OHS NEWSLETTER

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TODAY IS NCOLY TOMORROW

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College of Earth and Environmental Sciences
University of the Punjab, Lahore.

REWARD FOR WORKING SAFETODAY

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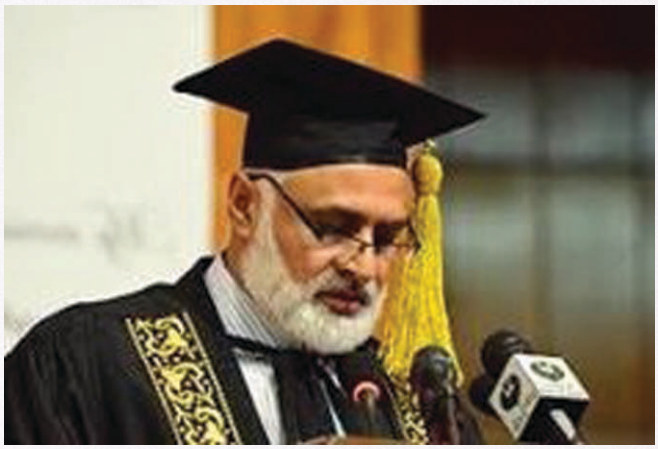

Niaz Ahmad Akhtar
Vice-chancellor
University of the Punjab

"I am very pleased with the efforts of the College of Earth and Environmental Sciences, University of the Punjab in launching the M. Phil degree program in Occupational Health and Safety, first in Pakistan, at University of the Punjab.

The publication of "OHS Newsletter" by CEES OHS students is a positive contribution to the society to highlight the crucial OHS issues such as, occupational diseases, ergonomic hazards and worker's injuries in the industrial and government sector. This effort will create awareness among workers and the community about such issues.

No one can deny the fact that workers injuries and occupational diseases in various industrial sectors are taking heavy toll, not only of workers but also of their families, as well as industrial productivity. The industrial growth is also causing the worst effect on humans and environment in the adjacent areas of various industries due to dumping of their waste products directly in to environment, which is directly affecting health of people and degradation of local environment. This effort of CEES will highlight health and safety issues and environmental health effects and will create awareness and suggest possible remedies to address them. In addition, the CEES faculty and students will be involved in research and training in partnership with various stake holders to create awareness for the protection of workers and environment."

Dr. Sajid Rashid Ahmad
Principal CEES
University of the Punjab

"I am very pleased with the efforts of the Occupational Health and Safety faculty and students at the College of Earth and Environmental Sciences, University of the Punjab in launching the "OHS Newsletter" to highlight the important issues faced by workers and public such as, heat related sickness and preventive measures, occupational health and safety problems faced by welders, and proper use of personal protective equipment during various tasks.

Recently, the Punjab government has taken initiative on this front by passing the Occupational Safety and Health Act 2019, which covers all those areas which were neglected in the British era OSH Act of 1934.To realize the need for well-educated and trained occupational health and safety professionals, CEES has launched a two year M. Phil degree in Occupational Health and Safety, first in the nation, to produce well educated technical professionals in this discipline for the public and private sector as well as to create a liaison between academia and industry and to highlight the importance of such issues and suggest possible remedies to address them."

OCCUPATIONAL HEALTH AND SAFETY PROGRAM
COLLEGE OF EARTH AND ENVIRONMENTAL SCIENCES

Dr. Muhammad Akram

Mr. Azhar Ali

The Occupational safety and health (OSH), commonly called as health, safety, and environment (HSE) or workplace health and safety (WHS), is a multidisciplinary program concerned with the safety, health, and welfare of people at work and beyond. People trained in this discipline are qualified in evaluating, identifying, and controlling chemical, biological, and physical hazards, which affects health, safety, and productivity of workforce. The College of Earth and Environmental Sciences (CEES), University of the Punjab, has initiated such a multidisciplinary program suitable for people with different educational background and experience. Various programs offered at CEES are:

M. PHIL IN OHS:

It is a multidisciplinary two-year degree program incorporate many areas of health, safety and environment, such as industrial hygiene, occupational health and safety, ergonomics, fire safety and emergency preparedness, noise and hearing conservation, hazardous waste management, construction, oil & gas, etc. It is intended to prepare students in many aspects of HSE to serve in the public and private sector. The program will operate within an international OHS frame work of education and research.

