr. A. R. Qureshi, Consultant, Karachi

**3.13 “Safety Requirement in Textile Industries”**

Engr. C. L. Nankani, Joint Director Labour, Government of Sindh

**3.14 “Environmental Sustainability in Business”**

Mr.Umer Farooq Hashmi, Bristol Myers-Squibb, Karachi

**3.15 “Pesticide Poisoning in the Agriculture Workforce”**

Dr. Abdul Khaliq Ansari, Professor, Chemical Engg Deptt. MUET, Jamshoro

**3.15 “Safety & Health at Work in the Context of Globalization”**

Engr. Akhtar Quddus, Maxsafe Engineering, Karachi

**3.16 “A Risk Manager’s Perspective of World Industrial Losses”**

Mr.Khurram Ali Khan, Executive Vice-President, EFU General Insurance, Karachi

**3.17 “Noise & Hearing Conservation – An occupational Health & Industrial Hygiene Perspective”**

Lt.Col. (R) Dr.A.H.H.Tahir Alavi, Engro Chemical Pakistan Ltd,

**3.18 “Fire-Environment Relationship”**

Mr. Kazim Ali, MIFireE, Chief Fire & Rescue Officer, CDGK

**4<sup>TH</sup> NATIONAL SEMINAR ON  
OCCUPATIONAL HEALTH, SAFETY & ENVIRONMENT  
14<sup>TH</sup> & 15<sup>TH</sup> NOVEMBER, 2005**

- 4.1 “Safety Measures Against Electrical Hazards” and Urdu Nazm**  
Mr. Ali Muhammad, Safety Department, Pakistan Steel Mills,
- 4.2 “Risk Assessment”**  
Mr. Qamar Ahmed, Technical Director, Mandviwalla Mauser Plastic Industries Ltd.
- 4.3 “Need & Importance of Training to the Factory Inspector”**  
Engr. C.L. Nankani, FIE (Pak), Ex-Joint Director Labour (OSHC)
- 4.4 “Hazards Evaluation and Identification”**  
Mr. Muhammad Khalid Yousuf, Plant Manager
- 4.5 “Safety Aspects of the Transport Sector”**  
Engr. A.R. Qureshi, HSE Consultant,
- 4.6 “Cleaner Production: A solution to face the WTO Challenges!”**  
Dr. Irshad Ahmad, National Consultant,  
Incharge National Cleaner Production Center for Fuels, R’pindi
- 4.7 “Safety Passport Scheme for Contractors’ Supervisors”**  
Mr. Haroon Tabani, Safety Manager,  
International Power-Hub Power Station Baluchistan,
- 4.8 “Prevalence of Byssinosis in Textile Workers in Karachi”**  
Mr. I. K. Memon & Mr. D.J.K. Rohra, Department of Biological and Biomedical Science, Faculty of Health Sciences, Medical College, Aga Khan University, Karachi.  
Mr. A. M. Panhwar; National Secretary for Pakistan, International Commission on Occupational Health (ICOH), Department of Medicine, Dow University of Health Science, Karachi
- 4.9 “Status and Regulations on Occupational Health and Safety for Waste Management in Bahrain”**  
Dr. Afaf Al-Sho’ala – Director, and Engr. Rehan Ahmed,  
Environmental Control Directorate, Public Commission for the Protection of Marine Resources, Environment & Wildlife, Bahrain.
- 4.10 “Ensuring Fire Safety in High-Rise Building”**



Dr. Abdul Majeed, Ex-Dir. General, Safety Services Division,  
KRL

**4.11 “Self Reported Health Problems after Oil Spillage from Tasman Spirit”**

Dr. Jawed Usman, Chairman, Department of Family Medicine,  
Dr. Tahseen Kazmi, Department of Community Health Sciences  
Ziauddin Medical University,

**4.12 “Driving Home the Need for Environmental Consciousness”**

Dr. Mahmood Naeem, Senior LRQA Representative for Pakistan  
Lloyd's Register EMEA, Karachi

**4.13 “Managing HSE Contracts”**

Engr. Akhtar Quddus, Chief Executive, Maxsafe Engineering

**4.14 “Large property damage losses in the Hydrocarbon-chemical industries— a thirty-year review trends and analysis”**

Mr. Khurram Ali Khan, Deputy Executive Director,  
EFU General Insurance,

**4.15 “VDR and its Role in Improving Driving Behaviors in BP Pakistan”**

Mr. Mahmood Kazmi, B.P. Pakistan Exploration & Production,

**4.16 “Integrated Management System – ABP Pakistan Example”**

Mr. Amjad Shaikh, B.P. Pakistan Exploration & Production,

**4.17 ”HSE Risk Assessment/Management Protocol”**

Mr. Irfan Shaikh, B.P. Pakistan Exploration & Production,

**4.18 “Behavioral Based Safety Management”**

Mr. Raed M. Al Jamy, Head of Health & Safety Division,  
Al-Moalem Institute, Bahrain

