Basic Occupational Safety and Health Training with Training of Trainers(v.2)

Submitted as requirement of the Occupational Safety and Health Center (OSHC) to respond to the additional requirements of Republic Act 11058 and its Implementing Rules and Regulation.

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Reference	Details of Revision	Reason of Revision	Date Approved
Module 15	New addition	Include 15.8.5 Rehabilitation Services and 15.9 Availing of ECP Benefits	June 29, 2021

Table of Contents: Basic Occupational Safety and Health for General Industries

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J3 Trainers and Consultants Inc.

About the Company

J3 Trainers and Consultants Inc. is a training company accredited by the Occupational Safety and Health Center (OSHC) of the Department of Labor and Employment (DOLE) as Safety Training Organization (STO), Safety Consulting Organization (SCO) and Construction Heavy Equipment Testing Organization (CHET). It is also accredited by the Professional Regulation Commission (PRC) as Continuing Professional Development (CPD) provider.

J3TCI was first established to respond to the need of the construction industry to professionalize management, technical and worker skills and to elevate the level of safety consciousness and priority in this high-risk industry through training and professional help via consultancy. In addition to the construction industry, J3TCI also caters to the other industries in terms of safety such as the mining, manufacturing, food and service industries.

Aside from safety training, J3TCI also serves the training needs of the professional sector, specifically in construction engineering, project management, human resource management, food safety, quality management, business continuity and entrepreneurial development.

The Company is a SEC-registered corporation established in 2016 with corporate office in Cagayan de Oro City.

The OSH Training Framework

The main goal of Occupational Safety and Health (OSH) is to prevent the occurrence of accidents and illnesses in the workplace. Factors contributing to these accidents and illnesses are health and safety hazards which can be addressed with the guidance of OSH Laws and Standards as well as OSH Fundamentals.

Figure 1. presents that accidents and illnesses are 98 percent preventable (Heinrich, n.d.), potential workplace accidents/illnesses can be avoided through Hazard Identification (Job Hazard Analysis, Safety Inspection, Work Environment Measurement (WEM), Medical screening & surveillance), Risk Assessment, and Risk Control (Elimination, Substitution, Engineering, Administrative, Personal Protective Equipment (PPE)—collectively referred to as HIRADC.

If accidents/illnesses do happen (with 2 percent chance), there are means to effectively manage and mitigate its impact. This OSH Course covers topics such as Workplace Emergency Preparedness, Employee Compensation and Accident Investigation and Reporting.

In institutionalizing safe workplace practices and conditions, the abovementioned strategies can be designed into a formal plan of action to prevent workplace injuries and illnesses—the OSH Program. Following the safety and health principles and guidelines found in the program, there will be a significant improvement in the company's compliance with laws and regulations and reduction of costs, including significant reductions in workers' compensation premiums.

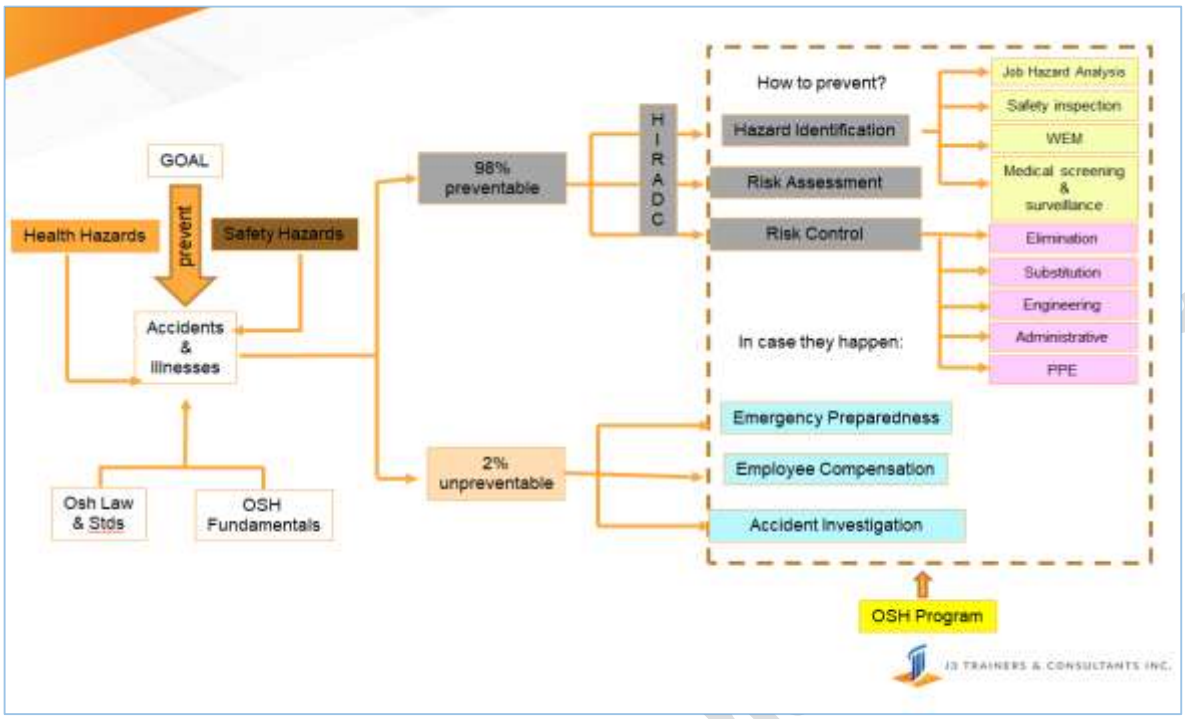


Figure 1. The OSH training Framework

Basic Occupational Safety and Health (BOSH)

General Objective

The comprehensive 40-hour course on Basic Occupational Safety and Health (BOSH) provides participants a clear and concise explanation of the various responsibilities of a Safety Officer with regards to the OSH Standards and the OSH Law. Participants are able to gain significant learning on the concepts and principle on safety and health to improve their competence to perform as Safety Officers. The program is aimed at equipping participants with the necessary knowledge and skills in keeping the workplace healthful and safe.

Specific Objectives

At the end of this orientation, participants are able to:

- Discuss the importance of OSH
- Explain the salient features of the OSH law
- Enumerate the causes of accidents
- Identify hazards, assess risks and recommend control measures
- Conduct the mandatory OSH orientation for workers
- Perform the role of a safety officer

1 – OSH Fundamentals

There are 2 Big Ideas: 1.) "Investment in Occupational Safety and Health (OSH) ensures workforce well-being and business continuity. It is not only a social responsibility and legal compliance issue. It makes good business sense." 2.) *ACCIDENTS* can be prevented by understanding their causes and implementing controls.

1.1. Session Objectives

At the end of the session, participants are able to:

- discuss the importance of OSH;
- describe the cost of accidents and illnesses in the workplace; and
- explain the causes of accident.

1.2. Introduction

The possibility of accident and adverse effect to health are always present in any workplace. All work exposes workers to hazards, example:

- Manual handling of materials
- Use of machines
- Exposure to toxic substances
- Contact with electricity
- Exposure to radiation
- Stress

Occupational Safety and Health (OSH) is a "state of being certain that exposure to workplace conditions will not cause adverse effects to the well-being of a worker in terms of:

- Injury
- Illness

1.3. Importance of OSH

OSH is important based on 3 arguments: 1) it is the right thing to do, 2) it is the smart thing to do, and 3) it is the law (WHO, 2010).

The first argument – right thing to do – is based on ethical principle in that the employer, while earning profit, has the moral obligation to protect employees from accidents and illnesses. Workers have the right to safe and healthful workplace.

The second argument – the smart thing to do – is based on the economic principle in that no business owner wants accidents because accidents and illnesses impose a massive cost to business. They not only lower productivity, but in the worst case, can even end the business.

The third argument – it is the law – is based on the legal principle in that employers violating the provisions of the law are imposed penalties and can be issued work stoppage orders by the appropriate authorities.

1.4. The Cost of Accidents

OSH is a strong business case. Investing in the prevention of accidents and ill-health is one of the best decisions a business organization can do because they cost time and money. The fact is, many businesses do not recognize the costs as most of them are indirect and hidden.

Only a fraction of the whole cost is actually seen, like an iceberg. The costs of accidents and illnesses that are easily seen are called direct or recoverable costs while those which are hidden are the indirect or unrecoverable costs. Indirect costs are usually many times greater than the direct costs. In fact, uninsured losses are ten times the cost of insurance premiums according to *HSE-UK (ROSPA).*

The following are examples of indirect or hidden costs:

- Lost time
- Sick pay
- Damage of products
- Repairs of equipment
- Extra wages
- Production delays
- Investigation time
- Fines
- Lost contracts
- Legal costs

Other key points to consider:

- Serious accidents can be critical to meeting contract deadlines.
- Losing key personnel can spell the end of the business altogether.
- Loss of business reputation can lead to loss of new or repeat business.
- Accidents can damage workforce morale.
- Accident claims mean higher insurance premiums.

The challenge for all is: If you think safety is expensive, try pricing an accident! *(Lois McMaster-Bujold).*

1.5. OSH Statistics

According to the International Labor Organization (ILO) during the World Safety Day Celebration in 2019:

- average of 7,500 die every day due to work-related accidents,
- 160 million incidents of occupational illness every year, and
- 270 million work-related accidents every year.

The biggest killer in the workplace is cancer, causing roughly 640,000 or 32% of deaths, followed by circulatory diseases at 23%, then accidents at 19% and communicable diseases at 17%. Asbestos alone takes about 100,000 lives annually (ILO).

In the Philippines, there were 38,235 accidents recorded in 2017 which resulted to a total of 46,283 injuries, 43.9 percent of which are non-fatal with lost workdays, 55.1 percent without lost workdays and 1 percent fatal.

Philippine OSH Situation Accidents (2017)

Total accidents	38,235	
Total injuries	46,283	
Non-fatal with lost workdays	20,318	*(43.9%)*
Without lost workdays	25,501.93	*(55.1%)*
Fatal	463	*(1%)*

Source: Integrated Survey on Labor and Employment (ISLE) – 2017/2018

Measures of Safety Performance

In 2017, the measure of performance of occupational injuries expressed in Frequency Rate (FR), Incidence Rate (IR) and Severity rate (SR) are as follows:

Measure	Rate (%)
Frequency Rate (FR)	1.75
Incidence Rate (IR)	4.27
Severity Rate (SR)	9.68

Frequency Rate: 1.75% means that there are about 2 cases of occupational injuries with workdays lost per 1,000,000 employee hours of exposure.

Incidence Rate: 4.27% means around 4 cases of occupational injuries with workdays lost per 1,000 workers.

Severity Rate: 9.68% means that almost 10 days were lost in cases of occupational injuries resulting to temporary incapacity per 1,000,000 employee-hours of exposure.

Occupational Injuries with Workdays Lost

Type of Injuries

Superficial injuries and open wounds were the most common type of occupational injuries with more than half or 50.8 percent of the total cases reported. This was followed by dislocations, sprains and strains with 12.0 percent and fractures with 10.7 percent.

Superficial injuries and open wounds	50.8%
Dislocations, sprains, strains	12.0%
Fractures	10.7%

Part of Body Injured

Wrist and hand was collectively recorded as the most injured part of body accounting for 35.9 percent. Lower extremities and arm and shoulder came next with 18.7 percent and 17.6 percent, respectively.

Wrist and hand	35.9%
Lower extremities	18.7%
Arm & shoulder	17.6%

Causes of Injury

The leading cause of work-related injury in establishments was stepping on, striking against or struck by objects, excluding falling objects (36.3%). Other causes of injury include caught in or between objects (21.0%) and falls of persons (10.5%).

Stepping on, striking against or struck by objects	36.3%
Caught in or in between objects	21.0%
Falls	10.5%

Agent of Injury

The top three (3) agents of injuries in 2017 were machines and equipment (26.2%); materials and objects (24.4%); and hand tools (18.3%).

Machines and equipment	26.2%
Materials and objects	24.4%
Hand tools	18.3%

Occupational Diseases

Occupational diseases reported in 2017 totaled to 101,851 cases, a decrease of 19.1 percent from 125,973 reported cases in 2015.

Highest among the work-related illnesses reported by workers was back pains, followed by essential hypertension and neck-shoulder pains, occupational asthma and other infections.

Back pains	31.3%
Essential hypertension	15.5%
Neck-shoulder pains	11.4%
Occupational asthma	5.4%
Other infection	5.3%

Workers engaged in administrative and support service activities reported the highest share of cases with occupational diseases with 31.8 percent. Followed by manufacturing industry (28.9%) and wholesale and retail trade; repair of motorcycles (9.6%).

Profile of Most Commonly Injured Worker

- Male
- Married
- 26-30 years old
- With 1 to 5 years work experience
- Assigned in the first shift

1.6. Accidents/Incidents

Accidents are "occurrences or events that are unexpected, unforeseen, unplanned and unwanted which result to damage, injury, loss or death". Incidents, on the other hand, are "events, which under slightly different circumstances, may have resulted in injury or ill health, or damage or loss to property, plant, materials or the environment or a loss of business opportunity" (HSE-UK).