POST GRADUATE DIPLOMA (PGD) IN OHS:

This one-year program will provide in depth knowledge to prepare students to become competent and demonstrate skillfulness in various occupational health and safety disciplines, such as health, safety and environment, industrial hygiene and safety management, chemical hazards, fire safety and emergency preparedness, regulations, noise and hearing conservation, personal protection equipment (PPE), etc. This will provide essential, broad-based education in HSE to prepare academically sound graduates for entry-level and advanced positions in the HSE profession.

CERTIFICATE IN OHS AS SAFETY PRACTIONER:

The Certificate in OHS will provide basic knowledge in various health and safety areas to prepare students who either are employees in small scale public or private enterprises or wants to add on responsibilities in HSE at their work site. The program consists of four Modules, one month each, which can be taken individually or completed in 4 months, covering areas described under PGD. The classes will be held mostly in evenings or weekends to accommodate people working during the day.

CONTINUING EDUCATION COURSES IN OHS:

To facilitate learning in occupational health, safety and environment discipline for people who have HSE education or work in this discipline but wants to enhance their knowledge in a certain specific area, such as confined space entry & permit requirements, electrical safety, lock-out/tag-out, respiratory protection, food safety, ladder safety, welding safety, housekeeping, chemical safety, biosafety, waste management, First Aid & CPR, fire safety, ergonomics, regulatory compliance and standards, etc.

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The Importance of Occupational health and Safety

Zulqarnain Mukhtar Mahmood
M.Phil-OHS Student

Mazhar Sultan
M.Phil-OHS Student

Occupational Health and Safety (OHS), also called workplace health and safety (WHS), health, safety & environment (HSE), is a diversified field which deals with health, safety, welfare and productivity of people at workplace. The main objective of OHS is to ensure safe and healthy work environment for workers, contractors and visitors and to protect our environment.

The OHS professionals are well educated in multiple disciplines, like occupational health, chemical exposure assessment, safety, ergonomics, fire safety and emergency preparedness, noise and hearing conservation, waste management, regulations, etc. By using different techniques and procedures for identification of potential hazards, evaluation of associated possible risks at workplace, they recommend adequate control measures to prevent injuries and work-related diseases of employees.

Recently, Punjab government has promulgated an occupational safety and health law 2019 (POSH 2019), replacing the old British OSH Act of 1934. The new law is more comprehensive and have strict enforcement requirements by employers. To meet this challenge the College of Earth and Environmental Science (CEES), University of the Punjab, Lahore, has started a new two-year M. Phil degree program which teach various courses necessary for this discipline. The first class of this program will be graduating soon.

It is obvious that workers in every industrial sector has various types of health and safety issues. The most common OHS hazards range from unplanned physical damages like cuts and bruises, to serious diseases like silicosis in marble and brick kilns industry to pneumoconiosis in coal mine workforce. The instantaneous hazards such as explosions, fires, chemical and biological spills, etc., has the potential for an immediate danger not only to workers but also to the adjacent community and the environment. Other hazards like ergonomics, material handling, psychological stresses as well as general welfare of employees working in an organization are also of serious concerns.

Well-designed and maintained occupational OHS program in an organization saves money in both ways; direct and indirect. The immeasurable direct cost due to health and safety failure can be either personal injury forcing an employee quite work and adapt a new way of life or a direct cost of payments in case of fatal incident resulting in tremendous economic loss for the company, which could directly impact the company's reputation and business. Many such companies not only lose a well-trained worker s but also fail to attract foreign business due to lack of adequate HSE plan.

In short, health and safety must be the top priority for every organization. It is a well-known fact that a healthy worker is 2.5 times more productive worker than other workers. Therefore, the future of each organization depends upon the productivity of its workers and so is the future of Pakistan,-

HEAT EXPOSURE AND PREVENTIVE ACTIONS

INTRODUCTION

Human body has a natural internal temperature of approximately 370c, and body maintain this internal temperature through sweating when it increases from 370c. When body fails to maintain this temperature, then the risk of heat related diseases are maximum. If warning signals are ignored the consequences can be very serious,