**4.19 “Awareness and Preparedness for Emergencies at Local Level (APELL) - UNEP Program”**

Prof. Dr. Abdul Khaliq Ansari, Chairman, Chemical  
Engineering Department,  
Mehran University of Engineering & Technology, Jamshoro,

**4.20 “Striving for World Class Safety”**

Mahmood Siddiqui, Safety & Environment Advisor,  
Engro Chemical Pakistan, Daharki, Distt. Ghotki

**4.21 “Management of Fire Risk in Textile Mills – Insurance Perspective”**

Karim Merchant, Joint Senior Vice-President, New Jubilee Insurance Co. Ltd.

**4.22 “Launching Effective Safety Program”**

Ijaz Ahmed, Unit Manager, Safety, Fauji Fertilizer Ltd., Bin Qasim

**4.23 “Leading Indicators of Safety Performance”**

Farukh Iqbal Qureshi, Sr. Advisor, Safety, Health, Environment and Training, Engro Asahi Polymer & Chemicals Limited,

**5<sup>TH</sup> NATIONAL SEMINAR ON  
OCCUPATIONAL HEALTH, SAFETY & ENVIRONMENT  
7<sup>TH</sup> & 8<sup>TH</sup> SEPTEMBER, 2007**

- 5.1 “Safety at Pakistan Steel”**  
Mr.M.Z.Ghori, Deputy General Manager, Pakistan Steel
- 5.2 “Job Hazard Analysis (JHA)”**  
Mr.Ali Irfan, General Manager, Technical, Qualities System
- 5.3 “Nurturing a Safety Culture at FFC – Plant site”**  
Mr.Tariq Sajjad, Staff Engineer, Mr. Zaheer Anwar, Project Manager and Mr. S.Zaheer Ali Kazmi Staff Engineer --  
Fauji Fertilizer Corporation-Goth Machi, Sadiqabad
- 5.4 “Combating Industrial Pollution”**  
Lt. Col. (Retd) Sarfaraz Ahmed Khan, General Manager, HR,  
Agriauto Industries Limited
- 5.5 “Noise Pollution”**  
Engr. Ijaz Ahmed, Unit Manager-Safety, Fauji Fertilizer Limited
- 5.6 “Preliminary Studies to assess the health status of workers of Iron and Steel Industries Located in Lahore”**  
Mrs. Husna Malik and Mr.Cheema K.J., Assistant Professor,  
Lahore College for Women University
- 5.7 “Risk Management in Power Plant”**  
Mr. Khurram Ali Khan, Executive Director,  
EFU General Insurance Ltd
- 5.8 “Pakistan Environmental Protection Agency, Legislations and Implementation Issues”**  
Professor Dr. A.W. Baloch, Faculty of Applied, Pure and  
Environmental Sciences,  
Preston University, Kohat, Sector H-8/1, Islamabad
- 5.9 “Occupational Health, Safety and Environment”**  
Engr. K. K. Sharma, Former Director, Pakistan Steel Mills
- 5.10 “Safety Environment & Health Aspects of Installation of Radio Antenna Systems on Buildings in Urban Areas-A Case Study”**  
Engr. A. R. Qureshi, Ex-Director General, T & T. Karachi

- 5.11 “Determination of Cotton Dust Concentration in Different Sections of a famous Textile Mill in Faisalabad and Prognostic Evaluation of Byssinosis in its Workers”**  
Dr. Mrs. Saleema Basheer, Assistant Professor,  
Kinnaird Collage for Women, Lahore
- 5.12 “Impact of Radiation Hazard and its Safety Measures”**  
Dr. M. Saleem Shaikh, Preston University, Islamabad
- 5.13 “Occupational Health, Safety and Environment- Islamic Perspective”**  
Mr. Hassan Mahmood Jaffery, Research Scholar,  
ARY Digital Network
- 5.14 “Personal Protective Equipment”**  
Engr. Anwar ul Haq Siddiqui, Technical Adviser, Mehran Oils Ltd
- 5.15 “Ergonomics”**  
Mr. Samir Ahmed, Asst. Manager, Health, Safety & Environment,  
Pakistan International Airlines
- 5.16 “Environmental Friendly Usage of Bagasse ASH for Sub grade Soil Stabilization”**  
Prof. Tayyeb Akram, Dean, National Institute of Transportation,  
NUST, Risalpur.
- 5.17 “A Study of Occupational Health and Safety Practices and its Health Impacts on Workers in some Leather Industries of Sialkot, Pakistan”**  
Dr.Saleema Bashir Shams, Nazifa Butt and Nikhat Khan,  
Kinnaird College for Women Lahore.
- 5.18 “Airport Emergency planning”**  
Engr. Tariq Moen, Secretary, Fire Protection Association of  
Pakistan (FPAP)
- 5.19 “Fire and Life Safety in High - Rise Building”**  
Mr.Kazim Ali, Sr.Fire Officer, Sui Gas Field, PPL
- 5.20 “Protection of Steel Structures through ZINGA Film Galvanizing Total Corrosion System”**  
Engr. Naseeruddin Humayun, Chief Executive, Mosh International
- 5.21 “Need of Training in Avoiding Accidents”**  
Engr. C. L. Nankani, Chief Executive, Kailash Safety Enterprises