Example: Accident

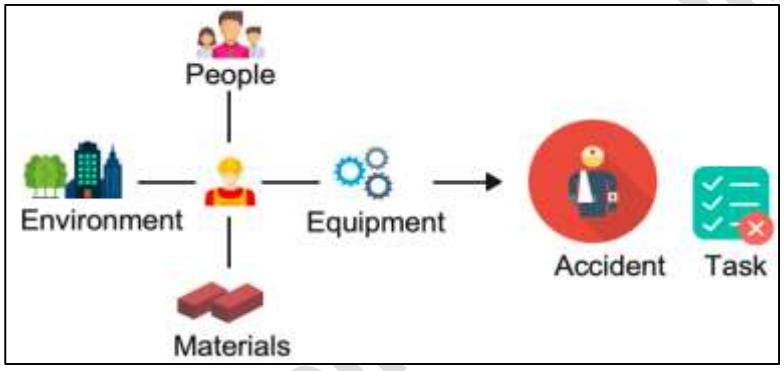
A window cleaner dropping a bucket from a height, which caused injury to a person underneath, would be classed as an accident.

Example: Incident

A window cleaner dropping a bucket from a height, which just missed a person standing underneath, would be classed as a "near-miss" incident. This incident did not cause an injury to a person but, under slightly different circumstances (the person standing nearer to the contact point) the person may have been injured.

1.7. How do Accidents Happen?

The System Theory of Accident Causation proposes that work is a system composed a group of regularly interacting and interrelated components such as people,



Equipment/machineries/tools, materials and environment as shown in the figure below. The likelihood for an accident to occur is dependent on how these components interact. Each component or a combination of these components are considered source of hazard that can either cause injury or illness to the worker after being exposed.

Example: *An inexperienced worker who temporarily replaces a competent operator of a machine has increased probability of figuring an accident.*

It takes a hazard and someone exposed to the hazard to produce an accident. (Hazard + Exposure = Accident/Incident).

What is a Hazard?
"A hazard is any source of potential damage, harm or adverse health effects on something or someone" (CCOSH). Harm is referred to as physical injury or damage to health.

Generally, there are 2 classification of hazards: Safety and Health, hence the term OSH. Safety hazards are something that has potential for injury while health hazards are something that has potential for illness.

Types of Hazards

A common way to classify hazard is by category: biological, chemical, physical, ergonomic, and psychosocial and safety hazards.

Biological	Health hazards	bacteria, viruses, insects, plants and animals
Chemical		gas, vapors, mist, fumes,
Physical		radiation, noise, temperature extremes, pressure, electricity, etc.
Ergonomic		repetitive movement, improper set-up of work stations, awkward positions, over exertions
Psychosocial	Safety hazards	stress, violence, etc.
Safety		clutters (slip and trip), unguarded machines, heights (fall), equipment malfunctions, inappropriate use of tools, electricity, etc.

Examples of Hazards

Source	Hazard	Harm
Object	Knife	Cut
Substance	Benzene	Leukemia
Material	Asbestos	Mesothelioma
Source of Energy	Electricity	Shock, electrocution
Condition	Wet floor	Slips, falls
Process	Welding	Metal fume fever
Practice / Task	Hard rock mining	Silicosis

What is Exposure (to Hazards)?

A state of being where a worker is within the "danger zone" in which way the worker is in a position of imminent danger (Safeopodia). Example: *a maintenance worker performing task in less than 10 feet away from a live wire.*

Exposure to hazards can be:

- Physical – when a worker is generally within arm's length (example: unguarded rotating machine)
- Environmental – when a worker is an unhealthy atmosphere (example: extremely hot working area)

Types of Accidents

1. Fall to:
    - lower level
    - same level

2. Caught:
   - on
   - in
   - in between

3. Struck:
   - against
   - by

4. Contact with:
   - chemicals
   - electricity
   - heat/cold
   - radiation

5. Rubbed or abraded by:
   - friction
   - pressure
   - vibration

1.8. Causes of Accidents

Fatalism which is a belief that accidents are bound to happen are not the real causes of accidents because the real and immediate causes are 1) unsafe acts which accounts for 88 percent and 2) unsafe conditions which accounts for 10 percent (W.H. Heinrich).

Unsafe Acts are "any human action that violates a commonly accepted work procedure" (American National Standards Institute).

Examples of unsafe acts are:

- Operating Equipment without Authority
- Disregard of SOP or instructions
- Removing Safety Devices
- Using Defective equipment
- Using PPEs improperly
- Horseplay
- Willful intent to injure
- Working while under the influence of alcohol or drugs

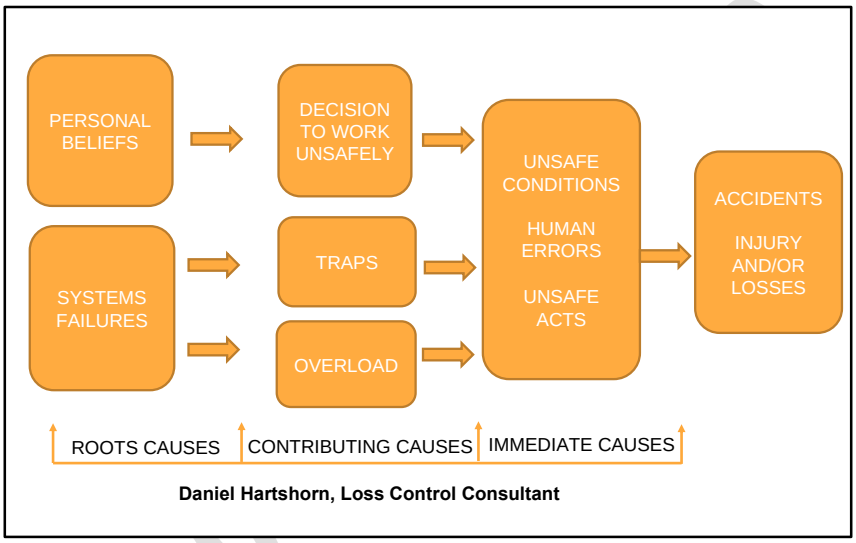
Factors Contributing to Unsafe Acts

- Improper Attitude
- Physical Limitations
- Lack of Knowledge or Skills

Unsafe conditions are “physical or chemical property of a material, machine or the environment which could result in injury to a person, damage or destruction to property or other forms of losses” (American National Standards Institute).

Examples of unsafe conditions:

- Slippery and wet floors
- Dusty work area
- Congested plant lay-out
- Octopus wiring
- Unguarded rotating machines
- Protruding nails/sharp objects
- Scattered objects in the work area



Can Accidents be Prevented?

Answer: **YES.**

And the truth is most accidents happen because they have not been prevented! According to W.H. Heinrich accidents are 98 percent preventable and 2 percent non-preventable. How are accidents prevented?

This course is focused on controlling hazards and managing exposure as a way to prevent accidents and ill-health in the workplace.

1.9. Concept of OSH Management

OSH is an issue that is rooted on something beyond Unsafe Acts and Unsafe Conditions. “Behind every unsafe condition, there is a management that allowed that hazard to exist and behind every unsafe behavior, there is a management system and organizational culture that leads people to act unsafely” (Dan Petersen, as quoted by Steve Minter).

That leads to the Multiple Causation Theory of Accident arguing that a single accident has multiple causes. The theory considers unsafe acts and unsafe conditions together

with human errors as the immediate causes of accidents. And behind those immediate causes, there is system failure and personal beliefs as root causes (Hartshorn).

1.10. Key Points

- All workplaces have some degree of hazards that can possibly cause accidents and ill-health to workers.
- Occupational safety and health is one of the leading concerns both globally and locally.
- Accidents and ill-health are costly that most business owners do not easily recognize.
- Accidents and ill-health can be prevented by controlling hazards and managing exposure to hazards.
- All accidents and ill-health are caused. Identifying these causes are helpful to control hazards

2 – OSH Legislation and OSH Standards

The Big Idea is that "OSH is too important that the government has enacted a law to penalize violations of the occupational safety and health standards and other requirements."

2.1. Session Objectives

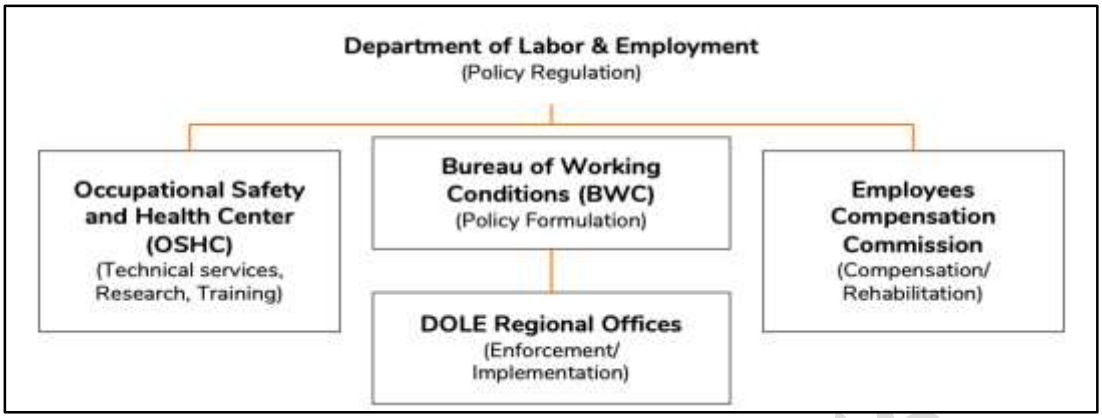
At the send of the session, participants are able to:

- gain awareness of OSH requirements, and
- familiarize the areas of compliance.

2.2. Legal Bases of OSH

- PD 422 – 1974 "The Labor Code of the Philippines"
- "OSH Standards", 1979, as amended 1989
- RA 11058 - "An act strengthening compliance with Occupational Safety and Health Standards and providing penalties for violations enacted January 25, 2019" and its Implementing Rules and Regulations (DO 198-18)

Implementing Mechanism



2.3. The OSH Standards

OSH Standards in the Philippines is a set of mandatory rules on occupational safety and health which codifies all safety orders issued prior to its promulgation. It is commonly called the "Yellow Book".

2.2.1. Rule 1000: General Provisions

Duties of the Employers

OSH Standards as Amended, 1989	RA 11058 per DO No. 198-18
– furnish his workers a place of employment free from hazardous conditions	– keep workers from hazards – ensure that hazards are under control
– give complete job safety instructions to all his workers.	– provide complete safe job instructions
– use only approved devices and equipment in his workplace	– use only approved equipment and devises
– comply with the requirements of the Standards	– comply OSHS & provision of PPE – comply with reportorial requirements

Duties of Workers

OSH Standards as Amended, 1989	RA 11058 per DO No. 198-18
– report any work hazard in the workplace	– report hazards in the workplace
– make proper use of all safeguards & safety devices furnished for his protection & the protection of others	– use safeguards and safety devices

– follow all instructions by the employer in compliance with the OSHS provisions	– comply with all instructions to prevent accident – follow all instructions in cases of emergency – join in OSH capacity building

2.2.2. Rule 1020: Registration of Establishment

- Every employer shall register his/her business with the Regional Labor Office to provide the DOLE with information as guide in its enforcement activities.
- Free of charge
- Valid for lifetime, except when there is *change in name, location, ownership; opening after previous closing*
- *Requirements: IP Form 3*

2.2.3. Rule 1030: Training and Accreditation of OSH Personnel

OSH Standards as Amended, 1989	RA 11058 per DO No. 198-18
– Employer to appoint a safety officer (full-time or part-time) depending on the type of workplace (hazardous or non-hazardous) and a number of workers in the workplace.	– Safety Officer(s) shall be employed or designated, whose category depends on the level of risk of the company and number of employees.
– Duties of Safety Officers – Advice the employer, supervisors and workers on OSH – Investigate accidents – Coordinate safety training programs – Conduct safety and health inspections – Maintain accident records system – Provide assistance to government agencies in the conduct of health and safety inspection, accident investigation or any other related programs	– Safety Officers shall: – Oversee management of the OSH program – Monitor/inspect OSH aspects of the operation – Assist government inspectors during inspections and accident investigations – Issue work stoppage orders when necessary
– A full-time safety officer must be duly accredited by the DOLE – Employment of a full-time safety officer may not be required if the employer enters into a written contract with a qualified consultant or consulting organization whose	– Safety Officer shall undergo the DOLE-prescribed mandatory basic and advanced/specialized training – Engagement of the services of a certified OSH consultant (SO4) shall be allowed for 1 year for establishments whose safety officer

duties and responsibilities are the duties of a safety practitioner. This, however, will not excuse the employer from the required training of his supervisors or technical personnel.	is in the process of completing the prescribed training courses and relevant experience.

2.2.4. Rule 1040: Health and Safety Committee

OSH Standards as Amended, 1989	RA 11058 per DO No. 198-18
– Type A (over 400 workers) – Type B (200 – 400 workers – Type C (100 – 200 workers) – Type D (less than 100 workers) – Type E (Joint Committee) – Submit Report of Safety Organization (RSO) within one month after the OSH Committee is organized/reorganized – Reorganized every year	– Less than 10 workers and low risk establishments with 10 to 50 workers – Medium to high risk establishments with 10 to 50 workers and low to high risk establishments with 51 workers and above – Joint Coordinating Committee for 2 or more establishments housed in one building

Duties of Health and Safety Committee

OSH Standards as Amended, 1989	RA 11058 per DO No. 198-18
– Plan and develop accident prevention program	– Plan, develop and implement OSH policies and programs
– Direct the accident prevention efforts	– Monitor and evaluate the OSH program
– Provide necessary assistance to government inspecting authorities	– Inspect and investigate all aspects of work pertaining to safety and health of workers
– Initiate and supervises safety trainings for employees.	
– Develop and maintains a disaster contingency plan.	