- Kidney damage
- Brain damage
- Death

Ali Arshad & Maaz Arif
M.Phil-OHS, Students

COMMON MENIFESTATION OF HEAT EXPOSURE AND PRECAUTIONARY MEASURES

Heat-related Illnesses	Possible symptoms	Who is at risk	First aid treatment	Preventive measures
Heat stroke	Headache Dizziness Light headedness Lack of sweating Red hot and dry skin muscle weakness Nausea and vomiting Rapid Heartbeat Rapid breathing unconsciousness	New born babies Elderly associated with heart diseases, and kidney diseases. Athletes. Those who work in outside environment. People over 50 years.	Call 1122 right away heat stroke is a medical emergency. Give patient a bath of cold water. use wet cloth to be immersed in cold water and apply it on body to lower body temperature.	Wear loose fitting, light weight clothing. Drink plenty of water. Never leave anyone in parked car. Avoid doing work in hot weather. Take extra precautions if you are medicated.
Heat exhaustion	Confusion Dark coloured Urine Dizziness Fainting Tiredness Headache Muscle cramp Nausea and vomiting Pale Skin Sweating excretion Rapid heartbeat	New born babies. Children Younger than 4. Adults older than 65 years. Fat people. Sudden changes in temperature. People using drugs like cocaine.	Move the person out of heat. Lay down the person and elevate the legs and feet slightly. Remove tight or heavy clothing. Give cold water to person for drinking. Cool the person by spraying cold water. Call emergency service if severe symptoms.	Wear loose fitting and light weight clothing. Drink plenty of water. Never leave someone in parked car. Avoid doing work during hottest part of the day. Be cautious if you are at increased risk.
Heat cramp	Cool, moist skin. Heavy sweating. Faintness. Dizziness. Fatigue. Weak, rapid pulse. Low blood pressure upon standing. Muscle cramps.	Infants, children, and elderly. Alcoholic person. Working in a hot environment. People Using certiain medicines. Drug abuse.	Rest briefly & cool down. Drink electrolyte containing juices. Massage affected muscle. Call doctor if cramp exist for 1 hour.	Heat cramp occurs in first few days during working in hot weather. make sure drink plenty of water to avoid heat cramp during these days.
Sunburn	Red skin Blisters Flu Feverish Nausea Headache itching and peeling skin in extreme cases. Low blood pressure Fainting Extreme weakness	You are at risk if you have: Pale, white or light brown skin. Red or fair hair. many moles. Skin problems. Exposed to intense sun occasionally. Live in a hot country. Family history of skin cancer. People who spend a lot of time in sun.	You are at risk if you have: pale, white or light brown skin. Red or fair hair. many moles. Skin problems. Exposed to intense sun occasionally. Live in a hot country. Family history of skin cancer. People who spend a lot of time in sun.	Try to stay indoor between 10 am and 4 pm. Wear right cloths. Apply sunscreen 30 minutes before going outside. Wear a wide brimmed hat. Protect eyes with sun glass.
Heat rash	Pink pimples Itchy rashes Skin burning Tingling (feeling like something is crawling on skin).	New born babies Children under age 4 Athletes Overweight persons Military troops	Wash the affected area Rinse the area with water and dry it with towel use calamine, hydrocortisone cream, and sunburn lotion on itching and burning symptoms.	Remain in a cool environment. Take cool shower. Rest in an air conditioned room. Avoid skin to skin contact. Wear loose cloths Drink plenty of Water.

Process Safety Management

Ibrahim Arif
Student M.Phil-OHS

At any workplace the potential for serious incidents (which may result in asset damage, property loss, fire, explosion or serious injuries including the fatalities, citations and reputation damage) always exists. In case of Chemical industry including the Oil & Gas exploration, Refining, Storage, and Transportation, the potential for such incidents is very large and is evident from the statistics available for various incidents which took place since 1980. Any fire or explosion incident in process industry not only results in on site damages but it also results in offsite injuries, public property loss, and consequences which may require evacuation of general public too. Industrial incidents involving release of toxic vapors, sustained fire of chemicals and/or explosions at industrial sites had resulted in very serious consequences both on site and off site, such incidents are different from safety incidents and are termed as Process Safety Management (PSM) incident.

Can we categorise all industrial incidents as PSM incident? The Center for Chemical Process Safety (CCPS) provides guidance as to what constitutes a PSM event i.e. “It must involve a chemical or have chemical process involvement; It must be above a minimum reporting threshold; It must occur at a process location; and the release must be acute, i.e., it must occur over a short period of time. Given that the principles of process safety are also used offshore, the word “chemical” in the above definition should be understood to include flammable and explosive materials

Preventing fire and explosion incidents in Chemical Industry requires a sustained and disciplined approach by leadership of the organisation. OSHA CFR 1910.119 with a focus on “Preventing or minimizing the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals, these releases may result in toxic, fire or explosion hazards” has identified 14 elements as focus area to ensure process safety management. These 14 elements address all steps of PDCA Cycle i.e. Plan, Do, Check, Act, which is a basic tool to drive continual improvement in any process. Process Safety Management (PSM) is “the application of management principles and systems to the identification, understanding, and control of process hazards to protect employees, facility assets and the environment”.

