

Jointly Organized by



The Institution of Engineers Pakistan  
Karachi Centre



NED University of Engineering  
& Technology, Karachi



NED International Alumni Network  
(NEDIAN) Association Pakistan

# 10<sup>th</sup> INTERNATIONAL CONFERENCE ON OCCUPATIONAL HEALTH, SAFETY & ENVIRONMENT



## ICOHSE 2022

9<sup>th</sup> & 10<sup>th</sup> DECEMBER  
AT HOTEL MARRIOTT KARACHI

THEME FOR YEAR 2022

### Life with Safety



In collaboration with



Federation of Engineering  
Institutions of South & Central Asia



Federation of Engineering  
Institutions of Islamic Countries



The American Society of Heating, Refrigerating  
and Air-Conditioning Engineers



Fire Protection Association  
of Pakistan



AMERICAN SOCIETY OF  
SAFETY PROFESSIONALS  
Pakistan Chapter

Abstract Book

# A BRIEF ABOUT IEP



The Institution of Engineers Pakistan was founded with the blessing of the Father of the Nation, Quaid-e-Azam Muhammad Ali Jinnah, in 1948 with its Headquarter at Dhaka. In 1972 the Headquarter was shifted to Lahore. Presently IEP has 5 Capital & Provincial Local Centres at Islamabad, Karachi, Lahore, Peshawar & Quetta and 5 local centres at other major cities which includes Hyderabad, Sukkur, Multan, Faisalabad & Gujranwala. IEP also has 3 International Centres at Saudi Arabia, Bahrain & USA. Beside various Technical programs organized regularly, every year IEP Karachi Centre and NED University of Engineering & Technology, Karachi in collaboration with almost all PEC Accredited Engineering Institutions of Karachi & Balochistan organizes three International Conferences on Civil, Mechanical & Electrical Engineering. In these conferences International & Local researchers, academicians & distinguish Engineers from Industry actively participate and present their papers / research / achievements.

## IEP IS AN ACTIVE MEMBER OF FOLLOWING INTERNATIONAL ORGANIZATIONS

1. World Federation of Engineering Organization (WFEO)
2. Federation of Engineering Institutions of Islamic Countries (FEIIC)
3. Federation of Engineering Institution of South & Central Asia (FEISCA)
4. The Asian Civil Engineering Coordinating Council (ACECC)
5. Common Wealth Engineers Council (CEC)
6. Collaboration Agreements with more than 40 National Engineering Bodies of various countries.

## DO YOU KNOW WHY YOU SHOULD BECOME A MEMBER OF IEP?

### Simply Because!

- ★ You will be exposed to International Experts, International Audience and International Organizations either ONLINE and/or through INPLACE Seminars/Lectures/Conferences
- ★ You will be able to attend; career counseling workshops, training on job seeking techniques, lectures and seminars on Entrepreneurship, skills and many more related topics.
- ★ You will enjoy online access to thousands of national and international engineering professionals, updates on job opportunities globally, information/Consultation regarding further study abroad
- ★ Discount on International Conferences, Congresses, Exhibitions and Workshop conducted regularly by IEP.
- ★ To fulfill the requirement of Pakistan Engineering Council (PEC) to become professional Engineers (PE), you will be able to attend CPD courses conducted by IEP.
- ★ Women Engineers can actively participate in the activities of IEP through IEP Women Engineers Forum (IEP-WEF)

## SPECIAL GROOMING PROGRAMS AT IEP FOR YOUNG ENGINEERS

In order to groom the Young budding Engineers, IEP has launched following programs:

- ★ IEP Future Leaders Forum (IEP-FLF) for Young Engineers to show case their technical talents.
- ★ In order to encourage meritorious young engineering graduates to excel in their respective fields, Award of Gold Medal to First Position holders of all PEC Accredited Engineering Programs / Institutions of Karachi.
- ★ Seminar on Resume writing, cover letter and tips for preparation for job interview
- ★ Career counselling session by the academia and industry.
- ★ Job placement through IEP website where prospective Employee & Employer can find their match.
- ★ Various professional / certified training programs for Young Engineers in collaboration with internationally authorized training institutes which could be useful to develop their careers in their respective fields and to increase their employment opportunities.
- ★ Home Based Employment Initiatives for Women Engineers not actively involved in the profession.

## IEP SPECIAL LIFE TIME MEMBERSHIP OFFER FOR ENGINEERS

**IEP is now offering Life Time Membership to Engineers on payment of Rs.500/= only**

### THREE SIMPLE STEPS TO GET IEP MEMBERSHIP

1. Download the IEP membership form from IEP website [www.iepkarachi.org.pk](http://www.iepkarachi.org.pk) or collect the IEP membership form IEP Karachi Centre.
2. Fill the Form and submit the form with following documents:
  - (i) Attested Photo Copy of Matric Certificate.
  - (ii) Attested Photo Copy of Intermediate Certificate
  - (iii) Attested Photo Copy of Degree Certificate,
  - (iv) Attested Photo Copy of Pakistan Engineering Council Certificate
  - (v) Attested Copy of CNIC
  - (vi) Two Passport size photographs.
  - (vii) Rs. 500/= by cash or pay order / cross cheque in favor of  
**The Institution of Engineers Pakistan, Karachi Centre**
3. Submit these documents to **The Institution of Engineers Pakistan, Karachi Centre**, 4th Floor, IEP Building, Opp: Hotel Regent Plaza, Shahrah-e-Faisal, Karachi.  
Tel: 32780233, 32781492, WhatsApp: 0311-2277721, E-mails: [main@iepkarachi.org.pk](mailto:main@iepkarachi.org.pk), [iepkc1948@gmail.com](mailto:iepkc1948@gmail.com), Web: [www.iepkarachi.org.pk](http://www.iepkarachi.org.pk)

## TO KNOW MORE ABOUT IEP, FEEL FREE TO CONTACT

**Engr. Sohail Bashir**, Chairman, IEP, Karachi Centre (E-mail: [chairman@iepkarachi.org.pk](mailto:chairman@iepkarachi.org.pk)) **Engr. M. Farooq Arbi**, Secretary, IEP Karachi Centre (E-mail: [secretary@iepkarachi.org.pk](mailto:secretary@iepkarachi.org.pk))  
**Mr. Sikandar Mannan**, Deputy Director, IEP Karachi Center (Cell # 0321-2723095) **Mr. Sharif Khan**, Assistant Director, IEP Karachi Center (Cell # 0312-2356316) **Mr. Shaikh Saifuddin**, Assistant Director, IEP Karachi Center (Cell # 0300-5784726)

# MESSAGE



**Muhammad Baligh ur Rehman**  
Governor Punjab

“ I am glad to know that the Institution of Engineers Pakistan Karachi Centre , NED University of Engineering & Technology, and NED International Alumni Network Association-Pakistan are jointly organizing the 10th International Conference on Occupational Health Safety & Environment ( 10th -ICHSE-2022) on Friday the 9th & 10th December, 2022 in collaboration with many other Institutions.

It is also heartening to note that the Institution of Engineers Pakistan was established in 1948 with the blessing of the Father of Nation, Quaid-e-Azam Mohammad Ali Jinnah who in his message to first inaugural meeting of the Institution stressed that if Pakistan is to take its proper place among the progressive nations of the world, it will have to take up a good deal of scientific and technology education which is absolutely necessary for the proper development of the country and the utilization of its resources.

Since its established the Institution of Engineers Pakistan has been holding conferences, congresses, seminars and technical lectures etc. for benefit of the engineers and community. It has also been striving hard to get maximum transfer of appropriate technology to Pakistan

It is an established fact that the progress and prosperity of Pakistan is linked with the creative genius and productive role of engineers who have contributed immensely towards gigantic task of national development.

The role played by the Institution is commendable and I wish very success for 10th International Conference on Occupational Health Safety & Environment.