**6<sup>TH</sup> NATIONAL SEMINAR ON  
OCCUPATIONAL HEALTH, SAFETY & ENVIRONMENT  
22<sup>ND</sup> & 23<sup>RD</sup> AUGUST, 2008**

- 6.1 “Behavior Based Safety and Human Factor Engineering”**  
Engr. Akhtar Quddus, Maxsafe Engineering
- 6.2 “Turnaround Safety Management”**  
Engr. Asif Jan, Senior Engineer, Engr. Ghulam Sarwar Feroze,  
Staff Engineer, Fauji Fertilizer Company Limited, Goth Machhi,
- 6.3 “Risk Management for Power Plants“**  
Mr. Khurram Ali Khan, EFU General Insurance Limited
- 6.4 “Occupational Health Safety & Environment Problems of Nuclear Power Generation”,**  
Engr. Dr. Naimat Ali Javed, (Sitara-e-Imtiaz), Scientist Emeritus,  
Pakistan Atomic Energy Commission, Islamabad and District  
Nazim, Narowal Town, Punjab
- 6.5 “EHS Risk Assessment and Management “**  
Ms. Zulekha Soorma, Manager EHS, Glaxo Smith Kline Pakistan
- 6.6 “Managing Risks at Construction Site”**  
Engr. Karim Merchant, Senior Vice President, New Jubilee  
Insurance Corporation
- 6.7 “Security Risk Assessment-Protection of Industrial Concerns against Terrorism”** Mr. Naseeruddin Humayun, Principal  
Consultant & CEO Mosh Consultants
- 6.8 “Industrial Disasters & Family Assistance”**  
Mr. Tariq Moen, Secretary FPAP & Deputy General Manager,  
Emergency Response Planning (ERP), PIA
- 6.9 “HSE Management System Certification at SUI Northern Gas Pipeline Limited”**  
Mr. Ali Irfan, COO & Chief Trainer, IDEAS, Management Trainer  
and Consultancy
- 6.10 “Safety Critical System“**  
Engr. Syed Zeeshan Bukhari, Urea Section Incharge,  
Engro Chemical Pakistan Limited, Daharki
- 6.11 “Fire at Ammonia Start up Heater Block Valve”**

Engr.Ahmed Bilal Zakir, Staff Engineer, Engr.Taufiq Arshad Mir,  
Staff Engineer, Fauji Fertilizer Company Limited, Goth Machhi

- 6.11 “Occupational Health Safety and Environmental (HSE) Concerns of Thar Coal Exploitation and Power Generation”**  
Engr. M. Abdullah Farooqui, Safety Consultant
- 6.12 “Concept of Environmental Footprint of Fertilizer Plants”**  
Engr. Asghar Naveed, Safety & Environmental Advisor,  
Engro Chemical Pakistan Limited, Daharki
- 6.13 “Common Electrical Hazards in Industrial”**  
Engr.Farrukh Ahmed Khan, AM Electrical (Safety)  
Engr.M.Masoom-ul-Haque, General Manager (Safety), SUPARCO
- 6.14 “Management Style in Textile Industries of Pakistan”**  
Mr. M. Ayub Khan, Res. Director, Latif Group of Spinning Mills
- 6.15 “Law of Compensation”**  
Advocate Chaudhry Rashid Ahmed,
- 6.16 “Health Problem Solutions Chemical Innovations”**  
Engr. Ghulam Abbas Cyselwala, M Director Chemage Trading Co
- 6.17 “Proper Lubrication of Machine Reduces Chance of Accident:”**  
Engr. C. L. Nankani, Director, Tag Group of Companies &  
Former Joint Director Labour, Government of Sindh.
- 6.17 “Disposal of Urban Solid Waste”**  
Engr. A. R. Qureshi, Former Director General (T & T).