PROCESS SAFETY MANAGEMENT

14 ELEMENTS OF PSM [1]	Performance indicators [2]
1. Employee Participation 2. Process Safety Information 3. Process Hazards Analysis 4. Operating Procedures 5. Training 6. Contractors 7. Pre-startup Safety Review 8. Mechanical Integrity 9. Hot Work 10. Management of Change 11. Incident Investigation 12. Emergency Planning and Response 13. Compliance Audits 14. Trade Secrets	Lagging Indicators 1. Total Count of Process Safety Incidents (PSIC): The Count of all incidents which meet the definitions of a PSI described within thi document. 2. Process Safety Total Incident Rate (PSTIR): The cumulative (annual) count of incidents normalized by man-hours. 3. Process Safety Incident Severity Rate (PSISR): The cumulative (annual) severity-weighted rate of process safety incidents. Leading indicators 1. Maintenance of mechanical integrity; 2. Action items follow-up; 3. Management of change; and 4. Process safety training and competency (and training competency assessment). 5. Barriers related to the hazards inherent in their operations, 6. Barriers related to the critical causal factors or immediate causes of major incidents and high potential near-misses experienced by their operations, 7. Review of the metrics detailed in the CCPS Risk Based Process Safety book.

PSM TOOLS
✓ PSSR: Pre Start Up Safety Review
✓ HAZOP: Hazards and Operability Study
✓ LOPA: Layers of Protection Analysis
✓ Bow Tie Analysis
✓ HEMP: Hazards effect Method Process
✓ PHA: Periodic / Process Hazards Analysis

DUPONT being an industry leader has implemented a Process Safety Management framework, with leadership and commitment at core of it and with the distribution of PSM elements in three major groups: facilities, personnel, and technology (3).

> Process Safety Management is the application of management principles and systems to the identification, understanding, and control of process hazards to protect employees, facility assets and the environment

Management of process safety related hazards is a complex process and requires a disciplined, well planned, systematic and team work approach with participation of teams from multi disciplines. A strong leadership and commitment by senior management is a must for PSM to be effective. Therefore it requires lead role assigned to any of the board member so that PSM is implemented perfectly. The principles of PSM also demand the same.

PSM Principles (4)

- Clear and positive process safety leadership is at the core of managing a major hazard business and is vital to ensure that risks are effectively managed;

- Process safety leadership requires board level involvement and competence. For companies with boards located outside the UK then the responsibility to show this leadership rests with the most senior UK managers;

- Good process safety management does not happen by chance and requires constant active engagement;

- Board level visibility and promotion of process safety leadership is essential to set a positive safety culture throughout the organisation;

- Engagement of the workforce is needed in the promotion and achievement of good process safety management;

- Monitoring process safety performance based on both leading and lagging indicators is central to ensuring business risks are being effectively managed;

- Publication of process safety performance information provides important public assurance about the management of risks by an organisation;

- Sharing best practice across industry sectors, and learning and implementing lessons from relevant incidents in other organisations, are important to maintain the currency of corporate knowledge and competence.

PSM Performance Indicators

Like any other process, PSM has its own set of Performance Indicators, tracking of both lagging as well as leading indicators is a must so that system focus remains proactive and prevention based. Lagging indicators may include Total Count of Process Safety Incidents (PSIC), Process Safety Total Incident Rate (PSTIR), and Process Safety Incident Severity Rate (PSISR). Similarly certain leading indicators are also established and tracked e.g. in case of Asset Integrity the indicators are:

- Number of inspections of safety critical items of plant and equipment due during the measurement period and completed on time/Total number of inspections of safety critical items of plant and equipment due during the measurement period) x 100%.