# MESSAGE



**Kamran Tessori**  
Governor of Sindh



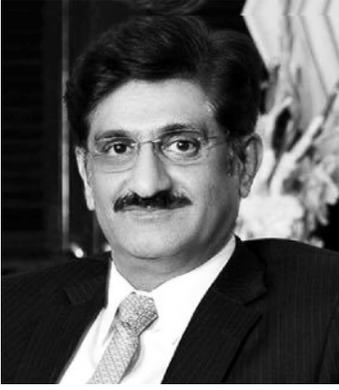
“ I am glad to know that The Institution of Engineers Pakistan Karachi Centre, NED University of Engineering & Technology, and NED International Alumni Network Association- Pakistan are jointly organizing 10th International Conference on Occupational Health Safety & Environment (10th -ICOHSE-2022) schedule to be held on Friday 9th & Saturday 10th December, 2022 at Karachi in collaboration with Federation of Engineering Institutions of Islamic Countries, Federation of Engineering Institutions of South and Central Asia, American Society of Heating Refrigerating and Air-Conditioning Engineers, Pakistan Chapter, American Society of Safety Professionals and Fire Protection Association of Pakistan

The Institution of Engineers Pakistan, came into existence in 1948 with the blessings of Father of the Nation, Quaid-e-Azam Mohammad Ali Jinnah. Ever since its inception, the institution has been endeavoring to keep pace with the ever expanding knowledge in the field of engineering and its dissemination amongst the engineers fraternity throughout the length and breadth of the Country. Over a period of time, the Institution has been instrumental in the promotion and advancement of science and practice of engineering and the acquisition and exchange of technical knowledge in the field of engineering.

I am confident that the 10th International Conference on Occupational Health Safety & Environment themed as “Life with Safety” will have far reaching impact in the field of science and engineering. I strongly believe that every advancement in technology today, will give way to a better successor. Being attended by engineers from all the provinces of Pakistan as well as foreign countries, it will provide an excellent opportunity to the participants to benefit from shared experiences and to find solutions to our current national problems.

I wish the Institution of Engineers Pakistan, NED University of Engineering & Technology and participants of the Conference all success.

# MESSAGE



**Syed Murad Ali Shah**  
Chief Minister Sindh



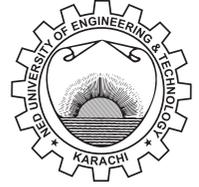
“ It is a matter of great pleasure to know that the Institution of Engineers Pakistan, Karachi Centre is holding the 10th International Conference on "Occupational Health, Safety & Environment (10th ICOHSE-2022) on 9th & 10th December, 2022 at Karachi in collaboration with NED University of Engineering and Technology (NEDUET) NED International Alumni Network Association- Pakistan, Federation of Engineering Institution of South and Central Asia (FEISCA), Federation of Engineering Institution of Islamic Countries (FIEEC), The American Society of Heating Refrigerating and Air-Conditioning Engineers (ASHRAE), Pakistan Chapter, American Society of Safety Professionals , Fire Protection Association of Pakistan, The Institution of Engineers Pakistan has been holding Conference, Congresses, and Technical Lecture etc. for the benefit of the Engineering Community.

It has also been striving hard to get maximum transfer of appropriate technology to Pakistan. It is an admitted fact that the progress and prosperity of Pakistan is linked to the creative genius and productive role of engineers who have contributed towards gigantic task of national development.

I personally congratulate the Institution of Engineers Pakistan for organizing such a conference. The knowledge transferred by this exercise will be helpful in reducing cost of production through improving health of the workers, increasing earning capacity, reducing absenteeism and improving profitability to the organization.

I wish the Institution of Engineers Pakistan all success in their endeavors.

# MESSAGE



**Engr. Prof. Dr. Sarosh H. Lodi**

Vice Chancellor

NED University of Engineering and Technology, Karachi

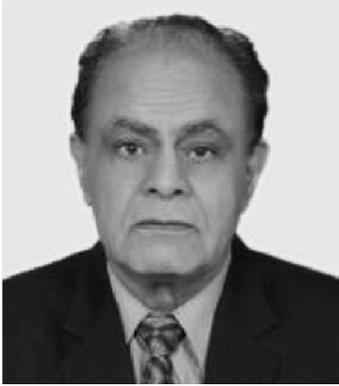
“ It gives me an immense pleasure to record my message on the occasion of the 10th International Conference on “Occupational Health, Safety and Environment “ being organized by The Institution of Engineers Pakistan, Karachi Centre, in collaboration with renowned institutions / organizations such NED University of Engineering & Technology, Karachi, NED International Alumni Network Association- Pakistan , Federation of Engineering Institutions of South and Central Asia (FEISCA), Federation of Engineering Institutions of Islamic Countries (FEIIC), American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Pakistan Chapter, American Society of Safety Professionals and Fire Protection Association of Pakistan

The Theme of the seminar “Life with Safety” is of great significance. The theme is aligned with the fact that profession has integrated technology for enhancing its efficiency and productivity. Every organization uses a variety of tools to achieve institutional goals, including business plans, strategic plans, and long-range development plans. The goals of an organization’s OHSE includes to identify hazards in the workplace and determine the risk associated with them, to design the facility and management program to reduce risks associated with the hazards, and most importantly, to communicate hazard identification, risk assessment, and appropriate safety measures to all employees. An OHSE integrates the efforts of management, administration, employees, and health care professionals in an active, evolving program that promotes a culture of safety in the workplace. This seminar provides platform to researchers, academics, engineers and experts to share their research in the field of Occupational Health Safety and Environment and explore possibilities for collaboration in various fields.

I am sure that 10th International Conference on Occupation Health, Safety and Environment will provide an excellent opportunity to the participants to benefit from the experiences of one another.

I congratulate Organizing Committee of the conference and wish them all the success.

# MESSAGE



## **Engr Dr Javed Yunas Uppal**

BSc Engg. Hons, PhD London, CEng, MICE, MASCE, FIE,  
President, Institution of Engineers Pakistan

“ It is matter of great pleasure that The Institution of Engineers Pakistan Karachi Centre (IEP) is holding 10th International Conference on “Occupational Health, Safety & Environment (10th-ICHSE-2022)” on Friday 9th & Saturday 10th December, 2022 at IEP Hotel Marriott, Karachi in collaboration with sister Engineering / Professional organizations and Universities.

The Institution of Engineers Pakistan is the premier body of Engineers in Pakistan and has made significant contributions through its Centers particularly IEP Karachi Centre for the development of the country. The role played by the IEP in dissemination of knowledge is highly commendable. Recent advancements in Science and Technology have placed enormous resources at our disposal which must be harnessed for the welfare of humanity. Pakistan possesses vast natural resources and it is the duty of our scientists and engineers to utilize these for the welfare of the society and eradication of disease, ignorance, poverty and hunger.

I am sure the 10th International Conference on “Occupational Health, Safety & Environment (10th-ICHSE-2022)” will provide an excellent opportunity to the participants to benefit from the experiences of renowned experts of the country and would also provide great opportunity for national and multinational companies engaged in manufacturing, construction, mining, petroleum exploration & refining, fertilizer production etc., to abreast themselves with the latest developments in OHSE through technical papers and case studies, interact with other stakeholders comprising of OHSE experts, professionals and policy makers including the federal and provincial government representatives, the academia as well as other representatives from the industry. Moreover, the OHSE Conference would provide huge opportunity for net working with the top professional experts in this field and also enhance the knowledge of participants.

I wish the Institution of Engineers Pakistan Karachi Centre and the organizing committee of the Conference all the success.



## **Engr. Sohail Bashir**

Chairman

Institution of Engineers Pakistan Karachi Centre



“ The Institution of Engineers Pakistan (IEP) is playing a vital role in the development of Pakistan since its inception in 1948 within the framework of its aims & objectives which revolve around the promotion of technology, advancement of the engineering practice, application of principles of science in engineering and dissemination of technical knowledge. Upholding its tradition continuously for the last many years, this year also the 10th International Conference on Occupational Health, Safety and Environment is being hosted jointly by the IEP Karachi Centre and NED University of Engineering & Technology, Karachi with more zeal and enthusiasm. The theme for this year seminar is “Life with Safety”.

The 10th International Conference on OHSE-2022 shall dwell on the latest development in the field of OHSE which would not only broaden the vision of participants but shall also lead them to update their knowledge to plan the way forward for effective implementation of OHSE in all spheres of life.

On behalf of The Institution of Engineers Pakistan, Karachi Centre and the Organizing Committee of 10th-ICOHSE-2022, I would like to express my sincere appreciation to all partner organizations, all the members of Advisory Board, Management Committee, Coordination Committee and Technical Review Committee who worked extremely hard for this event. Special thanks to the Conference Key Note Speakers of Inaugural and Closing Sessions, invited speakers from industry, authors and sponsors for strongly supporting the 10th-ICOHSE-2022. I also take this opportunity to pay my sincere gratitude to the Chief Guest and Guest of Honor of Inaugural & Closing sessions for sparing their valuable time for this event. My sincere gratitude is to Engr. Prof. Dr. Sarosh Hashmat Lodi, Vice-Chancellor NEDUET, Engr. Muhammad Tufail, Pro-Vice-Chancellor, NEDUET, Engr. Prof. Dr. Rizwan ul Haque Farooqui, Chairman, Department of Civil Engineering, NEDUET, Engr. Muhammad Abbas Sajid of ASHARE, Engr. Ayaz Mirza, Vice-President, IEP and Chief Organizer, 10th International Conference on OHSE-2022 and Engr. Muhammad Farooq Arbi, Secretary, IEP Karachi Center.