**7<sup>TH</sup> NATIONAL SEMINAR ON  
OCCUPATIONAL HEALTH, SAFETY & ENVIRONMENT  
1<sup>ST</sup> & 2<sup>ND</sup> OCTOBER, 2010**

- 7.1 “HSE-Culture – If You Can’t Measure It, You Can’t Improve It”**  
Engr. Akhtar Quddus, Chief Executive, Max Safe Engineering and Managing Director, MaxTrain International, Karachi
- 7.2 “Breakthrough Improvement I H&S Performance through 6 SIGMA”**  
Mr. Ali Irfan, COO & Chief Trainer, IDEAS, Management Trainer and Consultant, Karachi
- 7.3 “Participative Safety Management”**  
Engr. Israr Ahmad Rana, Assistant Manager Safety,  
Engr. Ejaz Ahmad, Deputy Manager Safety,  
Fauji Fertilizer Company Limited, Goth Machhi, Sadiqabad
- 7.4 “Occupational, Health Safety and Environment in Textile”**  
Ms. Hafsa Riaz, Assistant Professor, National Textile University, Faisalabad.
- 7.5 “HSE Control of Nuclear Power Generation”**  
Engr. S. Mansoor H. Rizvi, USA, & Engr. S. A. H. Naqvi, Vice-Chairman (Metal/Indust/Nucl/PG), IEP Karachi Centre
- 7.6 “Safety at Container Terminal”**  
Mr. Saud-ur-Rehman, Deputy Manager, HSE  
Pakistan International Container Terminal Limited, Karachi
- 7.7 “OHS Practices in Food Industry: A Case Study from Pakistan”**  
Ms. Sajeela Ghaffar, PhD Scholar, Environmental Engineering,  
Ms. Hira Amjad, Mr. Zahiruddin Khan, IESE, SCEE, NUST, Islamabad.
- 7.8 “Human Factors in Risk Assessment, Methodology adopted”**  
Syed Muhammad Umair, Assistant Executive Safety,  
FFC-MM Plant, Fauji Fertilizer Co. Limited, Goth Machhi,
- 7.9 “Occupational Health & Industrial Hygiene”**

Mr. Farooq M Saleem, Environment & Industrial Hygiene Advisor, Mr. Irfan Manzoor Bhutta, Environmental Engineer, Engro Fertilizer Limited, Dharki Distt: Gohtki

- 7.10 “Sustainability Initiatives at Hala EPF Project”**  
Mr. Tauseef Ahmad Khan, Manager HSE, Pakistan Petroleum Limited, Karachi.
- 7.11 “Case Study-HSE Cultural Uplift at Sui Purification Plant”**  
Engr. Haroon-ur- Rashid, Chief Engineer (Planning & Coordination), Pakistan Petroleum Limited.
- 7.12 “A Case Study on OHS Practices in Steel Re-Rolling Mill, Islamabad”**  
Ms. Hira Amjad, PhD Scholar Environmental Engineering, Mr. Zahiruddin Khan, IESE, SCEE, NUST, Islamabad
- 7.13 “Industrial Disasters & Humanitarian Assistance”**  
Mr. Tariq Moen, Deputy General Manager PIA, Simulator Building, Karachi Airport
- 7.14 “Safety and Health in the Workplace”**  
Mrs. Shameem Zuberi, Member Board of Governors KPT-Karwan-e-Hayat Hospital, Assistant Professor, Greenwich University.
- 7.15 “Ergonomics and Safety Advancement”**  
Mrs. Nausheen Shahzad, Psychiatrist & Chairperson, Standing Committee on Women Development, FPCCI
- 7.16 “Problem in Implementing Health & Safety Measures in Small Engineering Factories”**  
Engr. Khalid Parwez, Past-Chairman, IEP, Karachi Centre & Proprietor Parwez Engineering Industries, Karachi
- 7.17 “Assessing the Provision of Occupational Health Services in a Leading Construction Company of Pakistan”**  
Mr. M. Usman Hanif, Environmental Engineer, PhD Scholar, Mr. Zahiruddin Khan, Hira Amjad, Sajeela Ghaffar, IESE, SCEE, NUST, Islamabad
- 7.18 “Negligence is the Root Cause of all H.S.E. issues”**  
Engr. Ghulam Abbas Cyselwala, Chairman, Chemage Group of Companies, Karachi
- 7.19 “Focus on Occupational Health”**



Ms. Zulekha Soorma, EHS Consultant, Karachi

**7.20 “Importance of Occupational Health & Safety Management Practices”**

Ms. Saman Khalil, CEO, Strategic Management Services, Karachi

**7.21 “Importance of Safety Culture”**

Engr. Farrukh Ahmed Khan, Assistant Manager Safety, SUPARCO

**8<sup>TH</sup> NATIONAL SEMINAR ON  
OCCUPATIONAL HEALTH, SAFETY & ENVIRONMENT  
21<sup>ST</sup> & 22<sup>ND</sup> OCTOBER, 2011**