- Length of time plant is in production with items of safety critical plant or equipment in a failed state, as identified by inspection or as a result of breakdown/Length of time plant is in production) x 100%

PSM RELATED INDUSTRIAL INCIDENTS

YEAR	INDUSTRY	CONSEQUENCES
1980	Chemical Control, Elizabeth, NJ	400 emergency responders w/chronic respiratory and other diseases
1984	PEMEX LPG Terminal, Mexico City, Mexico	650 deaths, 6400 injuries
1984	Union Carbide, Bhopal, India	4,000 deaths and 20,000 + injuries and diseases among community residents
1984	Union Oil, Romeoville, IL -	17 deaths, 22 injuries
1985	Bayer Chemical, Institute, WV -	135 injures
1986	1986 ARCO, Carson, CA -	2 deaths, 44 injuries
1988	1988 Shell Oil, Norco, LA -	7 deaths and 24 injuries
1988	Occidental Petroleum, Piper Alpha North Sea, U.K.	167 deaths
1989	Phillips Petroleum, Pasadena, TX -	23 deaths and 132 injuries
1990	ARCO, Houston, TX -	17 deaths
2003	BLSR Operation facility.	a vapor cloud deflagration and pool fire erupted
2004	May 25, 2004 Conyers GA	Pool chemical process in plant (chlorine). Mass evacuation was needed to protect neighbors.
2007	Valero's McKee Refinery near Sunray, Texas,	A liquid propane release from cracked control station piping resulted in a massive fire in the propane de-asphalting (PDA) unit
2012	Chevron U.S.A. Inc. Refinery in Richmond, California	a catastrophic pipe rupture in the #4 Crude Unit
2016	Midstream Gas Plant Pascagoula, Mississippi | incident Date: June 27, 2016	Loss of Containment, Fires, and Explosions ate Enterprise Products

References

1- OSHA CFR 1910.119
2- Process Safety:Leading and Lagging Metrics- CCPS; An AIChE Technology Alliance.
3- Charles A. Soczek, DuPont Safety Resources ; Implementation of Process Safety Management into Diverse Corporate Cultures
4- Process Safety is not just for Engineers “Getting commitment and delivering transformational change”
Ken Rivers; 2ndInternational Process Safety Symposium, Istanbul, October 2015

Welding fumes fever

Welding:

Welding is a fabrication or sculptural process that joins materials, by using high heat to melt the parts together and allowing them to cool causing fusion.

Classification:

Welding processes are classified into two groups: Fusion welding, which is heat alone & pressure welding, which uses heat and pressure. Fusion welding involves three types: electric arc, gas and thermite.

All of these forms of welding produce visible smoke that contains harmful metal fume and gas byproducts.

Fumes & Gases:

The fume given off by welding and hot cutting processes is a varying mixture of airborne gases and very fine particles which if inhaled can cause ill health. Welding fumes contain a variety of metals, including aluminum, arsenic, beryllium, lead and manganese.

Gases that may be present in welding and cutting fume are:
-Nitrous oxide (NOx)
-carbon dioxide (CO_2),
-carbon monoxide (CO)
-shielding gas (e.g. Argon, helium) and
-ozone (O_3)

Table 1. Common cancer causing welding fumes

FUME TYPE	SOURCE	CARCINOGEN?
Beryllium	Hardening agent found in copper, magnesium, aluminium alloys and electrical contacts	Known carcinogen
Cadmium Oxides	Stainless steel containing cadmium or plated materials, zinc alloy	Suspected carcinogen
Chromium	Most stainsless-steel and high-alloy materials, wedling rods. Also used as palting material	Some forms are carcinogens (hexavalent chromium)
Nickel	Stainless steel, nickel-chromium, nickel-copper and other high-alloy materials, welding rods and plated steel	Increased cancer risk has been noted in occupations other than welding

Health Issues & Diseases:

Welding fumes can cause serious health problems for workers if inhaled. Short-term exposure can result in nausea, dizziness, or eye, nose and throat irritation. Prolonged exposure to welding fumes can lead to cancer of the lung, larynx and urinary tract, as well as nervous system and kidney damage.

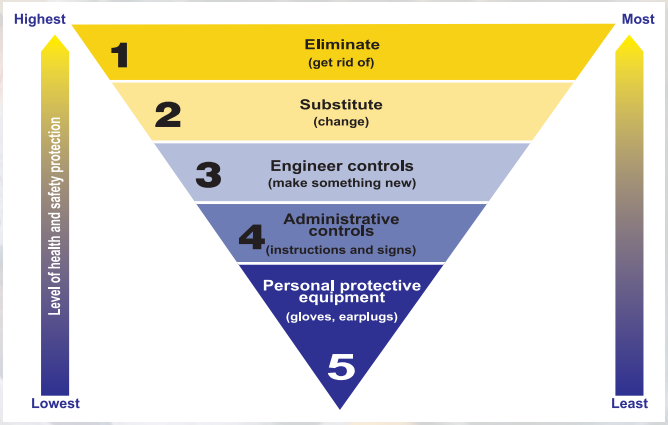
Welding activities produce many hazards through the production of contaminants in welding fumes and ultraviolet (UV) radiation in the welding arc. Both of these are carcinogens, meaning they can cause cancer in humans. Exposure to these fumes or UV radiation can increase your risk of developing melanoma of the eye, lung and other cancers.