2.2.5. Rule 1050: Notification & Keeping Records of Accidents and/or Illnesses

Notification

- All work accidents or occupational illnesses, resulting in disabling conditions or dangerous occurrences shall be reported by the employer to the Regional Labor Office.

- If a major work accident results in death or permanent total disability, employer shall initially notify the Regional Labor Office within 24 hours.

Keeping of Records

- The employer shall maintain and keep an accident or illness record which shall be open at all times for inspection by authorized personnel.
- Provides the safety officer means for an objective evaluation of the program
- Helps identify high injury rates
- Provides information on accident causes which contributes to high injury rates

REPORT/FORM	When to Report	Where to Report
Work Accident/Illness Report (WAIR) - DOLE/BWC/IP-6) WAIR	On or before the 30th day of the month following the date of occurrence of the accident * monthly under the Interim Guidelines for COVID 19	2 copies, to be submitted to concerned RO copy furnished the Bureau
Annual Exposure Data Report (AEDR) - (DOLE/BWC/IP-6b)	On or before Jan. 20	
Fatal/major accident (DOLE-BQF-ALERT)	Within 24 hours	

2.2.6. Rule 1960: Occupational Health Services

General Provisions

- Every employer shall establish in his place of employment occupational health services in accordance with the regulation & guidelines provided for under this rule.
- The employer, workers, & their representatives, where they exist, shall cooperate & participate in the implementation of the organizational & other measures relating to occupational health services.

Emergency Health Services

- Medicines & Facilities
- Emergency Medical & Dental Services
- Emergency Hospital
  An employer may not establish an emergency hospital or dental clinic in his workplace as required in these regulations where there is a hospital or

dental clinic which is located not more than five (5) kilometers away from the workplace, if situated in any urban area, or which can be reached in twenty-five (25) minutes of travel, if situated in rural area, and the employer has facilities readily available for transporting workers to the hospital or dental clinic in case of emergency.

REPORT/FORM	Where to Report	When to Report
Annual Medical Report – (AMR) DOLE/BW/OH-47A	2 copies submitted to concerned RO copy furnished the Bureau	On or before the last day of March of the year following the covered period

2.2.7. Rule 1070: Occupational Health and Environmental Control

The employer shall exert efforts to maintain and control the working environment in comfortable and healthy conditions for the purpose of promoting and maintaining the health of workers.

2.2.8. Rule 1080: Personal Protective Equipment and Devices

- No person shall be subjected or exposed to a hazardous environmental condition without protection.
- Every employer shall at his own expense furnish his workers with protective equipment and barriers whenever necessary.

2.4. Department Order 198-18 (IRR of RA 11058)

The State:

- affirms labor as a primary social and economic force and that a safe and healthy workforce is an integral aspect of nation building
- ensures that the laws and standards are fully enforced and complied with by the employers
- ensures a safe and healthful workplace for all working people by affording them full protection against all hazards in their work environment

Coverage

All establishments where work is undertaken, including:

- inside economic zones
- air, sea and land transportation
- mining, fishing, construction, agriculture, maritime
- contractors, subcontractors including those engaged in the public sector projects

High Risk Establishments
Where hazards affect the safety and/or health of the workers:

- Chemical works and chemical production plants
- Construction
- Deep sea fishing
- Explosives and pyrotechnics factories
- Firefighting
- Healthcare facilities
- Installation of communication accessories, towers and cables
- LPG filling, refilling, storage and distribution
- Mining
- Petrochemical works and refineries
- Power generation, transmission and distribution
- Storage and distribution center for toxic or hazardous chemicals
- Storage of fertilizers in high volume
- Transportation
- Water supply, sewerage, waste management, remediation activities
- Works in which chlorine is used in bulk
- Activities closely similar to those enumerated above and other activities as determined by DOLE in accordance with existing issuances on the classification of establishments

Medium Risk Establishments
Where there is moderate exposure to safety and health hazards and with probability of an accident, injury or illness.

Low Risk Establishments
Where there is low level of danger or exposure to safety and health hazards or with low probability to result in accident, harm or illness.

Rights of Workers

- *Right to know* all hazards in the workplace through training, education and orientation. Re-orientation for workers in high risk establishment shall be done not less than once a quarter.

- *Right to report accidents*, dangerous occurrences and hazards to the employer, to the DOLE and other government agencies using any form of communication and without retaliation.

- *Right to refuse* unsafe work without threat or reprisal from the employer if imminent danger situation exist, as may be determined by DOLE.

- *Right to Personal Protective Equipment (PPE)*

1. free of charge
2. appropriate type as tested and approved based on its standards
3. appropriate size, weight, and type to specific workers exposed to hazards

Other Requirements of the Law
Safety signage and devices posted in prominent positions to warn the workers and the public of the hazards in accordance with the OSH Standards in terms of colors and sizes and with the Generally Harmonized System pictograms.

Safety in the use of equipment complying the requirements of DOLE including the requirement on training and certification of the operators by the Technical Education and Skills Development Authority (TESDA) and the Professional Regulation Commission (PRC).

OSH information shall be made available to workers including hazards and risks in the workplace, control mechanisms to reduce the risk of exposure to the hazards and emergency and disaster management protocols.

OSH Reports, as required by law shall be submitted by employers in prescribed forms and at a designated time.

OSH Documentary Requirements

1	N	Notification and Keeping of Records of Accidents & Illnesses	Rule 1050
2	O	Occupational Health Services	Rule 1960
3	R	Registration of Business	Rule 1020
4	T	Training and Accreditation of Personnel in OSH	Rule 1030
5	H	Health and Safety Committee	Rule 1040

OSH Reports - Summary

1	W	Work Accident/Illness Report (WAIR)	On or before the 30th day of the month	DOLE-BFQ-WAIR (newly revised with reference coding list) WAIR COVID-19 WAIR A WAIR B
2	A	Annual Exposure Data Report (AEDR)	On or before Jan. 20	DOLE/BWC/IP-6b
3	R	Report of Safety Organization (RSO)	One month after the OSH Committee is organized	DOLE/BWC/OHSD/IP-5
4	M	Minutes of the Meetings of Health and Safety Committee	Quarterly	No prescribed form

5	A	Annual Medical Report (AMR)	On or before the last day of March	DOLE/BW/OH-47A

2.5. Safety Officer and Health Personnel Requirement

Safety Officer

No. of Workers	Low Risk	Medium Risk	High Risk
1 to 9	One (1) SO1	One (1) SO1	One (1) SO2
10 to 50		One (1) SO2	One (1) SO3
51 to 99	One (1) SO2		One (1) SO2 and one (1) SO3
100 to 199		One (1) SO2 and one (1) SO3	
200 to 250	Two (2) SO2 or one (1) SO3		Two (2) SO3
251 to 500	Two (2) SO2 and one (1) SO3	Two (2) SO3	One (1) SO2 and Two (2) SO3
501 to 750			
751 to 1000	Two (2) SO3		
Every additional of 250 or a fraction thereof	-	-	Additional one (1) SO3 or SO4
Every additional of 500 or a fraction thereof	Additional one (1) SO3	Additional one (1) SO3 or SO4	-

Health Personnel

Number of workers	Low Risk				Medium to High Risk			
	First-Aider	OH Nurse	OH Dentist*	OH Physician	First-Aider	OH Nurse	OH Dentist*	OH Physician

1-9	1	-	-	-	1	-	-	-
10-50		-	-	-		-	-	-
51-99		-	-	-		2 PT	-	-
100-199	2	2 PT	-	-	2	1 FT	1 PT	1 PT
200-500	3-5	1 FT	1 PT	1 PT	3-5	1 FT	1 PT	2 PT
501-2000	6-20	1 FT	1 PT	2 PT	6-20	1 FT	1 FT	2 PT or 1 FT
>2000	>20	1FT per shift	1 FT	1 FT and 2 PT	>20	1 FT per shift	1 FT	1 FT and 2 PT

***PT** = 4h/d, 3d/w; FT = 8h/d, 6d/w; OH personnel shall be placed in the shift with the highest numbers of workers; OH dentists: Alternatively, establishments can enter into a Memorandum of Agreement (MOA) for dental services for workers; provided that the requirements for dental facilities are met; OH physicians: If more than 1 is required, physician must be present in all work days of the establishment.*

Training Requirement for Safety Officers

Safety Officer 1 (SO1)	– Mandatory 8-hour OSH Orientation Course – Two (2) hours Trainer's Training
Safety Officer 2 (SO2)	– Mandatory 40-hour OSH Training Course applicable to the industry (BOSH, COSH, MOSH, etc.)
Safety Officer 3 (SO3)	– Mandatory 40-hour OSH Training Course – Additional 48 hours of advanced specialized trainings – Other requirements as may be prescribed by DOLE
Safety Officer 4 (SO4)	– Mandatory 40-hour OSH Training Course – Additional 80 hours of advanced specialized trainings – An aggregate of 320 hours of OSH related training or experience – Other requirements as may be prescribed by DOLE

Training Requirement for Health Personnel

First-Aider	Standard first aid training
OH Nurse	At least 40-hour Basic OSH Training Course for OH Nurses
OH Dentist	At least 40-hour Basic Training Course
OH Physician	At least 56-hour Basic OSH Training Course for OH Physicians

Safety and Health Training

- All workers to undergo mandatory workers' OSH orientation conducted by the safety officer of the establishment or any certified OSH practitioner or consultant.
- No cost on the worker and considered compensable working time.
- Personnel engaged in the operation, erection and dismantling of equipment and scaffolds, structural erections, excavations, blasting operations, demolition, confined spaces, hazardous chemicals, welding, and flame cutting to undergo specialized instruction and training conducted by DOLE or DOLE-accredited Safety Training Organization or PPE manufacturers.

Health Facilities | Every employer shall provide medical services & facilities

<table>
<tr><th rowspan="2">Number of workers</th><th colspan="3">Low Risk</th><th colspan="3">Medium to High Risk</th></tr>
<tr><th>First aid treatment room</th><th>Clinic (number of beds)</th><th>Hospital (number of beds)</th><th>First treatment room</th><th>Clinic (number of beds)</th><th>Hospital (number of beds)</th></tr>
<tr><td>1-9</td><td rowspan="3">1</td><td>-</td><td>-</td><td>1</td><td>-</td><td>-</td></tr>
<tr><td>10-50</td><td>-</td><td>-</td><td>1</td><td>-</td><td>-</td></tr>
<tr><td>51-99</td><td rowspan="2">1</td><td>-</td><td>2</td><td>1</td><td>-</td></tr>
<tr><td>100-199</td><td rowspan="5">Additional 1 for every 100 worker or a fraction thereof</td><td>-</td><td rowspan="5">Additional 1 for every 50 worker or a fraction thereof</td><td rowspan="3">2</td><td>-</td></tr>
<tr><td>200-250</td><td rowspan="2">2</td><td>-</td><td>-</td></tr>
<tr><td>251-500</td><td>-</td><td>-</td></tr>
<tr><td>501-750</td><td>Additional 1 for every 200 worker</td><td>-</td><td>Additional 1 for every 100 worker</td><td>-</td></tr>
<tr><td>751-1000</td><td>-</td><td>-</td><td>-</td></tr>
</table>

1001-2000		or a fraction thereof 1 full time	1		or a fraction thereof 1 full time	1

- Medical supplies, check requirement at Table 47 of the OSH Standard *(pp 207 to 211 of the 2019 updated OSH Standard)*
- Treatment room or clinic
- Hospital and dental clinic *(Section 15 of DO 198-18 pp 432 of the 2019 updated OSH Standards)*

Welfare Facilities

- Adequate supply of safe drinking water
- Adequate sanitary and washing facilities
- Suitable living accommodation such as in construction, shipping, fishing and night workers
- Separate sanitary, washing and sleeping facilities for all gender
- Lactation station except those establishments as provided for under (DOLE Department Order No.143-15)
- Ramps, railings as required
- Others as prescribed by the OSH Standard *(Section 19 of DO 198-18 at pp 435 of the 2019 updated OSH Standards)*

2.6. Penalties

Registration of establishment of DOLE	P20,000.00
Provision of job safety instruction or orientation prior to work	P20,000.00
Provision of worker's training (first aid, mandatory workers training, mandatory OSH training for safety officers and health personnel)	P25,000.00
Provision of safety signage and devices	P30,000.00
Provision of medical supplies, equipment and facilities	P30,000.00
Submission of reportorial requirements as prescribed by OSH standards	P30,000.00
Provision of safety officer and/or OH personnel	P40,000.00

Provision of certified personnel or professionals required by the OSH standards	P40,000.00
Establishment of a safety and health committee	P40,000.00
Formulation and implementation of a comprehensive safety and health program	P40,000.00
Provision of information on hazards and risk (absence of chemical safety data sheet, no written SOP in materials handling, lifting, etc., no permitting system for confined spaces/hot works, no lock-out/tag-out system etc.)	P40,000.00
Provision of sanitary and welfare facilities	P40,000.00
Use of approved or certified devices and equipment for the task	P50,000.00
Provision of PPE or charging of provided PPE to workers	P50,000.00
Compliance with DOLE issued WSO	P50,000.00
Compliance to other OSH standards	P40,000.00

- Failure or refusal to comply with OSH standards or compliance order shall be deemed willful when done voluntarily, deliberately and intentionally.
- Repeated violation shall be penalized of the corresponding fine plus an additional fine equivalent to fifty percent (50%) for every instance of repeat violation.
- When the violation exposes the worker to death, serious injury or serious illness, imposable penalty shall be one hundred thousand pesos (₱100,000.00).
- Should there be 2 or more non-compliances, all penalties shall be imposed; provided that the total daily penalty shall not exceed one hundred thousand pesos (₱ 100,000.00).