- 8.1 “Leadership and HSE Culture”**  
-Ms. Zulekha Soorma, EHS Consultant
- 8.2 “Leading Indicators”**  
- Mr.Asghar Naveed, HSE Manager, Engro Fertilizer Limited,
- 8.3 “HSE Improves Productivity and Company Image”**  
-Engr.Mehwish Qaseem, Engr.Shagufta Ishteyaque,  
Chairperson, Chemical Engg Department, Karachi University.
- 8.4 “Case Study on HSE Certifications at PPL”**  
-Engr.Syed Danish Ali, Manager HSE, Pakistan Petroleum Ltd.
- 8.5 “Case Study on HSE Certifications at PPL”**  
-Engr. Syed Danish Ali, Manager HSE, Pakistan Petroleum Ltd.
- 8.9 “Safe Workplace through RCA”**  
-Engr. M.Kamran Qureshi and Engr. Fahad Ishfaq, Senior Engineer  
Safety Pak Arab Fertilizer Ltd, Multan
- 8.10 “Overview-HSE Integrated Drilling Operation”**  
- Engr.Qaiser Mehmood, Assist. Engineer, Pakistan Petroleum Ltd
- 8.11 “Improving HSE Compliance at Container Terminal”**  
-Engr. Saud-ur-Rehman, Deputy Manager, QHSE,  
Pakistan International Container Terminal, Karachi
- 8.12 “Importance of Fire Preparedness and Response Audits for  
Production Enhancement, Image Building and Raising Brand  
Equity: An Application of Fire Assessment in a Tobacco  
Company”**  
-MS. Sharmeen Tariq, Co-Authors: Dr. Saleema Bashir Shams,  
Mr. Asim Mehmood, Kinnaird College for Women, Lahore
- 8.12 “Ammonia Process Condensate Recovery an Environmental  
Initiative”**  
-Engr. Hasan, Ops Engineer, Fauji Fertilizer Co., Mirpur Mathelo
- 8.13 “Investigating the Prevalence of Occupational asthma and its  
Environmental Triggers in 12 Hospitals of Sialkot”**

-Dr.Saleema Bashir ; Ms. Nazeefa Butt Associate Professor, Head of Zoology Department Kinnaird College for Women, Lahore

**8.14 “Repeated Administration of Mercuric Chloride Produces Motor Deficits; A Sign of Neurotoxicity”**

-Ms.Saiqa Tabassum, Co Author: Ms. Aisha Karim. Ms.Saida Haider and Ms. Darakhshan J. Haleem Neurochemistry and Biochemical Neuropharmacology Research Unit, Department of Biochemistry, University of Karachi

**8.15 “Lead-Acid Battery Recycling: Addressing Environment Hazards and Economic Objectives”**

-Mr. Mr.Rizwan Uz Zaman, Mr.Faisal Waqas Bhatti, Mr.Shabbir Jamal and Immad Ahmed Bin Qadeer, Undergraduate Students of Industrial & Manufacturing Engineering, NEDUET.

**8.16 “Case Study: Scrapper Movement during Cone Cleaning Inside Prill Tower”**

-Engr.Abdul Raouf, Assistant Executive Production, Fauji Fertilizer Company Ltd, Goth Machhi, Sadiqabad

**8.17 “Don’t Let Incidence Ruin your Plan”**

-Engr. Ghulam Abbas Cycelwala, Chairman, Chemage Trading Co

**8.18 “Static Electricity in the light of NFPA 77- Requirements, Implementation & Controls”**

-Engr. Mirza Shoaib Ahmed, Executive, HSE Department, Pakistan State Oil Company Limited, Karachi

**8.19 “Multinationals and Safety Implementation in Pakistan”**

-Mr.Tariq Moen, Secretary, Fire Protection Association of Pakistan

**8.20 “Corrective and Preventive Actions, A Tool to improve Productivity”**

-Mr. Ali Irfan, COO & Chief Trainer, IDEAS-Management Trainers and Consulting Firm.