Other Diseases:

- Fatal pneumonia
- Occupational asthma
- Irritation of throat and lungs
- Temporary reduced lung function
- Type of welding process used
- Material being welded
- Contaminants in the air
- Consumables being used
- Where the welding is being carried out
- Length of time welding.

Reduce Exposure Level:

Hierarchy of Control to Reduce Welding Fumes:



How to Reduce Exposure from Welding Fumes:

- Positioning (Stay upwind of welding fumes when work ing in open or outdoor areas.)
- Reducing fume generation by design (Thoroughly un derstand the hazards associated with welding)
- Reducing fume generation by filler
- Reducing fume generation by shielding gas (Never weld in a confined space that doesn't have ventilation)
- Reducing fume generation by spark control
- Removing coatings in weld area
- Fume control – at source (Use local exhaust ventilation systems for indoor welding)

Conclusion:

Metal fumes are toxic and exposure is very damaging. However, if appropriate hierarchy of control measures (Engineering control, Administrative control and accurate personal protective equipment PPE, like Air Purifying Respirator, Welding Helmet, Welding Gloves and apron) and safe practices outlined above, such diseases can be avoided.

Hafiz Muhammad Shaheryar
M.Phil-OHS, Student

Industrial Hygiene

Muhammad Awais
DVM, UAF (Pakistan)

INTRODUCTION

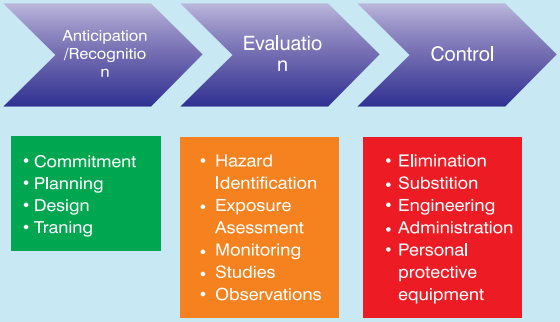
"Science and Art used in the anticipation, recognition, evaluation, and control of those environmental factors which may cause sickness, impaired health and well-being, or discomfort among workers or among the citizens of the community"

There has been an awareness of industrial hygiene since antiquity. The environment and its relation to worker health were recognized as early as the fourth century BC when Hippocrates noted lead toxicity in the mining industry. 'In the first century AD, Pliny the Elder, a Roman scholar, perceived health risks to those working with zinc and sulfur. He devised a face mask made from an animal bladder to protect workers from exposure to dust and lead fumes'.

Safety hazards associated with animal feed can be biological, chemical or physical. Each hazard is associated with particular sources and routes of contamination and exposure. Risk management must be based on a thorough understanding of Hazard Bases.

Industrial hygiene gained further respectability in 1700 when Bernardo Ramazzini, known as the "father of industrial medicine" published in Italy the first comprehensive book on industrial medicine, De Morbis Artificum Diatriba (The Diseases of Workmen). The book contained accurate descriptions of the occupational diseases of most of the workers of his time. Ramazzini greatly affected the future of industrial hygiene because he asserted that occupational diseases should be studied in the work environment rather than in hospital wards.

Scope of industrial Hygiene

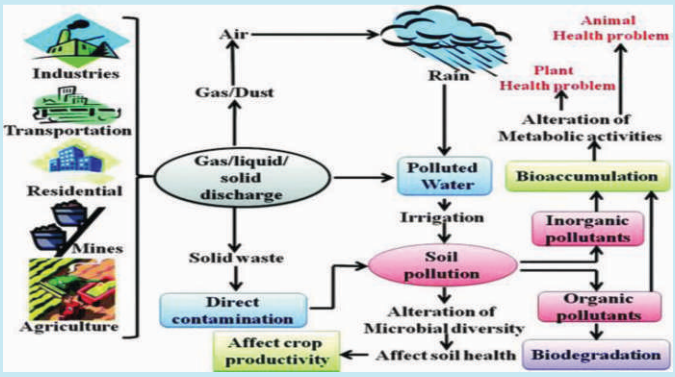


OSHA AND INDUSTRIAL HYGIENE

Under the OSH Act, OSHA develops and sets mandatory occupational safety and health requirements applicable to the more than 6 million workplaces in the U.S. OSHA relies on, among many others, industrial hygienists to evaluate jobs for potential health hazards. Developing and setting mandatory occupational safety and health standards involves determining the extent of employee exposure to hazards and deciding what is needed to control these hazards to protect workers. Industrial hygienists are trained to anticipate, recognize, evaluate, and recommend controls for environmental and physical hazards that can affect the health and well-being of workers.