I would like to take this opportunity to place on record my sincere appreciation to Engr. S. Ali Ashraf Naqvi, Vice-President (Chemical & Allied), IEP, Engr. M. Aijazul Haque, Vice-Chairman (Mechanical), IEP Karachi Centre, Engr. Dr. Shagufta Ishteyaque, Chairperson, Chemical Engineering Department, Karachi University, Engr. Syed Jawaid Akhtar, MD, JAVTAQ International (Pvt) Limited, Mr. Tariq Moien, Director, FPAP, Engr. Beena Riaz, DGM Environment, KE, Dr. Saad Qazi, Dr. Abdul Jabbar Sangi, Dr. Shamsun Fareed, Engr. Ghulam Farooq Maniar, Engr. Abdul Rahim, Engr. Umar Mashkooor Makhdumi, Engr. Afaq Ali Siddiqui, Engr. Faiza Saeed and all the staff of IEP Karachi Center.

Finally, I would like to welcome all the participants and hope that they will find 10th ICOHSE-2022 not only useful in enhancing their technical knowledge but also to be a forum to meet many highly respected OHSE Experts under one roof for effective interaction in future.

# MESSAGE



**Engr. Asim Murtaza Khan**

President

NED International Alumni Network (NEDIAN) Association-Pakistan

“ It is a matter of great pride that The Institution of Engineers Pakistan, Karachi Centre, NED University of Engineering & Technology, and NED International Alumni Network Association Pakistan are jointly holding 10th International Conference on Occupational Health Safety and Environment on Friday 9th & Saturday 10th December, 2022 at Hotel Marriott, Karachi in collaboration with National International Institutions.

It gives me great satisfaction that renowned experts from within the country and from abroad shall be presenting their valuable papers during the conference. This event will provide opportunity to young engineers to benefit from the knowledge of experienced engineers in their relevant fields.

The Institution of Engineers Pakistan, Karachi Centre is working hard for dissemination of knowledge by holding National/International Engineering Conferences, Technical Seminars, Workshops and Lectures for the benefit of Engineering profession and development of the Country.

As President, NED International Alumni Network Association- Pakistan, I am confident the delegates, participants and corporate members attending the Conference, will be benefited by the presentations to be made by the experts from all over Pakistan and abroad, the participants will be able to improve their skills in their fields. It is hoped the participants attending this Conference will be able to apply their improved knowledge for better productivity in their practical life.

I pray for the success of the 10th International Conference on Occupational Health Safety and Environment.

# MESSAGE



**Engr. Amir Zamir Ahmed Khan**  
Secretary General  
The Institution of Engineers, Pakistan

“ It is matter of great pleasure that The Institution of Engineers, Pakistan Karachi Centre (IEP) is holding 10th International Conference on “Occupational Health, Safety & Environment (10th -ICOSE-2022)” on Friday 9th & Saturday 10th December. 2022 in collaboration with sister Engineering / Professional organizations and Universities.

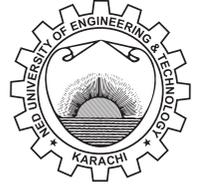
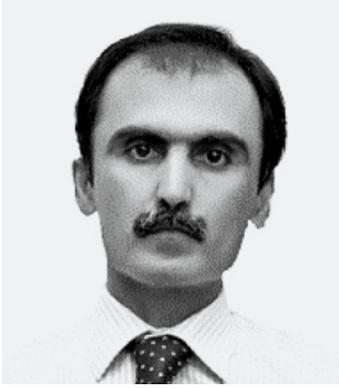
The Institution of Engineers Pakistan is the premier body of Engineers in Pakistan and has made significant contribution to the development of the country. The role played by the Institution in dissemination of knowledge is highly commendable. Recent advancements in Science and Technology have placed enormous resources at our disposal which must be harnessed for the welfare of humanity. Pakistan possesses vast natural resources and it is the duty of our scientists and engineers to utilize these for the welfare of the society and eradication of disease, ignorance, poverty and hunger.

I am confident that the 10th International on “Occupational Health, Safety & Environment (10th-ICHSE-2022)” would provide an excellent opportunity for national and multinational companies engaged in manufacturing, construction, mining, petroleum exploration & refining, fertilizer production etc., to abreast themselves with the latest developments in OHSE through technical papers and case studies, interact with other stakeholders comprising of OHSE experts, professionals and policy makers including the federal and provincial government representatives, the academia as well as other representatives from the industry. Moreover, the OHSE Conference would provide great opportunity for net working with the top professional experts in this field and also enhance the knowledge of participants as well.

I personally congratulate Chairman, Secretary, Chief Organizer, and Members Organizing Committee, IEP Karachi Local Center for organizing the conference in the light of aims and objectives of the Institution of Engineers, Pakistan.

I pray to Almighty Allah for the success this conference.

# MESSAGE



**Engr. Prof. Dr. Muhammad Tufail**

Pro Vice-Chancellor

NED University of Engineering & Technology, Karachi

“ It is indeed a pleasure to see the efforts of the NED University of Engineering and Technology and Institution of Engineers Pakistan (IEP) to provide opportunities to researchers from all over the world to showcase their research work and skills in the field of Occupational Health Safety and Environment.

The two days conference, 1COHSE-2022 its kind, aims to facilitate researchers and Health, Safety and Environmental engineers to pursue the advancements and trends in the field around the globe. This conference intends to host talks of internationally renowned speakers from industry, academics, and research Institutions.

Apart from getting knowledge about new research, the participants will also interact with other participating Institutions, which will establish collaboration between the Institutions within the Country and abroad.

Wishing the prosperity of the event, I congratulate the Organizing Committee of the 10th ICOHSE- 2022 for their commendable efforts in organizing this event and hope that it will continue as a legacy.



**Engr. Ayaz Mirza, FIE (PAK), PE**  
Vice-President, Institution of Engineers Pakistan &  
Chief Organizer 10th-ICOHSE-2022

“ As Chief Organizer of the 10th International Conference on Occupation Health, Safety and Environment, I feel honored to welcome you all. This is the first time that IEP has broadened the canvas from national to international level. Theme for this year is “Life with safety”

The National Seminar on Occupational Health Safety and Environment is a regular event of IEP. In previous nine National Seminars all important areas viz-a-viz HSE Policy, Program & Performance Evolution, HSE in Specific Industries, Risk Assessment & Risk Management, HSE in Small Industries and HSE General Matters have been covered. Much more efforts are needed to attain the goal of total safety culture in our industry and the civil society.

Occupational health deals with all aspects of health and safety in the workplace and has a strong focus on primary prevention of hazards. The health of the workers has several determinants, including risk factors at the workplace leading to cancers, accidents, musculoskeletal diseases, respiratory diseases, hearing loss, circulatory diseases, stress related disorders and communicable diseases and others.

10th ICOHSE-2022 will ensure that all participants develop the necessary knowledge and skills to effectively create, maintain and manage environment, safety and health programs. You will also acquire an in-depth understanding of the environment, safety and health practices including knowledge of the relevant legislation with respect to the environment, safety and health.

You will learn how to identify and manage risks and hazards, effectively participate in decision-making processes, and improve safety and health to prevent injuries and illness in the workplace. In addition, you will learn the necessary scientific and technical skills associated with analysis and the evaluation and interpretation of data.

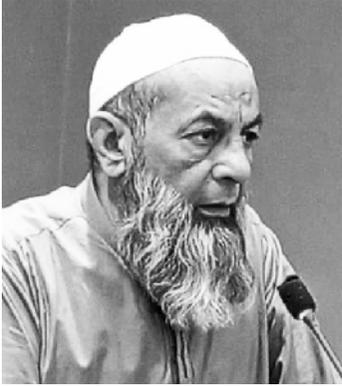
OHSE awareness should be started at school level to ensure that the future working population is well aware of the occupational hazards and their rights to a safe work environment.

There is an urgent need to have more professional institutes like the Institution of Engineers Pakistan that can impart the training to create a large pool of Occupational Health and Safety professionals. This can be achieved through corporate and governmental initiatives.