**8.21 “Occupational Stress in the Managerial Jobs”**

-Engr.A.R.Qureshi, Former Director General T & T

**8.22 “LPG Handling and Storage- Safety Design Aspects”**

- Mr.Imran Bokhari, Dr.S.Ahmed, Dr.Suhail Qadeer, Pakistan Petroleum Limited

**8.23 “Safety Attitude”**

-Mr.Syed Naeem A.Naqvi, Chief Executive Delta Consultants

## **APPENDIX -2**

### **NATIONAL INSTITUTIONS PROMOTING HSE CULTURE**

1. Centre for Improvement of Working Conditions & Environment,  
Government of Punjab, Chandni Chowk, Township, Lahore  
Tele: 042- 9926 2145, Email: [info@ciwce.org.pk](mailto:info@ciwce.org.pk)
2. [Chief Inspector of Mines, Islamabad](#)
3. Institution of Engineers Pakistan, Karachi Centre,  
IEP Building, 177/2 Liaquat Barracks, Shahrah Faisal,  
Karachi-75350; Tel: 021-3278 0233, 3278 1492  
Fax: 021-3278 3442 Email: [info@iepkc.org](mailto:info@iepkc.org)
4. [I M A F, Islamabad](#)
5. Maxtrain, MaxSafe Engineering,  
42/1 J-D, Block-6, P.E.C.H.S, Karachi  
Tele: 021- 3432 0033 – 35 Email: [info@maxsafegrou.com](mailto:info@maxsafegrou.com)
6. N.E.D University of Engineering & Technology,  
University Road, Karachi-75270; Tele: 9926 1261-8,  
Fax: 9926 1255 Email: [registrar@neduet.edu.pk](mailto:registrar@neduet.edu.pk)  
  
National Institute of Labour Administration & Training,  
Main University Road, Karachi-75300  
Tele: 021-9924 3760, 99243764; Fax: 021-9924 3790
7. Pak Safety Solutions,  
Suit# 26, Basement, Glamour One Plaza Main PECO Road  
Township, Lahore; Tele: 042-3551 7430, Fax: 042-521 3188;  
Email: [info@paksafetysolutions.com](mailto:info@paksafetysolutions.com)
8. Pakistan Institute of Labour Education & Research,  
T-001, Sector X, Sub Sector - V, Gulshan-e-Maymar, Karachi  
Tel: 021- 3635 1145-7, Fax: 021- 3635 0354  
E-mail: [piler@cyber.net.pk](mailto:piler@cyber.net.pk)

9. Sustainable Business Solutions  
Suite # 24, 1st Floor, Big City Plaza, Main Boulevard, Gulberg-3,  
Lahore; Tele: 042- 3577 4113-4, Email: [info@sbspak.com](mailto:info@sbspak.com)
10. SGS Pakistan (Private) Limited  
H-3/3, Sector 5, Korangi Industrial Area, Karachi , 74900  
Tele: 021- 3512 1388-95 / 021-111222747 Fax: 021- 3512 1386

## **CONSULTANTS PROMOTING HSE CULTURE**

1. Engr. Abdullah Farooqi, HSE Consultant, Karachi.
2. Mr. Abdul Ghani Ismail, Hub Power International, Karachi.
3. Dr. Abdul Majeed, Ex-Dir. General, Safety Services Division,  
KRL, Islamabad.
4. Engr. Akhtar Quddus, Chief Executive, Max Safe  
Engineering, Karachi.
5. [Mr. Ghayyur Hussain, Karachi.](#)
6. Engr. Ghulam Abbas Cyselwala, Chemage Group of  
Companies, Karachi.
7. Mrs. Husna Malik, Asst. Professor, Lahore College for  
Women University, Lahore.
8. Engr. Khalid Parvez, Proprietor, Perwez Engineering  
Industries, Karachi
9. Mr. Naseeruddin Humayun, Principal Consultant & CEO  
Mosh Consultants
10. [Mr. Saeed Awan, Lahore.](#)

11. Dr. Saleema Basheer, Assistant Professor, Kinnaird Collage for Women, Lahore
12. Engr. Syed Ali Ashraf Naqvi, Labour Department, Government of Sindh, Karachi .
13. Engr. Syed Naeem A. Naqvi, Chief Executive Delta Consultants, Karachi.
14. Ms. Saman Khalil, CEO, Strategic Management Services, Karachi
15. Ms. Sharmeen Tariq, Assistant Professor, Kinnaird College for Women, Lahore.
16. Mr. Tariq Moin, Secretary, Fire Protection Association of Pakistan Karachi.
17. Ms. Zulekha A. Soorma, Manager EHS, Glaxo Smith Kline Pakistan, Karachi.

## **APPENDIX – 3**

### **ILO CONVENTIONS**

Those conventions bold & underlined have been adopted by the Government of Pakistan as per the list prepared by PILER- Pakistan Institute of Labor Economics and Research.