The penalties shall be computed on a per day basis until full compliance reckoned from the date of the notice of violation or service of the compliance order.

The RD shall, after due notice and hearing, impose the appropriate administrative fines.

Other OSH-related DOLE Issuances

Issuance	Subject	Salient Features
Labor Advisory No. 4 Series of 2019	Guide for Compliance of Establishments to DO 198-18	- Establishment is responsible in determining its level of risk through

		the conduct of Hazard Analysis, Risk Assessment and Control (HIRAC). - Appoint an appropriate Safety Officer certified by the Human Resource Office in every establishment. - Conduct mandatory workers OSH seminar to all workers on compensable time. - Development of an OSH program for every establishment. - Compliance to required OSH Reports: WAIR, AEDR, AMR, RSO, OSH Committee Report.
Department Order 183 Series of 2017	Revised Rules on the Administration and Enforcement of Labor Laws	Modes of implementation are: 1. Routine inspection to evaluate compliance to labor laws and social legislation. 2. Technical safety inspection to verify safety of mechanical equipment installation. 3. OSH standards investigation to determine existence of imminent danger, danger occurrence and accident resulting in disabling injury based on a report. OSH-related remediation period 1. Imminent danger – suspend work and remediation within 1 day per Section 2 (b.2 and b.3) 2. PPE violation – remediation within 3 days 3. Other violations – remediation within 90 days provided employee submits Action Plan after receiving Notice of Violation.

2.7. Key Points

- The OSH Standards and RA 11058 and its Implementing Rules and Regulation (IRR) are the 2 main references of OSH regulations in the Philippines.

- Both the employers and the employees have OSH-related responsibilities.

- The law requires employment of qualified Safety Officers in every establishment and the creation of OSH Committees.

- The law requires every workplace to develop, implement and continuously improve OSH plans and programs.

- The law imposes penalties to violations of the provisions of the OSH Law and OSH Standards.

- The challenge is: there is no better way than to follow the law.

3 – Health Hazards and their Controls

The Big Idea is that "statistics show that health is the bigger issue in the workplace compared to safety. Every workplace has potential health hazards that, if left unrecognized and uncontrolled, can cause adverse health effects to workers".

Session Objectives

At the end of the session, participants are able to:
- Classify the different health hazards
- Describe the adverse effects of health hazards
- Identify occupational exposure
- Determine control measures

Classification of Health Hazards and Occupational Exposure

Occupational Health Hazards refer to any agent or activity in the workplace posing a potential hazard to the health of workers. These include, but are not limited to, any organism, chemical, condition, or circumstance that may cause illness to workers.

OH Hazards are classified into biological, chemical, physical, ergonomic and psychosocial.

3.1. Biological and Chemical Hazards

- biological substances that pose threat to the health of living organisms, primarily that of humans
- also called biohazards

Occupational biohazards are infectious agents or hazardous biological materials that exert harmful effects on workers' health, either directly thorough infection or indirectly through damage to the working environment, and it can also

include medical waste or samples of a microorganism, virus, or toxin from a biological source (Kyung-Taek Rim and Cheol-Hong Lim, 2014).

3.1.1. Types of Biological Hazards

Biological hazards are classified into micro and macro organisms which might possibly present biohazards in work settings (Dutkiewicz et al., 1988 quoted in ILO). Four broad classes of micro-organisms that can interact with humans are bacteria, fungi, viruses and protozoa. They are hazardous to workers due to their wide distribution in the working environment.

The most important biological occupational hazards are:

Bacteria	salmonella, listeria, E.coli, *M tuberculosis*
Fungi	molds, algae
Virus	smallpox, influenza, mumps, measles, chickenpox, ebola, HIV, rubella, novel corona
Protozoa	Plasmodium parasites (malaria), Trypanosoma protozoa (chagas disease and sleeping sickness) Giardia protozoa (giardiasis)
Macro organism	insects, plants and animals

3.1.2. Adverse Health Effects of Biological Hazards

- Skin irritation
- Allergies
- Infections (AIDS, TB)
- Cancer
- Infectious Respiratory Diseases – e.g. Covid-19

Occupational Exposure

- agricultural work
- health care and hospital work
- research laboratories
- building maintenance
- sewage and compost facilities
- industrial waste disposal
- poor sanitation
- handling of pathological wastes
- poor personal hygiene

3.1.3. Control Measure of Biological Hazards

Engineering

- Improvement of ventilation

- Isolation of contamination source
- Installation of negative pressure
- Separate ventilation and air conditioning system
- Use of ultra violet lamps
- Installing physical barriers (e.g. clear plastic and sneeze guard for Covid-19)

Administrative

- Adhere strictly to the practice of personal hygiene (e.g. hand washing)
- Training
- Disinfection practices (e.g. footbath, frequently-touched objects)
- Physical distancing (for Covid-19 and all viruses)
- Coughing and sneezing etiquette (for Covid-19 and all viruses)
- Housekeeping practices of prevent surface contamination
- Hygiene facilities (e.g. hand washing station, alcohol and sanitizer supply)

Personal Protective Equipment

- Masks (surgical and N95)
- Eye Shields
- Face Shields
- Protective clothing (gown, coverall, apron, hazmat)
- Shoe cover
- Gloves

***Important Note**: Covid-19 prevention and control guidelines for all workplaces jointly issued by DOLE and DTI is discussed in Session 19.*

3.1.4. Relevant DOLE Health-Related Issuance

The Department of Labor and Employment (DOLE) has issued orders to guide employers or establishments to address potential hazards to health of workers. Relevant issuances to control of biological hazards are the following:

Health Issue	Issuance	Salient Features
Hepatitis B - a viral infection that affects liver and is the most common cause of liver cancer. - most commonly transmitted through blood and body fluids.	DEPARTMENT ADVISORY NO. 05 Series of 2010 GUIDELINES FOR THE IMPLEMENTATION OF A WORKPLACE POLICY AND PROGRAM ON HEPATITIS B	Employers are required to formulate and implement a workplace policy and program on Hepatitis B that includes: – Education and training; – Preventive strategies; – Non-discrimination, confidentiality and work accommodation arrangement;

- passive and active vaccines offer 98 to 100% protection *(Source: WHO, 2019)*		– Screening, treatment and referral to health care services; and – Benefits and compensation.
HIV and AIDS - Human immunodeficiency virus (HIV) targets the immune system and weakens people's defense against many infections and some types of cancer. - Acquired immunodeficiency syndrome (AIDS) is the most advanced stage of HIV infection. - Transmitted through body fluids (e.g. blood, semen, vaginal fluids, breastmilk). *(Source: WHO, 2020)*	DEPARTMENT ORDER NO. 102-10 Series of 2010 GUIDELINES FOR THE IMPLEMENTATION OF HIV AND AIDS PREVENTION AND CONTROL IN THE WORKPLACE PROGRAM	Employers are required to formulate and implement a workplace policy and program on HIV/AIDS that includes: 4. Education and training; 5. Preventive strategies; 6. Non-discrimination, confidentiality and work accommodation arrangement; 7. Screening, treatment and referral to health care services; and 8. Benefits and compensation.
Tuberculosis (TB) - caused by germs that TB usually affects the lungs. - spreads from person to person through the air and can cause death if not treated - 90% cure rate with Directly Observed Treatment Short Course (DOTS) *(Sources: CDC, OSH Center)*	DEPARTMENT ORDER NO. 73-05 Series of 2005 GUIDELINES FOR THE IMPLEMENTATION OF POLICY AND PROGRAM ON TUBERCULOSIS (TB) PREVENTION AND CONTROL IN THE WORKPLACE	All establishments shall formulate and implement policies and programs on TB prevention and control including, among others: 1. Prevention 2. Treatment 3. Rehabilitation 4. Compensation 5. Restoration to work 6. Social policies
Drug or substance abuse	DEPARTMENT ORDER NO. 53-03 Series of 2003 GUIDELINES FOR THE IMPLEMENTATION OF	Establishments employing ten (10) or more workers are mandated to formulate and implement drug abuse

	DRUG-FREE WORKPLACE POLICIES AND PROGRAMS FOR THE PRIVATE SECTOR	prevention and control programs that includes: 1. Increasing awareness among employees 2. Drug testing for officers and employees 3. Treatment, rehabilitation and referral 4. Periodic monitoring and evaluation

3.1.5. Chemical Hazards

Arise from excessive airborne concentration of:

- Vapors
- Mists
- Fumes
- Gases
- Dusts and particulates

***Important Note**: Covid-19 prevention and control guidelines for all workplaces jointly issued by DOLE and DTI is discussed in Session 19.*

3.1.6. Vapors

Vapors are gases formed when liquid evaporates. Vapors are associated with solvents, adhesives and alcohols. Examples of organic solvents are:

- Hydrocarbons – toluene
- Ketones – methyl ethyl ketones
- Esters – ethyl acetate
- Ether – ethyl ether
- Alcohols – ethyl alcohols

Occupational Exposure

- Degreasing of metals
- Printing
- Dry cleaning
- Painting
- Laboratory

3.1.7. Mists

Mists are dispersion of liquid particulates suspended in the air. Mists are associated with acids, chlorine, formaldehyde, phenols. Some examples are:

- hydrochloric acids
- sulfuric acids
- nitric acids
- phosphoric acids

Occupational Exposure

Exposure to mists from strong inorganic acids can be through inhalation, ingestion, and dermal contact, although inhalation is the most important route of exposure (Carex Canada, 2020).

Workers with the greatest potential for high exposure are those involved in manufacturing, using, and transporting sulfuric acid, isopropanol, and oleum (fuming sulfuric acid), electroplating, spray painting.

Moderate levels of exposure are expected in soap and detergent production, and the manufacture of nitric acid and ethanol.

Lower exposure levels are expected in lead-acid battery manufacturing and phosphate fertilizer production.

Factors influencing the type and extent of exposure include the industrial process, particle size, distance from the source, control measures (i.e. ventilation), and the breathing pattern of workers.

3.1.8. Fumes

Fumes are volatilized solids that condense upon contact with air where very small solid particles are created when hot vapor reacts with air to form an oxide. These are associated with molten metals. Some examples are: lead, tin, chromium, zinc, and iron.

Occupational Exposure to fumes include, but are not limited to, soldering, welding, hotworks, mining, and working with asphalt.

3.1.9. Gases

Gases are substances in the gaseous state at room temperature and pressure, usually do not have warning odors at dangerous concentration.

Occupational exposure to gases includes:

- Where there is incomplete combustion (carbon monoxide)
- Waste water treatment plant (hydrogen sulfide and chlorine gas)
- Refrigeration and fertilizer plants (ammonia)
- Machinery using diesel engine (nitrogen dioxide)

3.1.10. Dusts and Particulates

Dust and particulates are suspended solid particles in the air. These are classified into:

- Total dust – all dust particles in the area
- Respirable dust – fraction of total dust which can be inhaled and deposited in the lungs

Occupational Exposure

Silica dusts	building materials such as stone, bricks and concrete
Metal dusts	leaded paints, grinded metal
Asbestos dusts	thermal and acoustic insulation, fire resistant walls and partitions, asbestos cement sheets and flooring
Wood dusts	flooring, wood fixtures

3.1.11. Health Effects of Chemical Hazards

- *Immediate health effects (Acute)*
  - Skin irritation
  - Burns
  - Eye irritation
  - Poisoning
- *Longer terms effects (Chronic)*
  - Organ damage
  - Cancer
  - Weakening of immune system
  - Developing allergies or asthma
  - Reproductive problems and birth defects
  - Mental and physical development of children

Control Measures

- Read and follow all directions when using chemical products
- Be guided by the Safety Data Sheets (SDS)
- Be guided by the labels through Generally Harmonized System (GHS) (*AO No. 01 Series of 2009 pp 301 to 314 of the 2019 updated OSH Standards*)
- Maintain indoor air quality
- Store chemicals in proper and secure place

3.1.12. Safety Data Sheets

SDS is a summary of the important health, safety and toxicological information on the chemical or the mixture ingredients. It has 16 sections:

1	Identification of the Chemicals	9	Physical and Chemical Properties
2	Composition/Information on ingredients	10	Stability and Reactivity
3	Hazards identification	11	Toxicological Information
4	First-aid measures	12	Ecological Information
5	Fire-fighting measures	13	Disposal Considerations
6	Accidental Release Measures	14	Transport Information
7	Handling and Storage	15	Regulatory Information
8	Personal Protection	16	Other Information

Sample Safety Data Sheet

Section 1 - IDENTIFICATION	
1.1 PRODUCT IDENTIFICATION	
Product Name:	Paver Tech DriBond™
Product Code:	Not Available
1.2 RECOMMENDED USE OF CHEMICAL AND RESTICTIONS ON USE	
Use:	Thin-section concrete pavers and natural stone material
1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET	
Name:	Paver Technologies, LLC 4366 N. U.S. Highway 1 Vero Beach, FL 32967 USA
Telephone Number:	1-888-767-4777 (USA and Canada)
1.4 EMERGENCY TELEPHONE NUMBER	
Emergency Telephone Number	1-888-767-4777 (USA and Canada) (With hours of operation)

Section 2 – HAZARD(S) IDENTIFICATION	
2.1 CLASSIFICATION OF CHEMICAL	
Hazard Class	
Skin irritation 2 Serious eye damage 1 Skin sensitization 1 Carcinogenicity 1A Specific target organ toxicity – Single exposure 3 Specific target organ toxicity – Repeated exposure 1	
2.2 LABEL ELEMENTS	
Hazard Pictogram:	
Single word:	Danger
Hazard Statement:	Causes skin irritation. Causes serious eye damage. May cause an allergic skin reaction. May cause cancer. May cause respiratory irritation. Causes damage to organs through prolonged or repeated exposure.