I also strongly feel that a regulatory framework, though necessary, can only act as a catalyst to the process of OHSE implementation. The main enabler will be the acceptance of all stakeholders to comply with the existing rules and regulations. Without this no number of regulations can help implement OHSE.

I would also like to thank all of you who have worked on putting this successful event together. I am confident that the delegates, participants, and corporate members attending the seminar, will be benefited by the presentations to be made by the experts from all over Pakistan, and the participants will be able to improve their skills in the field of Occupational Health, Safety and Environment. It is hoped the participants attending this programme will be able to apply their improved knowledge for better productivity in their industries.

I am grateful to all members of Advisory Board and Organization Committee specially Engr. Sohail Bashir, Chairman IEP Karachi Centre, Engr. Prof Dr. Sarosh Hashmat Lodi for their unconditional support for organizing this event. Special thanks to Engr. Ashraf Ali Naqvi Vice President (Chemical and Allied), Syed Javed Akhtar Engr. Tariq Moen, Secretary, FPAP, Engr. Dr. Shagufta Ishteyaque, Vice-Chairperson ( Chemical), IEP, Karachi Centre, Engr. M. Aijaz ul Haque, Vice-Chairman ( Mechanical), IEP, Karachi Centre, Engr. Ghulam Farooq Maniar, Member Central Council, IEP, Engr. Afaq Ali Siddiqui, Member Local Council, IEP, Karachi Centre, Engr. Abdul Rahim, Member Local Council, IEP, Karachi Centre, Umar Mashkooor Makhdumi, Member Local Council, IEP, Karachi Centre and Engr. Beena Riaz, DGM Environment, KE , Engr. Abbas Sajid and the staff of IEP Secretariat. Limited for their support to making this event happen. In the last I am grateful to the Almighty Allah SWT for the support and courage required to hold this event.



**Engr. M. Farooq Arbi**

Secretary

The Institution of Engineers Pakistan Karachi Centre

“ Since its inception in 1948, The Institution of Engineers, Pakistan (IEP), the prime national body of engineers has been endeavoring to keep pace with the ever evolving techniques and knowledge in the field of engineering, and its dissemination amongst the engineers. Realizing the importance of the topic, The International Conference on Occupational Health, Safety and Environment (IOHSE) has become a regular event at IEP Karachi Center along with International Conferences in Civil, Electrical and Mechanical Engineering. This is the 10th International Conference of the series with the theme “Life with Safety.” This 2-days conference will consist of a Panel Discussion, 3 Technical sessions covering Health & Safety Management Culture, Operational Safety and Environment.

As Secretary, IEP Karachi Centre, I am confident that the delegates, Participants and IEP Corporate members attending this conference will greatly benefit from the presentations to be made by the experts from all over Pakistan and will be able to improve their skills in the field of Occupational Health, Safety and Environment.

The Organizing Committee deserves great appreciation for their un-tiring efforts and I convey my warm greetings and felicitations to them and the participants and extend my best wishes for the success of this conference. In the end I will request all Engineers to become members of IEP, which will provide them an affable environment to freely exchange views and ideas with the researchers and academicians and play their role in the development of Pakistan more effectively.

# MESSAGE



**Engr. Muhammad Abbas Sajid**

Past-President

Chair of Mentorship Committee, ASHRAE-Pakistan Chapter

“ I am delighted to have the opportunity to share a few thoughts at the time of 10th International Conference on Occupational Health Safety & Environment (10th ICOHSE-2022). It is a great initiative taken by Institution of Engineers Pakistan (IEP) Karachi Centre and NED University of Engineering and Technology Karachi and NED International Alumni Network (NEDIAN) Association Pakistan, The American Society of Heating Refrigerating and Air-Conditioning Engineers (ASHRAE), Pakistan Chapter at Hotel Marriott, Karachi in collaboration with National International Institutions. The 10th edition of the conference itself is an indicator of the quality and credibility of the Conference Internationally.

This conference is great opportunity for engineering professionals to sit together and brainstorm ideas for solving regional and global issues. ICOHSE-2022 encompass wide spectrum of Health, Safety & Environment domain.

IEP and NED University deserves a great applause for bringing academia, industry experts, and other stakeholders from all over the world to address common challenges. I congratulate all office bearers, and organizers of the conference for organizing such a wonderful event and I wish them great success.



## The Institution of Engineers Pakistan

1948

The main goal of the Institution of Engineers, Pakistan is to Build Better World as appearing in its logo.

The aims and objectives of the Institution are:

- a. To Promote and advance the science, practice, and business of engineering in all its branches throughout Pakistan.
- b. To Promote efficiency in the engineering practice and profession.
- c. To Regulate the professional activities and assist in maintaining high standard in the general conduct of its members.
- d. To Lay down professional code of ethics and to make it mandatory for its members in their professional conduct.
- e. To Help in the acquisition and exchange of technical knowledge.
- f. To Promote the professional interest and social welfare of its members.
- g. To Encourage original research in engineering and conservation and economic utilization of the country's materials resources.
- h. To Foster coordination with similar institutions in other countries and Engineering Universities, Institutions and Colleges in Pakistan and in other countries for mutual benefits in furthering the objects of Institution.
- i) To diffuse among its members information on all matters affecting engineering and to encourage, assist and extend knowledge and information connected therewith by establishment and promotion of lectures, discussions or correspondence, by the holding of conferences, by the publication of papers, periodicals and journals, proceedings, reports, books, circulars and maps or other literary undertaking, by encouraging research work or by the formation of library or libraries and collection of models, designs, drawings, and other articles of interest in connection with engineering or otherwise howsoever.
- j) To promote the study of engineering with a view to disseminating the information obtained for facilitating the scientific and economic development of engineering in Pakistan.
- k) To establish, acquire, carry on, control or advise with regard to colleges or other educational establishments where students and apprentices may obtain a sound education and training in engineering on such terms as may be settled by the Institution.
- l) To encourage, regulate and elevate the technical and general knowledge of persons engaged in or about to engage in engineering or in any employment manual or otherwise in connection therewith and with a view thereto function as an Educational Institution and to provide for holding of coaching wherever possible and to test by examination or otherwise the competence of such persons and to institute and establish professor-ships, student-ships, scholar-ships, rewards and other benefactions and to grant certificates of competency whether under any Act of the Government of Pakistan or Local Government under the Bye-Laws of the Institution regulating the conduct and qualification of engineer or otherwise howsoever.
- m) To-operate with various Government agencies and industrial and commercial enterprises connected with engineering and advising them in matters concerning the profession and practice of engineering and promotion of technical education.
- n) To encourage inventions and investigate and make known their nature and merits.
- o) To arrange and promote the adoption of equitable forms of engineering contracts and other legal documents, to encourage settlement of disputes by arbitration and to act as and nominate arbitrators and to act as and nominate arbitrators and umpires on such terms as may be expedient.
- p) To promote just and honorable dealing and to suppress mal-practice in engineering
- q) To do all such other acts and things as are incidental or conducive to the above objects or any of them.

The Institution ever since its inception has been taking concerted efforts to upgrade the knowledge and technical know-how of its member engineers by undertaking various technical activities. IEP has, on number of occasions, conducted numerous studies on various technical problems, and has submitted its recommendations to the government.

## ADVISORY BOARD

**Engr. Sohail Bashir**  
Chairman, IEP, Karachi Centre

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# The Institution of Engineers Pakistan

INAUGURAL SESSION  
on Friday the 9th December, 2022 at 3:00 pm  
at Crystal Ballroom Hotel Marriott, Karachi