WORKSITE ANALYSIS

A worksite analysis is an essential first step that helps an industrial hygienist determine what jobs and work stations are the sources of potential problems. During the worksite analysis, the industrial hygienist measures and identifies exposures, problem tasks, and risks. The most-effective worksite analyses include all jobs, operations, and work activities. The industrial hygienist inspects, researches, or analyzes how the particular chemicals or physical hazards at that worksite affect worker health. If a situation hazardous to health is discovered, the industrial hygienist recommends the appropriate corrective actions.



RECOGNIZING AND CONTROLLING HAZARDS

Administrative controls include controlling employee's exposure by scheduling production and tasks, or both, in ways that minimize exposure levels. For example, the employer might schedule operations with the highest exposure potential during periods when the fewest employees are present. When effective work practices or engineering controls are not feasible or while such controls are being instituted, appropriate personal protective equipment must be used. Examples of personal protective equipment are gloves, safety goggles, helmets, safety shoes, protective clothing, and respirators. To be effective, personal protective equipment must be individually selected, properly fitted and periodically refitted; conscientiously and properly worn; regularly maintained; and replaced, as necessary.

Summary of Indsutrial Hygiene Hazards:

Chemical	Physical	Ergonomic	Biological
Air Contaminants	Noise	Lifting	Blood borne pathogens
Solvents	Vibration	Posture	Viruses
Irritants	Heat	Static work	Bacteria
Corrosives	Cold	Repetitive motion	Fungi
Oxidizers	Ionizing radiations	Cold	Animals
Carcinogens	Non-ionizing radiation		Insects
toxins	Pressure extremes		

CHEMICAL HAZARDS

Harmful chemical compounds in the form of solids, liquids, gases, mists, dusts, fumes, and vapors exert toxic effects by inhalation (breathing), absorption (through direct contact with the skin), or ingestion (eating or drinking). The most effective and reliable controls are those that result in protection from the hazardous chemicals are Substitution, Isolation, Engineering controls and Personal protective equipment.

Classes of Mycotoxins common in Animal feed:

Mycotoxins	Contaminated Products	Animal Affected
Aflatoxins	Corn, Peanut, Cottonseed, tree nuts, Dairy products	Swine, Dogs, cat. Sheep, Cattles, Human, birds
Ergot alkaloids	Rye, Sorghum, Pasture, grasses	Cattle, Sheep/Goat, Human
Fumonisins	Corn, Silage	Horses, Swine, Human
Ochratoxins	Cereals, grapes	Swine, Human
Trichothocenes	Wheat, Barley, Oats, Corn	Swine, Dairy Cattle, Poultry, Horses, Human
Zearalenone	Corn, Hay	Swine, Daily Cattle

Electrical Hazards

Places of work generally have power nominally supplied at 230 volt (single phase) and 400 volt (3 phase) although some larger workplaces will receive electricity at a higher supply voltage. The information below relates to workplaces using 230 and 400 volt supplies.

The main hazards with electricity are:

1. Contact with live parts causing shock and burns, 2.faults which could cause fires, 3.fire or explosion where electricity could be the source of ignition in a potentially flammable or explosive atmosphere.

2. Industrial Emergency Rooms provide life-saving measures to tens of thousands of individuals injured/maimed/impaired as a direct/indirect result of the effects of electric current passing through their bodies.

Biological Hazards

These include bacteria, viruses, fungi, and other living organisms that can cause acute and chronic infections by entering the body either directly or through breaks in the skin. Occupations that deal with plants or animals or their products or with food and food processing may expose workers to biological hazards.