3.1.13. Globally Harmonized System

Globally Harmonized System (GHS) is a comprehensive classification and labeling of chemicals and an international standard for:

- classifying chemicals and communicating its hazards;
- establishing a comprehensive national chemical safety program; and

- defining and classifying hazards and communicating information on labels and
- safety data sheets (SDS).

Hazard pictograms (Globally Harmonized System of Classification and Labelling of Chemicals) are used for labelling of containers and transporting of dangerous goods.

GHS has two (2) key elements:

1. Hazard classification
    - Physical hazards
    - Health hazards
    - Environmental hazards
2. Hazard communication – 6 distinct elements
    - Product identifier
    - Signal word
    - Hazard statement
    - Precautionary statement
    - Supplier information
    - Pictogram

Benefits of GHS

- Enhance the protection of humans and environment
- Facilitate international trade in chemicals
- Reduce the need for testing and evaluation of chemicals
- Assist countries and international organizations to ensure the sound management of chemicals

3.1.14. Key Points

- Every workplace has potential health hazards that if left unrecognized and uncontrolled can make workers sick. Health is a bigger issue in the workplace compared to safety.

- Health hazards in the workplace are grouped into biological, chemical, physical, ergonomic and psychosocial.

- Biological hazards usually come from micro and macro organisms that are present in the workplace such as farms and production of agricultural products, health care facilities, research laboratories and handling of sewage and pathological wastes.

- Covid-19 which is caused by novel corona virus is a hazard in workplaces. Employers and employees need to work together in following protocols and guidelines to prevent and control this hazard.

- Chemical hazards come in the form of mists, vapors, fumes, gases, dusts and particulates that can either be through skin contact, inhalation or ingestion.

3.2. Physical, Ergonomic, and Psychosocial Hazards

3.2.1.Physical Hazards

Physical hazards are agents, factors or circumstances that can cause harm with or without contact.

Types of Physical Hazards

1. Noise
2. Vibration
3. Illumination
4. Extreme temperature
5. Extreme pressure
6. Radiation

3.2.2.Noise

Noise is an unwanted, excessive sound. It is a form of energy caused by the vibration of air measured in decibel (dBA). The higher the level of noise and the longer individuals are exposed, the more risk they have of suffering harm such as temporary or permanent hearing loss.

"If 2 people with no hearing impairment have to raise their voices or shout to be heard in a distance of less than arm's length of each other, the sound level is potentially hazardous."

Recommended limits of noise levels for the number of hours exposed.

Number of hours exposed	Sound level dBA
8	85 - 90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110

Source: ILO OSH Brief 3a, Physical Hazard: Noise

Occupational Exposure

Noise is a common hazard and is present in almost all workplaces like entertainment, manufacturing, agriculture, ship building, textiles, mining and quarrying, food and drink manufacturing, woodworking, metal working and construction.

Adverse Health Effects

Most common health effects of noise are tinnitus (ringing in the ears), noise-induced hearing loss, effect on pregnancy, physiological effects, and occupational stress.

Hazard Control Measures

Engineering controls involve modifying equipment or making physical changes at the noise source or along the transmission path to reduce the noise level at the worker's ear. Some examples of effective engineering controls are:

- use of low-noise tools and machinery;
- maintenance and lubrication of machines and equipment;
- installation of barriers between the noise source and employee; and
- enclosure of the noise source.

(Source: OSHA, Noise Hazards and Control Measures)

Administrative controls are changes in the workplace that reduce or eliminate the worker exposure to noise. Examples include:

- operating noisy machines during shifts when fewer people are exposed;
- reducing the amount of time a person spends at a noise source;
- providing quiet areas where workers can gain relief from hazardous noise sources; and
- restricting worker presence to a suitable distance away from noisy equipment.

According to OSHA, controlling noise exposure through distance is often an effective, yet simple and inexpensive administrative control. In open spaces, doubling the distance between the source of noise and the worker, the noise is decreased by 6 dB.

Personal Protective Equipment (PPE). Hearing protection devices such as earmuffs and plugs are acceptable but less desirable option to control exposures to noise.

3.2.3.Vibration

Vibration is a physical factor that transmits mechanical energy from sources of oscillation. It is expressed as the frequency-weighted vibration exposure in meters

per second squared (m/s2) and measured using an instrument called "accelerometer".

Types of Vibration

Whole body vibration	Low frequency	Loom weaver, farm tractors, boom harvester
Segmental body vibration	High frequency	Hand power tools – chainsaw, jack hammer, grinder

Occupational Exposure

Exposure to vibration may arise through the use of power hand tools, driving delivery vehicles, driving earth moving equipment, use of tools that generate vibration at low dominant frequencies and high amplitudes, such as jackhammers.

Adverse Health Effects

Occupational exposure to vibration is associated with increased risk of musculoskeletal pain in the back, neck, hands, shoulders, and hips. Vibration may also contribute to peripheral and cardiovascular disorders and gastrointestinal problems, bone damage, motion sickness and hand-arm vibration syndrome (HAVS).

Hazard Control Measures

Most acceptable *engineering method* to control exposure to vibration are to mechanically isolate the vibrating source and install vibration damping seats, if possible, or purchasing new tools that vibrate less.

Administrative controls can include limiting the amount of time a worker to perform the task, job rotation, frequent breaks, keeping hands and good maintenance of the tools and equipment.

Operator techniques also reduce risk of injury, because the amount of grip force used and the way a tool is allowed to "do the work" can limit the amount of vibration energy entering the body.

Training is very important to keep workers aware of the hazards and how to perform work in a safe manner (Brauch, 2015).

Anti-vibration gloves are, so far, the only PPE used to reduce the hazardous effect of prolonged exposure to segmental vibration.

3.2.4.Illumination

It is a measure of stream of light falling on surface expressed in lux or foot candle. An instrument called "lux meter" is used to measure illumination. There are 2 types of workspace lighting: 1) general lighting and 2) local lighting. The goal is to allow people to see and move about comfortably.

The amount of light a worker needs varies and depends on the type of task being done, type of surfaces, general work area, individual's vision.

Recommended Illumination Levels

Type of Activity	Ranges of Illuminations (Lux)**
Public spaces with dark surroundings	10 - 20
Simple orientation for short temporary visits	50 - 100
Working spaces where visual tasks are occasionally performed	100 - 200
Performance of visual tasks of high contrast or large scale	200 - 500
Performance of visual tasks of medium contrast or small size	500 - 1000
Performance of visual tasks of low contrast or very small size	1000 - 2000
Performance of visual tasks of low contrast and very small size over a prolonged period	2000 - 5000
Performance of very prolonged and exacting visual tasks	5000 - 10000

***Lux = Lumens (quantity of light) per square meter*
(Source: IESNA Lighting Handbook. 9th ed. Illuminating Engineering Society of North America, 2000. P. 10-13 in Canadian Center for Occupational Health and Safety.)

Occupational Exposure

Workers can be exposed to the hazard of poor lighting where there is insufficient light (not enough or too little light for the need), glare (too much light for the need), improper contrast, poorly distributed light, and flicker.

Adverse Health Effect

People get about 85 of their information through their sense of sight. Inappropriate lighting can cause eye fatigue and headaches. It also causes safety hazards in that accidents are likely as a result of "momentary blindness" while eyes adjust to brighter or darker surroundings (Roth, 2012).

Hazard Control Measures

- *Engineering* - installation of more sources of light, if inadequate, redesign work area to allow enough natural light, paint walls and ceilings with light colors.

- *Administrative* – job rotation to limit exposure, in case of glare, position the workstation so that windows and fluorescent light tubes are parallel to the worker's line of sight.

- *PPE* – depending on the hazards identified.

3.2.5.Extreme Temperature

This refers to too hot or too cold temperature in worksites affecting the condition of workers in terms of comfort and productivity. Extreme heat or cold, can be a hazard that can lead to serious illness and increased accidents among the workers (OSH Rep, 2019).

Occupational Exposure

Workers in different occupations may be exposed to heat or cold stress. For example, outdoor workers; workers in bakeries, foundries, boiler rooms, steelworks and in other manufacturing processes; hot and poorly-ventilated buildings; and working in vehicles are exposed to extreme heat.

Occupations exposed to extreme cold are workers in refrigerated warehouses, meat packaging and meat storage.

Adverse Health Effects

Possible consequences of excessive heat are increase in the likelihood of incidents due to reduced concentration, skin rashes, heat cramps, heat exhaustion, heat stroke, aggravation of other medical conditions and illnesses.

Exposure to cold environmental conditions can result to increased incidents of arthritis, rheumatism and bronchitis, decrease in dexterity and sensitivity, hypothermia and frostbite.

Hazard Controls

- Engineering controls such as:
  - heaters, air conditioning, air circulating fans, ventilation;
  - insulating or shielding sources of heat in the workplace;
  - reducing heat gain via windows by reflective film or blinds;
  - ducting hot exhausts outside the workplace;
  - mechanizing some of the tasks; and
  - providing air-conditioned or heated work vehicles.

- Administrative controls such as:
  - sign posting heat stress/cold stress areas;
  - acclimatization process;
  - modifying hours of work; and
  - rest breaks.
- Personal Protective Equipment
  - appropriate clothing

3.2.6.Extreme Pressure

Extreme pressure is pressure exerted by the weight of the atmosphere measured by an instrument called "barometer". Sometimes referred to as barometric pressure.

As one ascends higher above sea level and descends lower below sea level, both the total air pressure (the barometric pressure, PB) and the amount of oxygen in the ambient air (that portion of total pressure due to oxygen, PO2) progressively fall (ILO, 2011).

Occupational Exposure
Occupations that expose workers to the hazards of barometric pressure are working at high altitudes and below sea level like mining operations, diving, aviation, agricultural pursuits, military exercise and working in confined spaces like tunnel operations and sewage construction.

Adverse Health Effects
Adverse health effects of the hazards of extreme pressure includes increased muscular fatigue, deterioration of mental function, impaired memory, computation, decision making and judgement, hypoxia (low oxygen states) and hypoxemia (decrease of oxygen pressure in the arterial blood).

Hazard Controls
Some of the ways to control the hazards of extreme pressure are ventilator, acclimatization, oxygen supply through self-contained breathing apparatus (SCBA) and intermittent exposure.

3.2.7.Radiation

Radiation is everywhere. It is the transmission of energy as waves or moving particles. It comes in two types: ionizing and non-ionizing.

The higher frequencies of electromagnetic radiation, consisting of x-rays and gamma rays, are types of ionizing radiation. While lower frequency radiation, consisting of ultraviolet (UV), infrared (IR), microwave (MW), Radio Frequency

(RF), and extremely low frequency (ELF) are types of non-ionizing radiation (US Dept. of Health and Human Services, 2020).

Exposure to ionizing radiation can pose a health risk to workers if not properly controlled.

Occupational Exposure
Occupational settings with ionizing radiation sources include:

- medical and dental offices (e.g., X-rays);
- hospitals and outpatient treatment centers;
- nuclear power plants (reactors) and their support facilities;
- nuclear weapons production facilities;
- industrial and manufacturing operations;
- research laboratories; and
- security operations.

According to Canadian Nuclear Commission, exposure Limit is 100 mSv over 5 years (a 20 mSv per year average).

Adverse Health Effects
Ionizing radiation interacts with cells and can cause damage such as temporary or permanent sterility, cataracts, detectable lens opacities, skin reddening, cancer and genetic effects.

Hazard Controls

- Most common *engineering controls* against the ill-effects of ionizing radiation are shielding and interlock systems.

- Examples of *administrative controls* include signage, warning systems, and written operating procedures to prevent, reduce, or eliminate radiation exposure (OSHA).

- Commonly used *PPE* for radiation protection from X-rays and gamma rays include lead aprons or vests, lead thyroid collar, lead-lined gloves and safety googles.

3.2.8.Ergonomic Hazards

Ergonomic hazards are physical factors that can result in musculoskeletal injuries. For example, a poor workstation setup/design, poor posture and manual handling, repetitive and awkward movement and poor body positioning. Improving the workplace is the heart of ergonomics: changing the work to fit the worker.

Occupational Exposure/Risk Factors

Ergonomic risk factors are most likely to cause or contribute to musculoskeletal injuries:

- Awkward postures
- Cold temperatures
- Contact stress
- Force
- Repetition
- Static postures
- Vibration

Adverse Health Effects

If not managed correctly, ergonomic hazards can have significant long and short term impacts on the workers' health and wellbeing. Example of musculoskeletal injuries are damage to muscles, tendons, bones, joints, ligaments, nerves, and blood vessels.