2:45 - 3:00	<b>Guests Arrival</b>	
3:00	<b>Guest to be seated</b>	
3:00 - 3:05	<b>Holy Quran-e-Pak</b>	
3:05 - 3:10	<b>National Anthem</b>	
3:10-3:15	Conference Briefing by <b>Engr. Ayaz Mirza</b> , Vice-President, IEP & Chief Organizer, ICOHSE-2022	
3:15 - 3:20	Welcome Address by <b>Engr. Sohail Bashir</b> , Chairman, IEP, Karachi Centre	
3:20 - 3:50	<b>Keynote Address by</b> "Construction Safety Human Aspects and Technology Interventions" by <b>Engr. Prof. Dr. Rizwanul Haq Farooqi</b> Chairman, Department of Civil Engineering, NEDUET, Karachi	
3:50 - 4:10	<b>Keynote Address by</b> "Stress & Resilience" by <b>Engr. Taimoor Khan</b> Head of CHSEQ & HSEQD K-Electric Limited	
4:10 - 4:30	<b>Keynote Address by</b> Challenges in Implementation of Building Code of Pakistan by <b>Mr. Tariq Moen</b> , Director, Fire Protection Association of Pakistan	
4:30 - 4:40	Asr Prayers	
4:40 - 4:45	Address by Chief Guest <b>Engr. Prof. Dr. Sarosh Hashmat Lodi</b> , Vice-Chancellor, NEDUET, Karachi	
4:45 - 4:55	Address by Guest of Honor	
4:55 - 5:10	Vote of Thanks by <b>Engr. M. Farooq Arbi</b> , Secretary, IEP, Karachi Centre	
5:10 - 5:20	Presentation of Mementos to Keynote Speakers & Guests	
5:20 - 5:30	Group Photo	
5:30 - 5:45	Networking & Break Maghrib Prayers	
5:45 - 6:45	Panel Discussion	
6:45 - 6:50	Presentation of Mementos to Panelists	
6:50 - 7:00	Group Photo	
7:00	Hi-Tea	
<b>TECHNICAL SESSIONS</b>		
Saturday the 10th December, 2022 at AV/Hall Department of Civil Engineering, NEDUET, Karachi		
9:00- 9:45 AM Networking & Breakfast	9:45 AM 11:25 AM Technical Session- 1 "Occupational Safety"	11: 25 AM 11:40 AM Tea Break
11:40 AM 1:20 PM Technical Session-2 "Occupational Environment"	1:20 PM - 2:10 PM Zohar Prayer / Lunch Break	2:00 PM - 3:45 PM Technical Session 3 "Occupational Health"
3:55 PM - 5:25 PM Closing Session		REFRESHMENTS

## CONFERENCE PROGRAM SCHEDULE FOR ORAL SESSION ICOHSE-2022

Venue: (A/V Hall), Department of Civil Engineering, NEDUET, Karachi

Saturday the 10<sup>th</sup> December, 2022

9:00 -9:45 am

### Networking & Breakfast

Technical Session-1

Saturday Day-2 December 10, 2022

Topic: Occupational Safety

Time	Paper ID	Title and Presenters
9:45 -10:05	OS/14	<b>“The Importance of Hazards Elimination along with Economic Justification”</b> by <b>Engr. Syed Asad Akhter Naqvi</b> , Lecturer , Department of Mech. Engineering, NEDUET, Karachi
10:05-10:25	OS/09	<b>“Health &amp; Safety For Construction Projects -KE”</b> by <b>Engr. Umar Mashkoor Makhdumi</b> , General Manager (Works), KE- Limited
10:25-10:45	OS/10	<b>“Rescue and Fire Fighting (RFF) in Aviation Industry”</b> by <b>Engr. Muhammad Arif Khan</b> , Secretary General & Former Joint Director, Fire & Safety, Civil Aviation Authority
10:45- 11:00	OS/12	<b>“Soft Skills for HSE Professionals”</b> by <b>Mr. Raja Muhammad Asim</b> , QHSE Consultant, Member Board of Directors Pakistan Institute of Management
11:00-11:20	OS/03	<b>“Safe Lifting and Transportation of Heavy Equipment”</b> by <b>Muhammad Saeed Malik (SFS)</b> , CEO Shaheen Freight Services
11:20-11:25		<b>Presentation of Mementos &amp; Certificates to Presenter</b>
11:25-11:40		<b>Tea Break</b>

Technical Session-2

Saturday Day-2 December 10, 2022

Topic: “Environment”

Time	Paper ID	Title and Presenters
11:40 -12:00	OE/01	<b>“Hazardous Waste Management in Kiran Hospital”</b> by <b>Dr. Muhammad Hanif</b> , Karachi Institute of Radiotherapy and Nuclear Medicine (KIRAN),Pakistan Atomic Energy Commission.
12:00-12:20	OE/13	<b>“Environmental and Social Management System (IFC PS1)”</b> by <b>Ms. Saman Laiq Abbasi</b> , CEO Strategic Management Services
12:20- 12:40	OE/04	<b>“Valorization of Agro-Food Waste”</b> by <b>Dr. Abeera Moin</b> , Assistant Prof. Department of Food Science and Tech, University of Karachi
12:40 -1:00	OE/05	<b>“Climate Change Impacts on Global Food Security”</b> by <b>Dr. Zubala Yasir Lutfi</b> , Assistant Professor Department of Food Science and Technology, University of Karachi
1:00-1:20	OE/22	<b>“Environmental Due Diligence”</b> by <b>Engr. Beena Riaz</b> , DGM Environment Corporate HSEQ, KE Limited
1:20- 1:25		<b>Presentation of Mementos &amp; Certificates to Presenter</b>
1:25-:2:10		<b>Zohar Prayer &amp; Lunch Break</b>

<b>Technical Session-3</b> <b>Saturday Day-2 December 10, 2022</b> <b>Topic: "Occupational Health"</b>		
<b>Time</b>	<b>Paper ID</b>	<b>Title and Presenters</b>
2:10-2:30	OH/02	<b>"Workshop Health Assurance and fitness to Work"</b> by <b>Dr. Mir Zafar Ali</b> , Occupational Health & Safety Consultant. Chairman National standards committee for Environment. Former General Manager Bureau Veritas Pakistan.
2:30-2:50	OH/011	<b>"Hospital Waste Management"</b> by <b>Mr. Kashif Iqbal Butt</b> Chairman Committee on ISO 14001, PSQQA, MoST"
2:50-3:10	OH/15	<b>"Shale Gas Exploration - Environmental Challenges in Pakistan's Perspective"</b> by <b>Engr. Syed Danish Ali</b> , Deputy Chief Engineer, Pakistan Petroleum Limited
3:10-3:30	OH/19	<b>"Multi Stakeholder approach toward Occupational Safety and Health"</b> by <b>Syed Zulfiqar Ali Shah</b> , Joint Director PILER
3:30-3:50	OH/18	<b>" Beyond First Aid"</b> by <b>Dr. Sarah Ahmed</b> , Assistant Manager, Medical Services, ZMT Primary Healthcare Network.P
3:50-3:55		<b>Presentation of Mementos &amp; Certificates to Presenter</b>
<b>3:55</b>		<b>Closing Session Saturday Day-2 December 10, 2022</b>

## KEYNOTE INAUGURAL SESSION

### CHALLENGES IN IMPLEMENTING BUILDING FIRE CODES

Tariq Moen, Director, FPAP

Fire incidents, fire deaths and property loss on ever increasing side in Pakistan. Root cause remain as non-provisioning of required fire protection arrangements in buildings and structures.

Initially requirements like Civil Defence Rules, Factories Act, Cinematographic Act, Local Government Rules, Insurance Rules etc. Generally, these things were adopted from British documents but were not updated with the passage of time. In a way these were quite outdated even after a lapse of more than half a century. As per initiative of Pakistan Engineering Council, funding for meetings by National Disaster Management Authority (NDMA), technical support by Fire Protection Association of Pakistan (FPAP) and active involvement of other stake holders, Building Code of Pakistan, Fire Safety Provisions -2016 were issued by Government of Pakistan. The next step was its implementation which turned into a challenge for following reasons:

1. Understanding level and capacity of professionals with government bodies
2. Seriousness of Implementation Bodies / Authority Having Jurisdiction (AHJs) in adopting the given provisions
3. Curriculums of Engineering and Management Universities
4. Syllabi of Government Training Institutions
5. Absence of Advisory Institutions / Organizations
6. Priorities of industry owners

Nevertheless, Fire Protection Association of Pakistan (FPAP) conducted awareness and educational sessions for professional. Latest of these is FPAP Certified Fire Protection Facilitator – Level 1 (CFPF-1) in collaboration with NED University. Requirements have been included in Sindh OSH Rules. International buyers of products from Pakistan have helped implementation by pursuing their vendors and a program by International Accord is in pipe line to bring a massive support for the textile sector.

Professionals, Industry and Government still need to be actively pursued towards capacity building and seriousness for saving life and property

## KEYNOTE CLOSING SESSION

### HSE IN MEGA MALLS

S. M. Asif Hussain Senior Manager HSE LuckyOne Mall

A shopping mall is a term for a large indoor shopping center, usually anchored by department stores. The term "mall" originally meant a pedestrian promenade with shops along with it. Usually, these buildings are considered as Assembly buildings & are prone to vulnerable hazards based on public approach, attitude & behavior.