<b>C 1</b>	<b><u>Hours of Work (Industry) Convention 1919</u></b>
C2	Unemployment Convention, 1919
C3	Maternity Protection Convention, 1919
C4	Night Work (Women) Convention, 1919
C5	Minimum Age (Industry) Convention, 1919
C6	Night Work of Young Persons (Industry)
C7	Minimum Age (Sea) Convention, 1920
C8	Unemployment Indemnity (Shipwreck)
C9	Placing of Seamen Convention, 1920
C10	Minimum Age (Agriculture) Convention,
C11	Right of Association (Agriculture)
C12	Workmen's Compensation (Agriculture)
C13	White Lead (Painting) Convention, 1921
<b>C14</b>	<b><u>Weekly Rest (Industry) Convention, 1921</u></b>
(C15)	Minimum Age (Trimmers and Stokers)
<b>C16</b>	<b><u>Medical Examination of Young Persons</u></b>
C17	Workmen's Compensation (Accidents)
C18	Workmen's Compensation (Occupational
C19	Equality of Treatment (Accident

(C20)	Night Work (Bakeries) Convention, 1925
(C21)	Inspection of Emigrants Convention, 1926
C22	Seamen's Articles of Agreement
C23	Repatriation of Seamen Convention, 1926
C24	Sickness Insurance (Industry) Convention,
C25	Sickness Insurance (Agriculture)
C26	Minimum Wage-Fixing Machinery
<b>C27</b>	<b><u>Marking of Weight (Packages Transported)</u></b>
(C28)	Protection against Accidents (Dockers)
C29	Forced Labour Convention, 1930
C30	Hours of Work (Commerce and Offices)
(C31)	Hours of Work (Coal Mines) Convention,
<b>C32</b>	<b><u>Protection against Accidents (Dockers)</u></b>
C33	Minimum Age (Non-Industrial
(C34)	Fee-Charging Employment Agencies
(C35)	Old-Age Insurance (Industry, etc.)
(C36)	Old-Age Insurance (Agriculture)
(C37)	Invalidity Insurance (Industry, etc.)
(C38)	Invalidity Insurance (Agriculture)
(C39)	Survivors' Insurance (Industry, etc.)
(C40)	Survivors' Insurance (Agriculture)
(C41)	Night Work (Women) Convention



C42	Workmen's Compensation (Occupational
(C43)	Sheet-Glass Works Convention, 1934
(C44)	Unemployment Provision Convention,
<b>C45</b>	<b><u>Underground Work (Women)</u></b>
(C46)	Hours of Work (Coal Mines) Convention
C47	Forty-Hour Week Convention, 1935
(C48)	Maintenance of Migrants' Pension Rights
(C49)	Reduction of Hours of Work (Glass-Bottle
(C50)	Recruiting of Indigenous Workers
(C51)	Reduction of Hours of Work (Public
C52	Holidays with Pay Convention, 1936
C53	Officers' Competency Certificates
C54	Holidays with Pay (Sea) Convention, 1936
C55	Shipowners' Liability (Sick and Injured
C56	Sickness Insurance (Sea) Convention, 1936
C57	Hours of Work and Manning (Sea)
C58	Minimum Age (Sea) Convention (Revised),
C59	Minimum Age (Industry) Convention
(C60)	Minimum Age (Non-Industrial 7
(C61)	Reduction of Hours of Work (Textiles)
C62	Safety Provisions (Building) Convention,
C63	Convention concerning Statistics of Wages

(C64)	Contracts of Employment (Indigenous
(C65)	Penal Sanctions (Indigenous Workers)
(C66)	Migration for Employment Convention,
(C67)	Hours of Work and Rest Periods (Road
C68	Food and Catering (Ships' Crews)
C69	Certification of Ships' Cooks) Convention,
C70	Social Security (Seafarers) Convention,
C71	Seafarers' Pensions Convention, 1946
C72	Paid Vacations (Seafarers) Convention,
C73	Medical Examination (Seafarers
C74	Certification of Able Seamen Convention,
C75	Accommodation of Crews Convention,
C76	Wages, Hours of Work and Manning (Sea)
C77	Medical Examination of Young Persons
C78	Medical Examination of Young Persons , 1946
C79	Night Work of Young Persons (Non-
C80	Final Articles Revision Convention, 1946
<b>C81</b>	<b><u>Labour Inspection Convention, 1947</u></b>
P81	Protocol of 1995 to the Labour Inspection
C82	Social Policy (Non-Metropolitan
C83	Labour Standards (Non-Metropolitan
C84	Right of Association (Non-Metropolitan

C85	Labour Inspectorates (Non-Metropolitan
(C86)	Contracts of Employment (Indigenous
C87	Freedom of Association and Protection of
C88	Employment Service Convention, 1948
<b>C89</b>	<b><u>Night Work (Women) Convention</u></b>
P89	Protocol to the Night Work (Women)
<b>C90</b>	<b><u>Night Work of Young Persons (Industry)</u></b>
(C91)	Paid Vacations (Seafarers) Convention
C92	Accommodation of Crews Convention
C93	Wages, Hours of Work and Manning (Sea)
C94	Labour Clauses (Public Contracts)
C95	Protection of Wages Convention, 1949
C96	Fee-Charging Employment Agencies
C97	Migration for Employment Convention
C98	Right to Organize and Collective
C99	Minimum Wage Fixing Machinery
C100	Equal Remuneration Convention, 1951
C101	Holidays with Pay (Agriculture)
C102	Social Security (Minimum Standards)
C103	Maternity Protection Convention (Revised),
(C104)	Abolition of Penal Sanctions (Indigenous