Hazard Controls

There are ways to reduce ergonomic risk factors and help fit the workplace to the worker. The most effective control involves a combination of approaches.

Some examples of *engineering controls:*

- redesign workstations and work areas to eliminate reaching, bending, or other awkward postures;
- provide adjustable tables and chairs that can be used by workers with a range of sizes and shapes, and that allow neutral postures;
- provide carts for transporting material and mechanical hoists to eliminate lifting; and
- use tools that fit the hand, have no sharp edges, and eliminate awkward hand and wrist position.

Some examples of *administrative controls:*

- rotate workers among different tasks;
- improve work scheduling to minimize excessive overtime;
- increase staffing to reduce individual workloads;
- provide sufficient breaks to reduce fatigue;
- assign more staff to lifts of heavy objects;
- encourage proper body mechanics and use of safe lifting techniques; and
- provide workers with training on:
  - safe working postures,
  - lifting techniques,
  - ergonomics policies and procedures, and
  - safe use of lifting and carrying devices.

PPEs for ergonomic problems include knee pads for kneeling tasks, shoulder pads to cushion loads carried on the shoulder, gloves to protect against cold, vibration, or rough surfaces.

Relevant DOLE Issuance

Issuance	Salient Features
DEPARTMENT ORDER NO. 178 Series of 2017 - *Safety And Health Measures For Workers Who By The Nature Of Their Work Have To Stand At Work*	Employers to provide measures to safeguard the safety and health of employees while standing at work or frequently walking. Measures include: 1. implementing rest periods or breaks, 2. install appropriate flooring or mats that will mitigate the impact of frequent walking, 3. allow workers to alternately sit and stand while performing their tasks, 4. provide readily accessible seats to be used during rest periods, 5. implement the use of footwear which is practical and comfortable.
DEPARTMENT ORDER NO. 184 Series of 2017 - *Safety And Health Measures For Workers Who, By The Nature Of Their Work, Have To Spend Long Hours Sitting*	Employers to institute appropriate control measures to address the risks to safety and health of workers who spend long hours sitting at work. Measures include, among others: 1. five-minute breaks every two hours from sitting time, 2. reduce sedentary work by interrupting sitting time and substitute it with standing and walking, 3. appropriate design of workstations, 4. implement health promotion activities, 5. conduct awareness program on effects of sedentary work, 6. conduct medical surveillance for workers who are at risk.

3.2.9. Psychosocial Hazards

These are hazards that can have an adverse effect on an employee's mental health or wellbeing. Mental illness refers to a wide range of mental health conditions – disorders that affect your mood, thinking and behavior. Examples of mental illness include depression, anxiety disorders, schizophrenia, eating disorders and addictive behaviors. (WHO, 2020).

Many people have mental health concerns from time to time. But a mental health concern becomes mental illness when ongoing signs and symptoms cause frequent stress and affect your ability to function.

Health Impacts

Having an occupational health issue can have significant impacts on an individual's wellbeing. For example, exposure to a blood-borne virus as a result of a sharps injury can result in months of stress and anxiety for the individual.

A mental illness can make you miserable and cause problems in your daily life, such as work or in relationship.

Harassment

Harassment are actions that result to feeling intimated, humiliated and offended which can have serious impacts on a person's health and wellbeing.

For example, bullying in the workplace can result in the bullied individual experiencing psychosocial symptoms, including stress, anxiety and sleep deprivation, loss of appetite and a sense of vulnerability.

Workplace aggression and abuse

Workplace aggression and abuse can have serious effects on someone's mental and physical health, resulting in symptoms such as stress, anxiety and sleep deprivation. (Workplace Strategies for Mental Health, Canada).

3.2.10. Key Points

- Physical, ergonomic and psychosocial hazards are of equal importance with other hazards and shall be given the same attention in the workplace.
- Physical hazards in the workplace incudes noise, vibration, temperature extremes, extreme pressure and radiation.
- Ergonomic hazards are closely associated to musculoskeletal injuries like damages to the muscles, tendons, bones, joints, ligaments, nerves, and blood vessels.
- Psychosocial hazards in the workplace like harassment and bullying can have adverse effect on the worker's mental health and well-being.

4 – Safety Hazards and their Control

The Big Idea is "safety hazards are present in every workplace. It is important to recognize them and determine the appropriate controls to protect workers from injuries and illnesses".

General Objectives

At the end of the session, participants are able to:

- Identify and assess safety hazards in the general industries
- Understand the harmful effects of hazards
- Recognize the importance of control measures

Safety Hazards are any source of potential injuries on someone in the workplace. Examples are:

- slipping/tripping hazards
- working at heights (falls)
- machine malfunctions or breakdowns

4.1. Housekeeping

The Big Idea is "A poorly-planned and untidy workplace is associated to many accidents causing injuries and even fatalities to workers and the public and damages to properties."

4.1.1. Session Objectives

At the end of the session, participants are able to:

- explain how poor housekeeping cause incidents in the workplace;
- describe the how good housekeeping help prevent incidents; and
- identify the elements of an effective housekeeping program.

4.1.2. Rule 1060; Premises of Establishment

Rule 1060.01 (Premises of Establishments) of the Occupational Safety and Health Standard (OSHS) states that:

- Good housekeeping shall be maintained at all times through cleanliness of building, yards, machines and equipment, regular waste disposal and orderly processes, operations, storage and filing of materials.

Rule 1150.01(Materials Handling and Storage) of the OSHS also states that:

- Storage areas shall be kept free from accumulations of materials that constitute hazards from tripping, fire, explosion, or pest harborage. Vegetation control shall be exercised when necessary.

Both refer to good housekeeping as strategy to keep workplaces free from safety hazards of trip, fire, explosion, etc.

Good housekeeping practices can help control or eliminate workplace hazards. It is based on the premise that if a workplace accepts debris, clutters, spills and disorder as normal, then other more serious hazards may be taken for granted.

Housekeeping is not just cleanliness. It is also:

- keeping work areas neat and orderly;
- maintaining halls and floors free of slip and trip hazards; and
- removing of waste materials and other fire hazards from work areas; and
- keeping the discipline among employees to sustain the practice.

Poor housekeeping can cause accidents like:

- tripping over clutters on floors, stairs, platforms;
- being hit by falling objects;
- slipping on greasy, wet and dirty surfaces;
- striking against projecting and poorly stacked items or misplaced materials; and
- cutting, puncturing, or tearing the skin of hands or other parts of the body on projecting nails, wire or steel strapping.

On the other hand, good housekeeping:

- prevents accidents;
- prevents fire;
- prevents illnesses (poor housekeeping attracts pests that can make workers sick);
- improves productivity; and
- boosts employee morale.

4.1.3. 5s of Good Housekeeping and its Principles

5S of Good Housekeeping involves the principle of waste elimination through workplace organization. It is derived from the Japanese words seiri, seiton, seiso, seiketsu, and shitsuke which can be roughly translated to English as sort, set in order, clean, standardize, and sustain, respectively (APO, n.d.).

Principles of 5S of Good Housekeeping

Japanese	English	Principle/Action Items
Seiri	Sort	Separate necessary from unnecessary. – take out unnecessary items – label unserviceable or defective equipment/tools – dispose of trash regularly
Seiton	Set in order	Orderliness eliminates extra motion.

		– place items in dedicated location to be more visible – apply systematic labeling to separate exclusive items – practice First-in-first-out (FIFO) method
Seiso	Sweep	Cleaning as purifying the spirit, cleaning as inspection and elimination of minor defects. – place items in dedicated location to be more visible – keep workplace as clean as required by the product/service – inspect while cleaning and clean before things get really dirty
Seiketsu	Standardize	Visual management and standardization. – maintain high standard of housekeeping at all times – make the first 3 S as standard and write them – use standard signs and safety signage
Shitsuke	Self-Discipline	Sustaining, maintaining discipline and reviewing standards. – do housekeeping spontaneously without being told – do regular inspections/audits – adopt the kaizen principle (continuous improvement)

4.1.4. Housekeeping Program

An effective housekeeping program considers the orderly storage and movement of materials. At the minimum, the housekeeping plan includes:

- materials flow plan
- workplace lay-out
- worker training
- responsibility matrix
- financial resources (e.g. to purchase extra bins and build storage)
- waste disposal plan
- inspection plan

Elements of an Effective Housekeeping Program

Successful implementation of housekeeping program is based on management commitment together with disciplined workers. The following are the recommended elements of an effective housekeeping program:

- maintenance – most important element (e.g. fixing broken windows and damage floors, regular painting and cleaning of walls, etc.)

- dust and dirt removal (e.g. vacuum cleaning dust and dirt in areas where dusts accumulate)
- employee facilities (e.g. regular cleaning of lockers, wash and change rooms, showers, toilets, etc.)
- surfaces (e.g. keeping floors and walls in good conditions)
- light fixtures (e.g. regular cleaning and maintenance of light fixtures)
- aisles and stairways (e.g. wide enough and free from obstructions for easy movement of people, products and materials, adequately-lighted)
- spill control (e.g. prevent spills, drip pans and guard if spills might occur, immediate clean-up if spills do occur)
- tools and equipment (e.g. suitable storage with markings and orderly arranged)
- waste disposal (e.g. regular collection, grading, sorting and disposal of scraps)
- storage (e.g. materials do not obstruct aisles and fire exits, stocking procedures followed and flammables and hazardous materials properly stored)

(Source: Canadian Center for Occupational Health and Safety, 2018)

4.1.5. Key Points

- Effective housekeeping can eliminate some workplace hazards and help get job done safely and properly.
- Poor housekeeping can frequently contribute to accidents (by hiding hazards that cause injuries).
- Good housekeeping is a basic part of accident and fire prevention.
- An effective housekeeping program helps in successful implementation.
- Management commitment and employee discipline help sustain housekeeping programs

4.2. Materials Handling and Storage

The Big Idea is "materials handling expose workers to many hazards that may cause serious and even fatal accidents that management and workers need to work together to implement effective controls."

4.2.1. Session Objectives

At the end of the session, participants are able to:

- recognize hazards related to materials handling and storage;

- describe the risk of being exposed to the materials handling hazards; and
- determine practical control measures to prevent injuries.

4.2.2. Requirements

Rule 1150 (OSHS). Materials Handling & Storage

1) Use of Mechanical Equipment. Where mechanical handling equipment is used, sufficient safe clearance shall be allowed for aisles, at loading docks, through doorways and wherever turns or passage must be made.

2) Aisles and passageways shall be kept clear and in good repair, with no obstruction across or in aisles that could create a hazard. Permanent aisles and passageways shall be appropriately marked.

3) Secure Storage. Storage of material shall not create a hazard. Bag containers, bundle, etc., stored in tiers shall be stacked, blocked, interlocked and limited in height so that they are stable and secure against sliding or collapse.

4) Clearance Limits. Clearance signs to warn of clearance limits shall be provided.

5) Rolling Railroad Cars. Derail and/or bumper blocks shall be provided on spur railroad tracks where a rolling car could contact other cars being worked, enter a building, work or traffic area.

6) Guarding. Covers and/or guardrails shall be provided to protect personnel from the hazards of open pits, tanks, vats, ditches, etc.

Materials handling plays an important role in almost all industries. The rapid rise of online shopping, has further fueled the demand for efficient and cost-effective material handling solutions.

This is a technique which includes the art of lifting, placing, storing or moving materials through the use of one's physical strength or appropriate handling equipment.

There are two different ways to handle materials in the workplace: manually, where workers physically lift and manipulate materials using their physical strength and mechanically, where special machines and lifting equipment are used to perform the task.

Both methods are effective, but there are important things that need workers need to be aware of for both their safety and that of the materials they are handling (Engineered Ergonomics, 2019).

Manual vs. Mechanical or Automated Materials Handling

4.2.3. Manual Materials Handling

Manual Materials Handling consists of lifting, lowering, emptying, moving, carrying, transporting and packaging of products using physical strength. This method is highly susceptible to injuries and accidents. When doing these activities, a worker might:

- cut himself/herself
- hurt his/her back, spine, muscles
- hurt his/her fingers, hand, arm or legs
- sprain his/her ankle

Manual materials handling expose workers to physical risks. The main risk factors associated with manual materials handling as identified by the National Institute for Safety and Health (NIOSH) are the following:

- awkward posture (bending and twisting)
- repetitive motion (frequent lifting, reaching, carrying)
- forceful exertions (carrying or lifting heavy loads)
- pressure points (grasping loads, leading against hard or sharp edges)
- static postures (in a fixed and prolonged position)

Repeated or prolonged exposure to one or more of these risk factors initially results to fatigue and discomfort but over time may cause damages to muscles, tendons, ligaments, nerves and blood vessels or what is known as musculoskeletal disorders (MSDs).