#### Fire Protection System

- Fire Alarm & Detection System
- Automatic Sprinkler System
- Fire Hydrant System
- Fire Extinguisher
- Public Addressing System
- Gas Suppression System

#### Legal Requirements

- Approved Plan
- NOC & Training Plan
- Building Code
- Consent to Establish & Consent to Operate
- SEPA Approval
- Waste Transfer Procedure
- Relevant Licenses

#### Electrical Safety

- Transformers Safety
- Diesel Generator
- HT/LT Substations
- Server Rooms
- UPS & Battery Area/Rooms
- Thermography & Megger Tests

#### Anchor & Retail Stores

- Fire Protection System
- Electrical Safety
- Mall Safety Practices Followed
- Material Storage & Handling
- Emergency Preparedness
- Life Safety Awareness
- Ventilation & Illumination

**TECHNICAL SESSION - 1****TOPIC: OCCUPATIONAL SAFETY****THE IMPORTANCE OF HAZARD ELIMINATION ALONG WITH ECONOMIC JUSTIFICATION****Asad A. Naqvi****Department of Mechanical Engineering, NED University of Engineering and Technology, Karachi, Pakistan**

Hazard is any thing which can cause a damage or simply hazard is a potential to accident. In our daily life numerous hazards are always present which can cause severe damage to our routine tasks and can lead towards a major accident. So, it is very important to identify the hazards. If a hazard is properly identified then it can be eliminated and an accident can be avoided. Here, different types of hazards have been noted which are around us. Those hazards include Physical, Chemical, Biological, Radiation and Phycological hazard. The importance of the hazard awareness has been discussed also. These hazards can be eliminated and minimized by proper engineering and administrative approach. Further, the importance of hazard elimination has also been justified economically by considering a case study of local workshop.

**TECHNICAL SESSION - 1****TOPIC: OCCUPATIONAL SAFETY****HEALTH AND SAFETY FOR CONSTRUCTION PROJECTS AT KE****Umar M Makhdumi – General Manager Works, KE Limited**

The paper mainly consists of various planning and implementation initiatives which have been undertaken at construction/renovation/refurbishment projects at KE over the years. Indeed a paradigm shift has taken place with regard to implementation of safety standards, protocols etc. at worksites. A few industry statistics have shown that construction is among the most vulnerable and incident-prone industries of the world and therefore utmost care should be exercised while selecting and appointing contractors. Four (04) major root cause reasons for construction incidents all over the world have also been highlighted. A proper pre-qualification criterion has been initiated by KE through which proficient contractors have been selected who have scored highly on different safety parameters. These vendors have been graded and categorized on completed projects according to their safety related performance and have been rewarded accordingly. This criterion can serve as a benchmark for other organizations also for appointing contractors who are adept at following relevant safety standards. Then the importance of Field Safety Observations (FSO) and/or Management Safety Audit (MSA) will be emphasized which has really helped in improvement of safety standards at work sites. By virtue of this initiative, some important environmental deliverables have been achieved with regard to HSEQ e.g. Green Building Certification, insulated walls and roof, LED lights, day lights, efficient plumbing fixtures, re-use of rain water etc. Moreover, some site related safety initiatives have been mentioned with regard to proper barricading, movable electrical DBs, mixer machine safeguard etc. which have been really effective in reducing work related injuries, incidents etc. Lastly, main sensitive and critical areas have been mentioned where SOPs are being implemented with full vigor and determination.

**TECHNICAL SESSION - 1****TOPIC: OCCUPATIONAL SAFETY****RESCUE AND FIRE FIGHTING (RFF) IN AVIATION INDUSTRY****Engr. Muhammad Arif Khan, Secretary General & Former Joint Director,  
Fire & Safety, Civil Aviation Authority**

Aviation fire fighting / aircraft fire fighting whenever needed is a serious business. Aircrafts are high speed machines having hundreds of aviation fuel on board. Aircrafts fires as a result of crash or impact reaches to a lethal limits in a very short time. The passenger's lives are exposed to serious threat as aircraft wings are the fuel tanks, containing fuel and surrounds the passengers. To respond with utmost urgency and deploy equipment for rescue and fire fighting to a landing / taking off aircraft in trouble is a great challenge for aviation fire fighters as large quantities of fuel is involved. The aviation authorities and management have a great responsibility to arrange and provide best equipment, extinguishing media and training to fire fighters to meet the requirement of international standards for passenger's safety and to maintain the confidence of international community that our airports are safe.

**TECHNICAL SESSION - 1****TOPIC: OCCUPATIONAL SAFETY****SOFT SKILLS FOR ENGINEERS****Raja Muhammad Asim, Member Board of Director, Pakistan Institute of Management**

Soft skills are personal attributes that drive an engineer's interactions, increase job performance, and brighten their career prospects. Absence of soft skills and values leads to de-motivation, insubordination, unpredictable behavior, deception, conflicts, and dis-trust. Excellence in soft skills is achieved through training and focused application of these skills within work area. Soft skills will enable performers with a strong conceptual and practical framework to design, build, and lead through effective teamwork at workplaces. They play a pivotal role in the development of the engineer's overall personality, thereby enhancing their career prospects. For effective performance in the workplace, companies need their employees to have not only technical knowledge, analytical skills, but the skills to deal with the external world of clients, customers, vendors, the government, and public which allows them to work in a collaborative manner with their colleagues. Soft skills sanction the grooming of attitude & behavior and allows to transact into progressive believes & strong values. They are much less tangible than hard or technical skills. These skills cannot be learnt by enrolling in a training program. However, these can be acquired through education, training, work, and lifelong experiences.

## ENVIRONMENT AND SOCIAL MANAGEMENT SYSTEM ESMS (IFC PS1)

Saman Laiq Abbasi, CEO Strategic Management Services

Environmental and Social Management is becoming more and more important in today's global economy. There are thousands of environmental and social codes and standards in the world today, but the challenge is in the implementation. IFC's ESMS helps companies to integrate the rules and objectives into core business operations, through a set of clearly defined, repeatable processes. In order to promote adequate socio-environmental performance in the projects especially finance by lenders, it is required that borrowers must have an adequate ESMS that is consistent with the project's level of risk and impact, in accordance with the requirements established in the IFC's Performance Standard 1 (PS1). Out of 8 Performance Standard elements of IFC, ESMS refers PS1. Elements of ESMS are;

**Element #1 Policy** The cornerstone of ESMS is set of policies. Policies summarize the commitment that your company has made to managing environmental and social risks and impacts. They establish the expectations for conduct in all related aspects of the business.

**Element #2 Identification of Risks and Impacts** The primary objective of a risk assessment is to identify the potential negative environmental and social impacts so that you can develop the appropriate strategies to address them.

**Element #3 Management Programs** Management Programs are centered on Action Plans and improved procedures to avoid, minimize or compensate for the risks and impacts that were identified.

**Element #4 Organizational Capacity and Competency** A well-implemented ESMS is ultimately about trained, committed people.

**Element #5 Emergency Preparedness & Response** Requires a complete Emergency Preparedness Plan in place with regular engagement with local community and government for onsite and offsite emergency plan. Formal resource-sharing agreements with neighboring companies.

**Element #6 Stakeholder Engagement** It requires Systematic engagement with affected communities in the identification and management of the impacts that negatively affect them contributes to building trust, credibility and local support. Engaging with them also provides the opportunity to highlight the positive aspects of the company's presence. This lowers the risk of anti-company sentiments that could lead to costly litigation or disruption of company operations.

**Element #7 External Communication & Grievance** If the company has social and environmental impacts in the community, inquiries, concerns and complaints are bound to arise. How the respond to their concerns and manage these issues will have significant implications for how the business is perceived. There must a documented grievance mechanism & an effective system of external communication for all stakeholders

**Element #8 Ongoing Reporting to Affected Communities** Affected communities always want to know what actions companies are taking to resolve their related issues identified when engaging with them. Keeping them well informed is essential for building and maintaining a good relationship. It builds trust and strengthen relationship

**Element #9 Monitoring & Review** Under this element the company requires to monitor the effectiveness of their ESMS and the action plans and make the necessary adjustments where required. It can be done through Inspections, audits, document review, physical visits, interviews.

Environmental and Social Management System (ESMS) can have direct business benefits. Conserving and using energy and materials more efficiently helps to reduce production costs. Reducing waste and discharges & recycling can minimize costs of waste disposal, which have been steadily increasing over time. The same tangible benefits can be realized on the social side.