C105	Abolition of Forced Labour Convention,
C106	Weekly Rest (Commerce and Offices)
C107	Indigenous and Tribal Populations
C108	Seafarers' Identity Documents Convention,
C109	Wages, Hours of Work and Manning (Sea)
C110	Plantations Convention, 1958
P110	Protocol to the Plantations Convention,
C111	Discrimination (Employment and
C112	Minimum Age (Fishermen) Convention,
C113	Medical Examination (Fishermen)
C114	Fishermen's Articles of Agreement
C115	Radiation Protection Convention, 1960
C116	Final Articles Revision Convention, 1961
C117	Social Policy (Basic Aims and Standards)
C118	Equality of Treatment (Social Security
C119	Guarding of Machinery Convention, 1963
C120	Hygiene (Commerce and Offices)
C121	Employment Injury Benefits Convention,
C122	Employment Policy Convention, 1964
C123	Minimum Age (Underground Work)
C124	Medical Examination of Young Persons
C125	Fishermen's Competency Certificates
C126	Accommodation of Crews (Fishermen)

C127	Maximum Weight Convention, 1967
C128	Invalidity, Old-Age and Survivors' Benefits
C129	Labour Inspection (Agriculture)
C130	Medical Care and Sickness Benefits
C131	Minimum Wage Fixing Convention, 1970
C132	Holidays with Pay Convention (Revised),
C133	Accommodation of Crews (Supplementary
C134	Prevention of Accidents (Seafarers)
C135	Workers' Representatives Convention, 1971
C136	Benzene Convention, 1971
C137	Dock Work Convention, 1973
<b>C138</b>	<b><u>Minimum Age Convention, 1973</u></b>
C139	Occupational Cancer Convention, 1974
C140	Paid Educational Leave Convention, 1974
C141	Rural Workers' Organizations Convention,
C142	Human Resources Development
C143	Migrant Workers (Supplementary
C144	Tripartite Consultation (International
C145	Continuity of Employment (Seafarers)
C146	Seafarers' Annual Leave with Pay
C147	Merchant Shipping (Minimum Standards)
P147	Protocol of 1996 to the Merchant Shipping
C148	Working Environment (Air Pollution, Noise

C149	Nursing Personnel Convention, 1977
C150	Labour Administration Convention, 1978
C151	Labour Relations (Public Service)
C152	Occupational Safety and Health (Dock
C153	Hours of Work and Rest Periods (Road
C154	Collective Bargaining Convention, 1981
C155	Occupational Safety and Health
P155	Protocol of 2002 to the Occupational Safety
C156	Workers with Family Responsibilities
C157	Maintenance of Social Security Rights
C158	Termination of Employment Convention,
C159	Vocational Rehabilitation and Employment
C160	Labour Statistics Convention, 1985
C161	Occupational Health Services Convention,
C162	Asbestos Convention, 1986
C163	Seafarers' Welfare Convention, 1987
C164	Health Protection and Medical Care
C165	Social Security (Seafarers) Convention
C166	Repatriation of Seafarers Convention
C167	Safety and Health in Construction
C168	Employment Promotion and Protection
C169	Indigenous and Tribal Peoples Convention,
C170	Chemicals Convention, 1990

C171	Night Work Convention, 1990
C172	Working Conditions (Hotels and Restaurants)
C173	Protection of Workers' Claims (Employer's
C174	Prevention of Major Industrial Accidents
C175	Part-Time Work Convention, 1994
C176	Safety and Health in Mines Convention,
C177	Home Work Convention, 1996
C178	Labour Inspection (Seafarers) Convention,
C179	Recruitment and Placement of Seafarers
C180	Seafarers' Hours of Work and the Manning
C181	Private Employment Agencies Convention,
<b>C182</b>	<b><u>Worst Forms of Child Labour</u></b>
C183	Maternity Protection Convention, 2000
C184	Safety and Health in Agriculture
C185	Seafarers' Identity Documents Convention
MLC	Maritime Labour Convention, 2006
C187	Promotional Framework for Occupational
C188	Work in Fishing Convention, 2007
C189	Domestic Workers Convention, 2011

**APPENDIX -4**

**HAZARDOUS MATERIAL:  
MATERIAL SAFETY DATA SHEET (MSDS)**



## REFERENCES

- Engr. M. Abdullah Farooqui: “An Overview of Pakistan Laws on HSE”, Presentation in 3<sup>rd</sup> National Seminar on HSE, Institution of Engineers Pakistan, Karachi, (2003)
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