Precautions in Manual Materials Handling

When moving materials manually, the following practices are recommended by OSHA to prevent injury among workers:

- Attach handles to loads to reduce the chances of getting fingers smashed
- Wear appropriate personal protective equipment
- Use proper lifting techniques
- Seek help when:
  - a load is too bulky to properly grasp or lift
  - you can't see around or over the load
  - you can't safely handle the load

Personal Protective Equipment

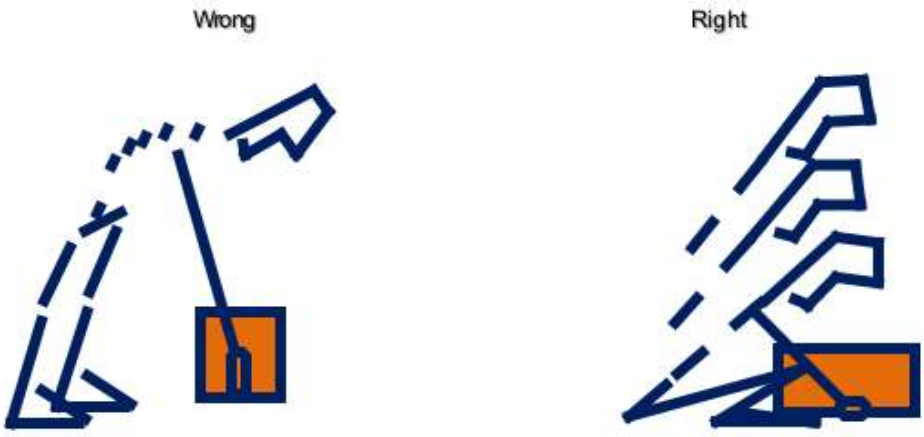
Using the following personal protective equipment prevents needless injuries when manually moving materials:

- hand and forearm protection (such as gloves for loads with sharp or rough edges);
- eye protection;
- steel-toed safety shoes or boots (to prevent impact on feet for objects that may fall);
- metal, fiber, or plastic metatarsal guards to protect the instep area from impact or compression.

Proper Lifting Techniques

- stand in front of the load
- bend the knees
- using both hands, grasp the object firmly and pull close to your body
- lift with the legs -- NOT THE BACK
- straight back and feet apart

Manual Lifting



4.2.4. Mechanical Materials Handling

Mechanical Materials Handling pertains to use of rigid, manually or mechanically-powered equipment mainly for handling bulky and heavy items.

The greatest benefit of using mechanical operations for material handling tasks is the fact that it reduces the risk of worker injury by placing the burden on the machine or equipment.

There are types of materials handling equipment (MHE), manually-powered and mechanically-powered or automated MHE.

Manually powered MHE

- reduce physical effort making the handling of materials easier and safer
- provide easy access
- protect the operator
- prevent any damage to materials

Examples:

- Trolleys
- Hand truck
- Pallet truck
- Cart
- Drum tilter
- Trolley
- Wheelbarrow

Mechanically-powered or automated MHE are classified as:
Lifting equipment

- Cranes
  - Stationary
  - Tower cranes
  - Overhead traveling cranes
  - Mobile (Wheel type, Crawler type, Gantry)

Transport equipment

- Industrial trucks
- Forklifts
- Tractors
- Trailers,
- Dump trucks
- Conveyors

Materials Handling Accessories – Slings

A competent person needs to conduct inspection of slings before and during use. In addition, ensure that workers observe the following precautions when working with slings:

- remove immediately damaged or defective slings;
- do not shorten slings with knots or bolts or other makeshift devices;
- do not kink sling legs;
- do not load slings beyond their rated capacity;
- Keep suspended loads clear of all obstructions.
- remain clear of loads about to be lifted and suspended
- do not engage in shock loading; and
- avoid sudden crane acceleration and deceleration when moving suspended loads.

Challenges with Mechanical/Automated Materials Handling Equipment

Although materials handling equipment offers plenty of benefits, there are also downsides such as:

- User safety
  According to UK data (HSE, 2019) contact with moving machinery was responsible for 9% while getting struck by a moving vehicle and object lead to 31% fatal injuries. Activities like handling, lifting, and moving were responsible for 21% of non-fatal workplace injuries while getting struck by a moving object lead to 10% of workplace accidents.

- Inadequate Operating Knowledge
  Lack of skilled and experienced workforce, makes it difficult to provide a safe workplace environment. The lack of such workforce leads to higher labor costs, turnover rates, human errors, and downtime.

- Human Error
  Material handling is also grappling with the element of human error, which often leads to inaccuracies. This, in turn, may lead to fatal accidents, damaged goods, and production downtime.

Mechanical Handling Precautions

- Do not operate any equipment if not trained
- Operators are certified and authorized
- Handlers and operators trained in safety and health
- Equipment properly maintained and regularly inspected

4.2.5. Storage Hazards

Materials while in storage areas must not create hazards and put workers at risk. To prevent creating hazards when storing materials, employers must do the following:

- keep storage areas free from accumulated materials that cause tripping, fires, or explosions, or that may contribute to the harboring of rats and other pests;
- place stored materials inside buildings that are under construction and at least 6 feet from hoist ways, or inside floor openings and at least 10 feet away from exterior walls;
- separate non-compatible materials;
- equip employees who work on stored grain in silos, hoppers, or tanks, with lifelines and safety belts;
- ensure that workers place bound materials on racks and secure them by stacking, blocking, or interlocking to prevent from sliding, falling, or collapsing; and
- provide storage areas with at least 2 exits.

Stacking materials can be dangerous if workers do not follow safety guidelines. Falling materials and collapsing loads can crush or pin workers, causing injuries or death. To help prevent injuries when stacking materials, the following safeguards can be helpful:

- stack lumber no more than 16 feet high if it is handled manually, and no more than 20 feet if using a forklift;
- remove all nails from used lumber before stacking;
- stack and level lumber on solidly supported bracing;
- ensure that stacks are stable and self-supporting;
- do not store pipes and bars in racks that face main aisles to avoid creating a hazard to passersby when removing supplies;
- stack bags and bundles in interlocking rows to keep them secure; and
- stack bagged material by stepping back the layers and cross-keying the bags at least every ten layers (to remove bags from the stack, start from the top row first).

4.2.6. Principles of Materials Handling

The following principles will help design an effective materials handling system:

Planning	Plan how, when and where materials move and get stored.
System	
Material Flow	Build equipment layout and operation process to optimize the material flow.

Unit Load/Size	Choose a unit size or a load of materials based on the right weight, size, cost, durability and ease of use.
Space Utilization	Use all cubic space for storage, conveyors and MHE efficiently.
Standardization	Standardize handling methods as well as types and sizes of handling equipment.
Ergonomics	Design the system to ensure effective interaction between human operators and equipment.
Energy	Consider energy consumption and costs when setting up a system.
Ecology	Use processes and equipment that help reduce environmental pollution.
Mechanization	Mechanize handling process, if possible, to reduce manual errors and labor costs.
Flexibility/Adaptability	Use flexible processes and equipment.
Simplification	Reduce unnecessary and uneconomical processes or equipment.
Gravity	Use gravity to move materials, if possible, to reduce energy consumption or labor cost.
Safety	Create safety guidelines, provide safety training and follow existing safety codes and regulations when setting up and operating the system.
Automation	Consider automation to ensure improved material handling, better information control and reduced labor costs.
Data flow	Ensure integration of data flow with physical material flow throughout the system
Control/tracking	Use technology (RFID or barcodes) for inventory – accurate and reliable + saves inspection costs
Costs	Consider and compare costs of various alternatives of materials handling equipment.
Maintenance	Create maintenance plans and schedule repairs.
Obsolescence	Create a long-term policy to remove and replace outdated or obsolete equipment and processes.

4.2.7. Key Points

- Rule 1150 of the Occupational Safety and Standards (OSHS) provides the guidance for materials handling to keep workers safe while lifting, moving, carrying and storing materials.

- Materials handling can be done either manually or mechanically. Manual handling is riskier than mechanical handling because of exposure to awkward positions, repetitive movement and forceful exertions.

- Risks with mechanical materials handling equipment are user safety, lack of knowledge is operation and human error.

- Employers are responsible in training workers on proper and safer materials handling techniques and providing them with proper PPEs.

- An effective materials handling and storage plan and program offers safety and productivity.

4.3. Machine Safety

The Big Idea is "behind the advantages of using machines to perform work is the hazard that can seriously injure or even kill workers that there is need to understand these hazards and control them to keep workers safe."

4.3.1. Session Objectives

At the end of the session, participants are able to:
- recognize the hazards while using and working around machines;
- describe the risk of being exposed to the mechanical hazards; and
- determine practical control measures to prevent injuries.

4.3.2. Requirements

- Employers shall ensure that machineries and equipment are properly guarded in conformity with the existing safety standards.
- Guards shall be designed, constructed and used that they will provide protection against the hazards.
- No person shall remove any safeguard, safety appliance, or safety device guarding a dangerous machine or machine part unless such is authorized and the machine is stopped.
- Warnings signs shall be installed near the machine being repaired or its guards removed.
- For complete guidance on Machine Guarding read through Rule 1200 of the OSHS.

4.3.3. Hazards working with machines

Machine is a mechanical structure that uses power to apply forces and control movement to perform an intended action. It is necessary for efficiency of work. Machines have moving parts, sharp edges and hot surfaces (OSHA).

Mechanical Hazards

They occur in 3 basic areas where safeguarding is required. These are:

- at the point of operation where work like cutting, shaping, boring, or forming are done;
- power transmission where components of the mechanical system transmit energy flywheels, pulleys, belts, connecting rods, couplings, cams, spindles, chains, cranks, and gears; and
- moving parts like reciprocating, rotating, and transverse moving parts, as well as feed mechanisms and auxiliary parts of the machine (OSHA).

Non-mechanical Hazards

Aside from the mechanical hazards, machines have other hazards that workers must know. The following is the list of other hazards working with machines:

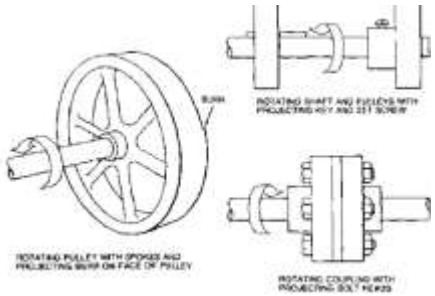
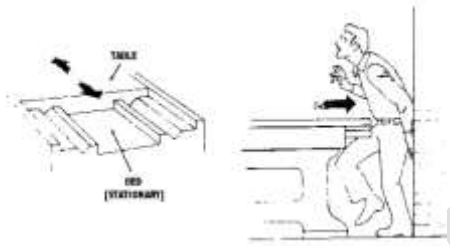
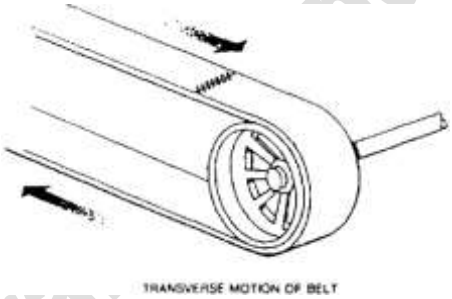
Hazards	Examples
Physical	Noise, heat, repetitive jobs, poor design, flying objects
Chemical	solvents, cleaners, acids, dusts, fumes, mists, rust from machine parts
Biological	dirty work area and facilities
Psychological	long shifts
Electrical	broken or frayed cords, exposed wires, faulty electrical wires

4.3.4. Hazardous Mechanical Motions and Actions

The basic types of hazardous mechanical motions are rotating, reciprocating and transversing while the basic actions are cutting, punching, shearing and bending.

Motion

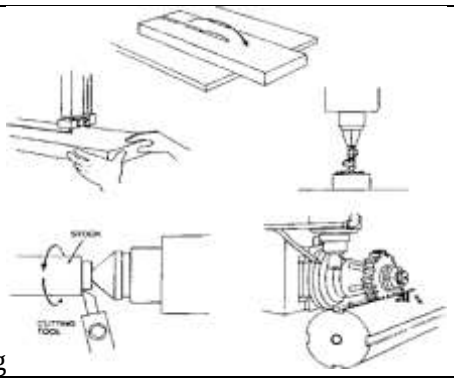
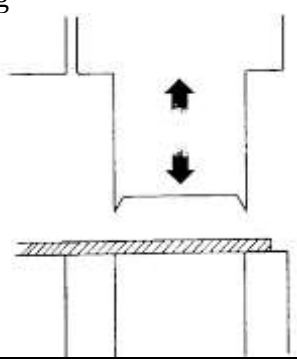
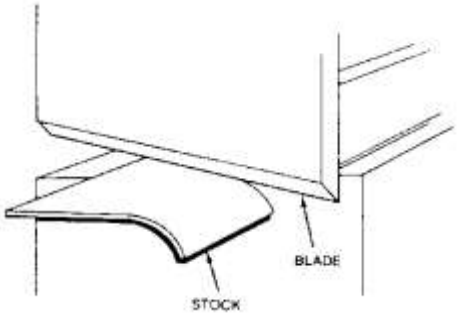
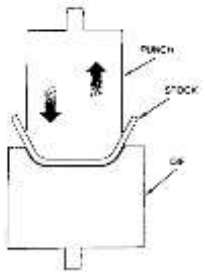
Motion	Danger

Rotating 	Injuries due to contact with rotating parts can be severe. Even smooth, slowly rotating shafts can grip clothing, and through mere skin contact force an arm or hand into a dangerous position.
Reciprocating 	Reciprocating motions may be hazardous because, during the back-and-forth or up-and-down motion, a worker may be struck by or caught between a moving and a stationary part.
Transversing  	Transverse motion which is a movement in a straight, continuous line creates a hazard because a worker may be struck or caught in a pinch or shear point by the moving part.