## VALORIZATION OF AGRO-FOOD WASTE

Dr. Abeera Moin

Assistant Professor, Department of Food Science and Technology, University of Karachi

Food waste and loss is directly linked to food security, nutrition and environmental sustainability. Approximately, 30% of the food globally produced is lost or wasted. The UN 2030 sustainable development goals; zero hunger (goal 1), good health and wellbeing (goal 3), clean water and sanitation (goal 6), affordable and clean energy (goal 7), responsible consumption and production (goal 12) and climate action (goal 13) are associated with food waste, loss and its valorization. The wastage of food involves massive environmental stress in terms of green house gas emission and consumption of natural resources (water, fossil fuel and land). On the contrary, according to UN Department of Economic and Social Affairs one in three people lack access to adequate food. Reduction and effective utilization of agro-food waste is urgently needed globally, for improving sustainability of food systems from an ethical, socio-economic, environmental and human health point of view. The recovery and restoration of nutrients from agro-food waste to value added food products, animal feed, bio fuels and fertilizers would minimize the stress on natural resources. It will also contribute to the reduction of quantity of waste deposited in landfills. In Pakistan and other developing countries post harvest losses are higher as compared to developed countries. Agro-food waste evaluation and management should be taken into consideration by regulatory bodies on priority basis. Interventions along with the food supply chains, awareness campaigns, incentives and subsidies should be employed to educate and include mass population.

TECHNICAL SESSION - 2

TOPIC: ENVIRONMENT

## CLIMATE CHANGE IMPACTS ON GLOBAL FOOD SECURITY

Dr. Zubala Yasir Lutfi

Assistant Professor, Deptt. of Food Science and Technology, University of Karachi

Climate change is directly linked with food insecurity. Acid rains, drought, soil erosion, extreme temperatures, disturbed monsoon cycles are major indicators of climate change. These extreme weather events have worsened the risks of hunger and under-nutrition worldwide. All aspects of food supply chain from food production, its access, utilization and nutritional values are critically affected globally. Climate-related disasters have the potential to destroy crops, critical infrastructure, and key community assets therefore deteriorating livelihoods and exacerbating poverty.

TECHNICAL SESSION - 2

TOPIC: ENVIRONMENT

## ENVIRONMENTAL & SOCIAL DUE DILIGENCE (ESDD)

Beena Riaz

DGM, Corporate, HSEQ, KE Limited

The unproportionate distribution of resources and frequent natural disasters due to climate change causing human tragedies and huge economic losses has put environmental sustainability and social responsibility on the global front. International finance institutions (FI) are investing in projects that are free from uncertainties, and work with clients that are able to identify and manage their inherent non-financial risks. These include actual or potential threats to the environment and living organism due to effluents, emissions, wastes, chemical releases, resource depletion, and consideration of social issues such as underprivileged groups, labor practices, protection of indigenous populations, and preservation of cultural heritage throughout the project life.

Environmental & Social due diligence (ESDD) supports institutions in monitoring and control of their E&S risks, improvement plans and risk covenants in financing contracts. It involves systematic identification, quantification and evaluation of such risks using eight performance standards on E&S sustainability - designed to avoid, mitigate, and manage risks as a way of doing business in a more sustainable way by ensuring stakeholder engagement and disclosure obligations. The process begins as early as possible, covers the screening process through checklists and inspection of compliance record, and is appropriate to the nature and scale of the project and proportionate to the level of E&S risks and impacts, with due regard to the mitigation hierarchy.

TECHNICAL SESSION - 3

TOPIC: OCCUPATIONAL HEALTH

## WORKPLACE HEALTH ASSURANCE & FITNESS TO WORK

Dr. Mir Zafar Ali

MD, MSc (Env), PgD, MSc OCC-Health and Safety Wales UK  
Chairman  
National Environmental Standards PSQCA

Founder ECO-Pakistan  
CEO-IOHSSG Industrial Occupational Health and Safety Services Group  
Former General Manager Bureau Veritas Pakistan

Maintaining a healthier workforce can lower direct costs such as insurance premiums and worker's compensation claims. It will also have a positive impact on indirect costs, such as absenteeism and worker productivity. Employers must consider workers "Fitness to work" for specific work, conduct periodic or routine health checkups, consider special conditions for working and environment for their workers and must ensure their safety. Especially hazardous conditions like during confined space, working in Fumes, extreme conditions and dust environments etc.

Occupational Health professionals can assist employers to identify work-related sickness and prevent work related diseases. It is the duty of employers to comply with local and national legislations for Occupational safety and health. They must consider the nature and progression of the work environment and other conditions to provide appropriate engineering control to remove hazards from their workplace. It's their duty to provide necessary change job as per fitness of the individuals as well ensure exposure durations and limits (Permissible Exposure Limits (PEL), Time-weighted average (TWA) exposure limit - the maximum average concentration of certain chemical in air for a normal 8-hour work to manage fitness to work.

TECHNICAL SESSION - 3

TOPIC: OCCUPATIONAL HEALTH

## HOSPITAL WASTE MANAGEMENT

Kashif Iqbal Butt

Chairman, Committee o ISO 14001, PSQSA, MoSt

The impact of hospital waste incineration on environment and human health is prime subject for research since decade. The health impacts by pollutant and compounds (Polychlorinated dibenzo-p-dioxins (PCDD) and polychlorinated dibenzo-furans (PCDF)) emitted by the incineration facility are well documented and evident. The toxicology of PCDD/Fs is strongly correlated among incineration flue gases, fly ash with specific carcinogenic and non-cancer health outcomes. The review paper will cover the PCDD/Fs toxicological impacts, formation mechanism and treatment methods.

TECHNICAL SESSION - 3

TOPIC: OCCUPATIONAL HEALTH

## SHALE GAS EXPLORATION - ENVIRONMENTAL CHALLENGES IN PAKISTAN'S PERSPECTIVE

Engr. Syed Danish Ali  
Deputy Chief Engineer, PPL

In an increasing energy demand scenario in Pakistan, shale gas exploration is one of the latest avenues that the country is looking forward to for developing the local unconventional resource. Besides technological challenges in its development, there are environmental aspects associated with shale gas which incites concern of general public & regulatory authorities. Major concerns being related to water and hydrosphere management in Pakistan specific scenario. **METHODS, PROCEDURES, PROCESS** Due to the shale gas exploration, one of the major areas to focus is related to water management and induced seismicity. As water in abundance is used to perform hydraulic fracturing, efficient and effective use of water becomes a must area to focus on. Some issues that are faced during the operations are related to water sourcing, ground and surface water protection and a proper waste water disposal. The other point of consideration is the induced seismicity, as in some cases deploying hydraulic fractures in near faults with high slip tendency can generate minor earthquakes on surface. To develop way forward catering these challenges, following methods are adopted while writing this paper:

- Consultation held with exploration geologists, geophysicists & drilling engineers.
- Experience of interaction with local regulators during public hearings on environmental matters pertaining to oil & gas exploration.
- Review of international guidelines.

**RESULTS, OBSERVATION, CONCLUSION** Using several techniques the problems related to water management can be taken into account for safe operations. One of the essential factor to be taken care of is to prepare an optimized fracture fluid with chemistry such that it is not having a negative impact on environment, along with the fact that the efficiency of fracture operation is not affected. In this case, substitution of potable water with brackish water can be one of the best options. Maximum opportunities must be created in order to collect water from sources that does not directly affect the environment, such as collection of storm water at well pads. During the decision of placement of wells where hydraulic fractures have to be deployed, near-by faults especially with high slip tendency must be considered. If technically possible, the fracture placement must be altered in order to minimize the possibility of seismic-induced earthquakes. For this purpose small pre-fracture injection tests with micro seismic monitoring can be performed in order to have clear directions of the impact of subsequent operations to be performed.

### NOVEL / ADDITIVE INFORMATION

This paper will provide insight on:

- Myths Vs Reality
- Specific Reference to Environmental Laws in Pakistan
- Development of Environmental Laws & Regulations.
- Adopting Guidelines e.g. IOGP by E&P Companies.
- Research & Development.
- PPL's Experience
- Learning from Experiences in other countries.
- Capacity Building of Environmental Consultants.
- Public Awareness through Media, Academia & EPAs.

TECHNICAL SESSION - 3

TOPIC: OCCUPATIONAL HEALTH

## MULTI-STAKEHOLDER APPROACH TOWARD OCCUPATIONAL SAFETY AND HEALTH

Mr. Zulfiqar Shah,  
Labour Rights Expert and Member of the Sindh Human Rights Commission and  
Sindh Occupational Safety and Health Council Contact: Zulfiqarshah@yahoo.com

Given the renewed focus on OSH in recent years particularly with reference to big industrial accidents in Bangladesh and Pakistan which killed hundreds of workers, there is a need to adopt a multi-stakeholder approach to address this issue. There are several initiatives that look at OSH beyond traditional employer-employee concern and underscore the need to have a holistic approach engaging various actors both with technical expertise and political will to fix the problem. This also comes with a positive business response to compliance in the backdrop of consumer pressure and also in response to initiatives such as Business and Human Rights.