Elimination of the source of contamination is fundamental to the prevention and control of biological hazards

Recommended limits for microbial contaminations in industry:

Grade	Air sample cfu/m^3	Settle plates (diameter 90mm) Cfu/4 hours	Contact plates Diameter 55mm) cfu/plate	Glove print 5 fingers cfu/glove
A	<1	<1	<1	<1
B	10	5	5	5
C	100	50	25	---
D	200	100	50	---

Hazard Prevention and Control Strategy

Effective controls protect workers from workplace hazards, help avoid injuries, illnesses, and incidents, minimize or eliminate safety and health risks, and help employers provide workers with safe and healthful working conditions. The processes described below will help employers prevent and control hazards identified in the previous section.

Procedure:

Step 1; Identify control options

Step 2: Select controls

Step 3: Develop and update a hazard control plan

Step 4: Select controls to protect workers during non-routine operations and emergencies

Step 5: Implement selected controls in the workplace

Step 6: Follow up to confirm that controls are effective

General Information

HIERARCHY OF CONTROL

Elimination and substitution, while most effective at reducing hazards, also tend to be the most difficult to implement in an existing process. If the process is still at the design or development stage, elimination and substitution of hazards may be inexpensive and simple to implement. For an existing process, major changes in equipment and procedures may be required to eliminate or substitute for a hazard.

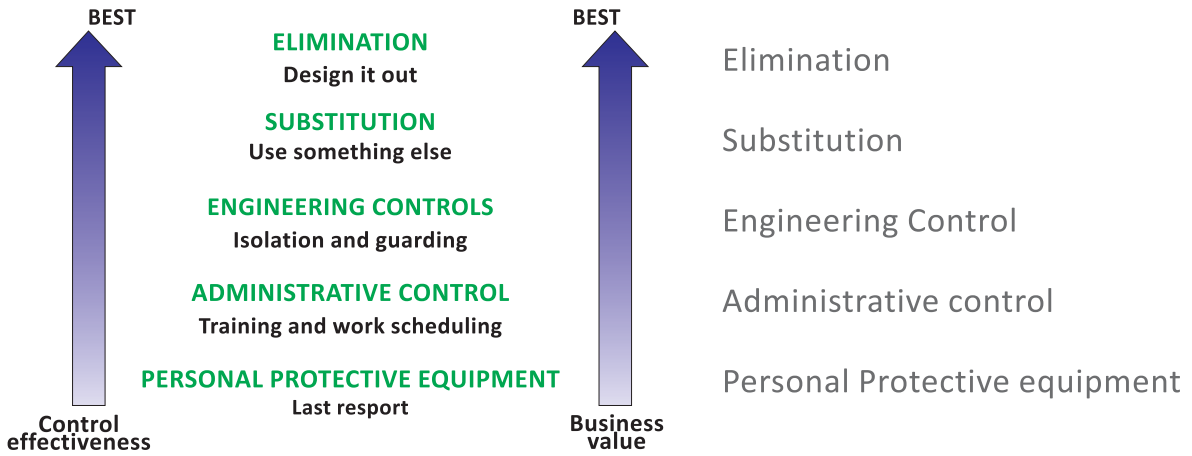
Engineering Controls

Engineering controls are favored over administrative and personal protective equipment (PPE) for controlling existing worker exposures in the workplace because they are designed to remove the hazard at the source, before it comes in contact with the worker. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. The initial cost of engineering controls can be higher than the cost of administrative controls or PPE, but over the longer term, operating costs are frequently lower, and in some instances, can provide a cost savings in other areas of the process.

For descriptions of engineering control technologies researched by NIOSH, and information on the control details and their effectiveness, visit our Engineering Controls Database. The engineering controls contained in the database are beneficial for users who need control solutions to reduce or eliminate worker exposures.
Personnel protective Equipment's.

Administrative Controls and PPE

Administrative controls and PPE are frequently used with existing processes where hazards are not particularly well controlled. Administrative controls and PPE programs may be relatively inexpensive to establish but, over the long term, can be very costly to sustain. These methods for protecting workers have also proven to be less effective than other measures, requiring significant effort by the affected workers.



Activities

Participation in "The World Day for Safety and Health
at Work Safety and Health and the Future of Work"
Labour and Human Resource Department, Punjab, Pakistan

Social services by OHS Students Society!
Free Sugar Test, Blood Pressure &Free Blood Grouping Camp

Class Tours: (Industrial)

Lab Works

One Day Training On Occupational Health and Safety Program












Up Coming Events

Rescue 1122 Training (Basic Life Support Course) Coming soon
Guest Lectures
Seminars

Note: If anyone want to put his/her article in this Newsletter, contact at
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