TECHNICAL SESSION - 3

TOPIC: OCCUPATIONAL HEALTH

## BEYOND FIRST AID

Dr Sarah Ahmed  
Assistant Manager, Medical Services ZMT Primary Healthcare Network

Workforce of Industrial and Commercial undertakings is exposed to various situations where they are susceptible to meet the accidents and incidents. To meet such a situation, responsible organizations organise first aid teams and arrange training them. Nevertheless, at the occasions when medical aid is at a distance and injury or sudden illness require enhanced level of attention, some thing beyond first aid is considered essential. Facilities like oil fields in far flung areas or special projects in isolated areas warrant to make arrangements which may include availability of doctors, paramedics, mutual cooperation and support agreements with nearby facilities, fully equipped ambulances, air ambulances and medical supplies. A thorough emergency response plan considering the expected risk and ensuring the requisite measures is the answer to the situation where we need something beyond first aid.



# The Institution of Engineers Pakistan

## CLOSING SESSION

on Saturday the 10th December, 2022 at 3:45 pm  
at Audio Video Hall, Department of Civil Engineering  
NED University of Engineering & Technology

3:45	<b>Guest to be seated</b>
3:45 - 3:50	<b>Holy Quran-e-Pak</b>
3:50 - 3:55	<b>National Anthem</b>
3:55 - 4:00	Address by <b>Engr. Sohail Bashir</b> , Chairman, IEP, Karachi Centre
4:00 - 4:20	Keynote Address by (online) <b>Mr. Mitchell Sawann</b> Board of Director, Philadelphia Energy Authority
4:20 - 4:40	<b>"HSE in Mega Malls"</b> by <b>Mr. S. M Asif Hussain</b> Sr. Manager HSE LuckyOne Mall, Karachi
4:40 - 4:45	Address by <b>Engr. Prof. Dr. Sarosh Hashmat Lodi</b> Vice-Chancellor, NEDUET, Karachi
4:45 - 4:50	Asr Prayers
4:50 - 4:55	Address by Guest of Honor
4:55 - 5:00	Address by Chief Guest <b>Engr. Prof. Dr. Muhammad Tufail</b> Pro-Vice Chancellor, NEDUET
5:00 - 5:05	Conference Recommendations by <b>Engr. Syed Ali Ashraf Naqvi</b> , Vice-President (Chemical), IEP & Member of Organizing Committee
5:05 - 5:10	Closing Remarks by <b>Engr. Ayaz Mirza</b> , Vice-President (Mech.), IEP & Chief Organizer, 10th ICOHSE-2022
5:10 - 5:15	Vote of Thanks by <b>Engr. M. Farooq Arbi</b> Secretary, IEP, Karachi Centre
5:15 - 5:20	Presentation of Mementos
5:20 - 5:25	Group Photo
5:25	Tea

## Papers Presented in the 9th National Seminar on Occupational Health Safety & Environment held on 29th & 30th November, 2022

### **KE's Safety Culture Transformation**

#### **- A True Story**

-by Ms. Saman Laiq Abbasi, General Manager  
Generation HSE, K Electric Limited  
Safety Powering Innovation  
Mr. Muhammad Ali Shaikh, Secretary, Oil  
Company Advisory Council

### **How Technology is Helping to Improve Safety**

- Engr. Ghulam Mujtaba Shaikh , Regional  
Director AI Engineers

### **Implementation Challenges – Building Codes-Fire Safety Provisions**

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

### **The Need of Electrical Safety Legislation (Voice of Pakistan)**

-Engr. Tahir Saleem, United Engineering  
Services

### **Emergency Planning and Resources**

-by Ms. Zulekha Soorma, CEO, Atlanta Inc

### **Effluent Treatment Plant for Textile Industries in Karachi**

-by Ms. Ramsha Nowal Alvi, Orient Water  
Technologies

### **Operating Hazards of Boiler in Context of Human Safety**

-by Engr. Tariq Jamal

### **NORMS ( Naturally Occurring Radio Active Materials) & its Implications**

-Mr. Syed Jawaid Akhter, Former Manager, HSE,  
ENI Pakistan

### **Sustainable Effluent Treatment Uniquely Desinged Towards Zero Liquid Discharge**

-by Mr. Qazi Nadeemuddin, Site Manager Head  
of Operations, Archoma Pvt Limited

### **Occupational Health Safety & Environment in Mining**

-by Engr. Muhammad Yousuf, Secretary General  
Institute of Mining Engineers Pakistan

### **Management of Asbestos Containing Materials**

-by Mr. M. Islahuddin, Manager Chemical  
Section, Hub Power Station HPSL-HUMCO

### **MultiTex RCT**

-by Mr. Abdul Rehman Iqbal, The Agha Khan  
Univeristy

## Poster Presentations

### **Hazard & Operability Study of Condensate Oil Refinery**

by Ms. Hira Arif, Muhammd Hamza, Zaman Asif  
Raja & Dr. Engr. Shaguffa Ishtyque, Department  
of Chemical Engg, Dawood University of  
Engineering.

### **Hydrophobic Recovery of Biaxially orientated Polypropylene (BOPP) Films by Cornea Discharge Treatment using special additives"**

-Mr. Sabina Israr . Zahool ul Hassan, NEDUT,  
Department of Chemical Engineering , NED  
Department of Chemistry, University of Karachi

### **Risk Assessment of the Residence, Living near industrial. Vicinity( A survey Based study)**

Mr. Muqaddas Usman, Hiba Asif, Suraiya  
Jabeen,

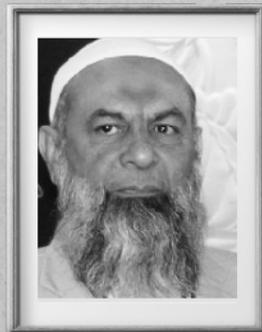
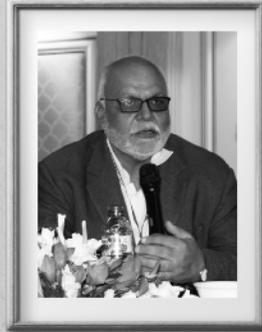
### **Surface Modification of Biaxially Oriented Polypropylene Films by Corona Discharge Treatment**

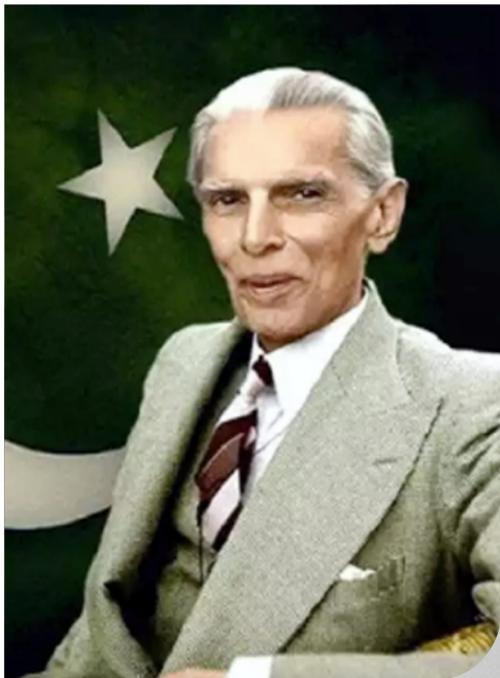
-by Ms. Sobina Israr

# Glimpses

## 9<sup>TH</sup> NATIONAL SEMINAR ON OCCUPATIONAL HEALTH SAFETY & ENVIRONMENT

29th & 30th November, 2019





## FATHER OF THE NATION

Quaid-e-Azam Muhammad Ali Jinnah

Message on the occasion of  
Foundation Stone Laying Ceremony of the  
Institute of Engineers Pakistan, Headquarters  
at Dacca on 30th May, 1948

*"If Pakistan is to take its proper place among the progressive nations of the world, it will have to take up a good deal of leeway in the realm of scientific and technical education which is so necessary for the proper development of the country and the utilization of its resources. The establishment of institution like the Institute of Engineers will greatly stimulate technical research and help in disseminating available information.*

*The Institute of Engineers will not only benefit the engineers themselves by improving their technical knowledge but also bring lasting benefits to public services which they are called upon to perform.*

*I wish the Institute every success"*

1948