Source: OSHA

Actions

Actions	Danger

Cutting 	The danger of cutting action exists at the point of operation where finger, arm and body injuries can occur and where flying chips or scrap material can strike the head, particularly in the area of the eyes or face.
Punching 	Punching action results when power is applied to a slide (ram) for the purpose of blanking, drawing, or stamping metal or other materials. The danger of this type of action occurs at the point of operation where stock is inserted, held, and withdrawn by hand.
Shearing 	Shearing action involves applying power to a slide or knife in order to trim or shear metal or other materials. A hazard occurs at the point of operation where stock is actually inserted, held, and withdrawn. Shearing machines can be mechanically, hydraulically, or pneumatically powered..
Bending 	Bending action results when power is applied to a slide in order to draw or stamp metal or other materials. A hazard occurs at the point of operation where stock is inserted, held, and withdrawn. Equipment that uses bending action includes power presses, press brakes, and tubing benders.

(Source: OSHA)

Preventing Against Machine Hazards

A good rule to remember is: any machine part, function, or process which many cause injury must be safeguarded. When the operation of a machine or accidental contact with it can injure the operator or others in the vicinity, the hazards must be either controlled or eliminated (OSHA).

Machine guarding is a safety feature on or around machine/equipment. It consists of a shield or device covering hazardous parts/areas of a machine to prevent contact with body parts or to control hazards like chips or sparks.

4.3.5. Requirements for Machine Guards

Machine guards must meet these minimum general requirements (per OSHA) which are also required by Rule 1200 of the OSHS:

- Prevent contact. Machine guards must prevent hands, arms, and any other part of a worker's body from making contact with dangerous moving parts. of their bodies near hazardous moving parts.
- Secure. Workers should not be able to easily remove or tamper the safeguard. They must be firmly secured to the machine.
- Protect from falling objects. A machine guard should ensure that no objects can fall into moving parts. A small tool which is dropped into a cycling machine could easily become a projectile that could strike and injure someone.
- Create no new hazards. A safeguard should not create a hazard of its own. The edges of guards, for example, should be rolled or bolted in such a way that they eliminate sharp edges to prevent laceration.
- Create no interference. Machine guards should not impede a worker from performing the job quickly and comfortably.
- Allow safe lubrication. Machine design should allow lubrication without removing the safeguards. Example: an oil reservoir outside the guard with a line leading to the lubrication point.

4.3.6. Types of Machine Guards

There are 4 general types of machine guards: fixed, interlocked, adjustable, and self-adjusting.

Type	Safeguarding Action	Advantages	Issue
Fixed	Provides barrier	– May be customized according to requirement – Can be fabricated in-plant – Usually provides maximum protection – Needs lesser maintenance – Suits to high production, repetitive operations	– May block worker vision – Can be limited to specific operations – Adjustment/repair often require its removal, thereby necessitating other means of protection for maintenance personnel
Interlocked	Shuts off or disengages power and prevents starting of machine when guard is open	– Usually provides maximum protection – Allows access to machine for removing jams without removing fixed guards	– Requires careful adjustment and maintenance – Jams may be easy to disengage
Adjustable	Provides a barrier that may be adjusted according to requirement	– Can be constructed/adjusted to suit many specific applications	– Hands may enter danger area – Often require frequent maintenance/adjustment – May block worker vision
Self-adjusting	Provides a barrier that moves according to the size of the stock entering the danger area	– Off-the-shelf guards are often commercially available	– Does not always provide maximum protection – May block worker vision – Usually needs frequent maintenance and adjustment

(Source: OSHA)

4.3.7. Personal Protective Equipment

It is recommended that engineering controls be given priority for maximum worker protection. But whenever engineering controls are not available or are not fully capable of protecting the employee, operators must wear personal protective equipment which should be:

- appropriate to the hazards;

- maintained in good condition;
- properly stored when not in use, to prevent damage or loss; and
- kept clean, fully functional, and sanitary.

Hard hats	protect the head from impact of bumps and falling objects
Caps and hair nets	help keep the worker's hair from being caught in machinery
Shields, safety goggles, glasses	protect face and eyes if machine coolants could splash or particles could fly into the operator's eyes or face
Hearing protection	protect workers from noisy machines
Coveralls, jackets, vests, aprons, and full-body suits	guard the trunk of the body from cuts or impacts from heavy or rough-edged stock
Special sleeves and gloves	protect hands and arms
Safety shoes and boots, or other acceptable foot guards	shield feet against injury in case the worker needs to handle heavy stock which might drop

It is important to note that protective clothing and equipment can create hazards. Examples:

- A protective glove can be caught between rotating parts.
- A respirator facepiece can hinder the worker's vision.
- Loose-fitting shirts might possibly become entangled in rotating spindles or other kinds of moving machinery.
- Jewelry can catch on machine parts or stock and lead to serious injury by pulling a hand into the danger area.

4.3.8. Key Points

- Machines are important but they have hazards that can cause serious injuries/fatalities. They have both mechanical and non-mechanical hazards.

- Hazardous mechanical motions are rotating, reciprocating and transversing while hazardous actions are cutting, punching, shearing and bending.

- Machine guarding is an engineering control that is most effective. But when machine guarding is not present or do not offer enough protection, workers should wear protective clothing/equipment.

- Machine guarding offers maximum protection when used in accordance to the general requirements of the standard – RULE 1200 of the OSHS.

4.4. Electrical Safety

The Big Idea is "electricity is present in every workplace and has been one of the major causes of accidents and fatalities among workers that requires effective control measures through compliance of the requirement of the standards and following good practices."

4.4.1. Session Objectives

At the end of the session, participants are able to:

- recognize the hazards while using and working around electricity;
- describe the risk of being exposed to the electrical hazards; and
- determine practical control measures to prevent injuries and fatalities.

4.4.2. Requirements: Rule 1210 Electrical Safety

Rule 1210 Electrical Safety

1211 Philippine Electric Code
1212 Electrical Safety Inspection
1213 Inspection Fees
1214 Requirements in the Preparation of Electrical Plans
1211: Philippine Electrical Code:

The Philippine Electrical Code is considered safety standards to safeguard any person employed in any workplace and control the practice of electrical engineering.

1212.04: Inspection:

1) The safety engineers of the Regional Labor Office or authorized representative having jurisdiction shall conduct annual safety inspection on all electrical installation and/or special inspections as provided in Rule 1004.

2) All Regional Labor Offices shall adopt and maintain an effective records control of all electrical inspections in order that re-inspection shall not go beyond the expiration date.

Specific Requirements for Working Safely with Electrical Energy

- Only Qualified Electrical Workers can perform work "ON" or "NEAR" electrical equipment
- Non-electrical workers may use electrical equipment, but must be trained to know the hazards of the equipment and how to use the equipment safely.
- If a worker does not know how to operate a piece of equipment safely and do not know the hazards involved, stop work and give the required training.

Leading Causes of Electrical Accidents:

- Drilling and cutting through cables
- Using defective tools, cables and equipment
- Failure to maintain clearance distance of 10 feet
- Failure to de-energize circuits and follow Lockout/Tagout procedures
- Failure to guard live parts from accidental worker contact
- Unqualified employees working with electricity
- By-passing electrical protective devices
- Not using GFCI (ground fault circuit interrupters) devices
- Missing ground prongs on extension cords

4.4.3. Hazards of Electricity

Shock	most common, can cause electrocution or muscle contraction leading to secondary injury which includes falls
Fire	enough heat or sparks can ignite combustible materials
Explosions	electrical spark can ignite vapors in the air
Arc Flash	can cause burns
Arc Blast	a pressure wave caused by expansion of copper in short circuit

Fundamentals of Electricity

- Electrical current is the flow of electrons through a conductor.
- A conductor is a material that allows electrons to flow through it.
- An insulator resists the flow of electrons.
- Resistance opposes electron flow.
- Current Flows in a Loop or Circuit

Circuits are AC (alternating current) or DC (direct current). Usually, current is alternating current (AC). AC current has five parts:

- Electrical source
- HOT wire to the tool
- The tool itself
- NEUTRAL wire returns electricity from the tool
- GROUND

Electric Shocks. Current travels in closed circuits through conductors, example: water, metal, the human body. Shock occurs when the body becomes a part of the circuit where current enters at one point and leaves at another.

Severity of the shock depends on:

- amount of current
- determined by voltage and resistance to flow
- individual differences

Effects of Current Flow

More than 3 milliamps (ma)	painful shock
More than 10 ma	muscle contraction
More than 20 ma	considered severe shock
More than 30 ma	lung paralysis - usually temporary
More than 50 ma	possible ventricular fibrillation (usually fatal)
100 ma to 4 amps	certain ventricular fibrillation (fatal)
Over 4 amps	heart paralysis; severe burns

4.4.4. Controlling Electrical Hazards

- Follow the Electrical CODE
- Electrical installation
- Four proactive methods:
    1. electrical isolation
    2. equipment grounding
    3. circuit interruption
    4. safe work practices

1. Electrical Isolation. To ensure safety, keep electricity away from workers. There are 3 ways:
    - Insulate the conductors. Example: Use of rubber and plastic.
    - Elevate the conductors. Example: Overhead powerlines. Never allow work within 10 feet of energized lines.
    - Guard the conductors by enclosing them. Example: Receptacle covers, boxes, & conduit.
    - Electric equipment operating at 50 volts or more must be guarded.

2. Equipment Grounding. Safety is ensured by providing a separate, low resistance pathway for electricity when it does not follow normal flow (ground prong). Grounding gives the stray current somewhere to go and keeps a person from becoming part of the circuit.

    Grounding does not work if:
    - tool does not have a ground pin
    - working in wet locations
    - touching a metal object

Make sure all circuits and extension cords, non-current carrying metal parts and non-double insulated portable and semi-portable tools and equipment have proper grounding.

3. Circuit interruption is a system that automatically shuts off the flow of electricity in the event of leakage, overload, or short circuit. They come in 2 kinds of protective devices:

   - Circuit Breakers and Fuses
     - devices that protects from heat build-up and meant to protect the building, equipment and tools

   - Ground Fault Circuit Interrupter (GFCI)
     - circuit protection device that protects a worker from shock and electrocution.

   A GFCI detects 'leakage' of 4-6 milliamps and opens the circuit in 1/40th of a second. It works without the ground plug but not fast enough.

4. Safe Work Practices
   - User must visually inspect the equipment for defects and damage.
   - If the tool or cord set is damaged, take out of service.
   - Before work begins, know the location of exposed and concealed electrical circuits.
   - Once found, warning signs/labels must be posted.
   - Distance of the worker to the energy source should be considered first.
   - Tools, materials and processes are considered to see if they could potentially shorten the safe separation distance. Examples: metal ladders, re-bar, forklift, scaffold tubes, etc.
   - Must not permit work near electric circuits unless the worker is protected.
   - De-energized circuits and equipment must be locked/tagged out.
   - No metal ladders near electrical work.
   - Only dry hands when plugging or unplugging cords/equipment.
   - No raising or lowering tools by the cord.
   - Unless equipment is designed for it, cannot be used in damp and wet locations.

4.4.5. Summary of Hazards and Control Measures

Hazards	Control Measures
1. Inadequate wiring	Proper grounding

2. Exposed electrical parts	Use GFCI
3. Wires with bad insulation	Use fuses and circuit breakers
4. Ungrounded electrical systems and tools	Guard live parts
6. Damaged power tools and equipment	Proper use of flexible cords
7. Using the wrong PPE and tools	Close electrical panels by Competent Person
8. Overhead power lines	Employee training
9. All hazards are made worse in wet conditions	Ensure Competent Person on site
10. Damaged extension cords	Use proper approved electrical equipment
11. Unqualified workers doing electrical work	Qualified persons install electrical devices

4.4.6. Key Points

- A safe work environment is not always enough to control all potential electrical hazards. Worker must be very cautious and work safely. Safety rules help control risk of injury or death from workplace hazards.
- Assume that all overhead wires are energized at lethal voltages.
- It is important that a worker is be able to recognize the electrical hazards around and know how to mitigate them.
- Whether electricity in the home or at work people must learn to control electrical power and ensure safety of those around them.

4.5. Fire Protection and Control

The Big Idea is “every workplace has materials and processes that create fire hazards that there is need for employers and workers to implement a system intended to prevent, detect and suppress fire for the protection of the workers, properties and the public.”

4.5.1. Session Objectives

At the end of the session, participants are able to:

- recognize the fire hazards in the workplace;
- describe the risk of being exposed to fire hazards; and
- determine practical control measures to prevent, detect and suppress fire.

4.5.2. Requirement: Rule 1941

Rule 1941: General Provision

1) All buildings for occupancy used shall be located in areas provided for by applicable zoning regulation of the locality.
2) Specific standards in design and construction, occupancy and use of buildings and facilities shall be those prescribed by the *Building Code of the Philippines.*
3) Fire tests of building materials and fire protection equipment used in any place of employment shall be those provided for the *Fire Code of the Philippines.*
4) Standards for the design and installation of indoor, outdoor general storage, sprinkler system and fire protection system shall be those provided for by Philippine Mechanical Engineering Code (RA 8495-1998) *Chapter 9*

Fire Protection

- a science in itself
- includes procedures for preventing, detecting and extinguishing fires
- aim to protect employees and property and assure the continuity of a plant's operations

The Fire Triangle/Fire Tetrahedron

- oxygen
- heat
- fuel

4.5.3. Basic Principles of Fire

- *Fire* is a process that emits light and heat. To sustain most fires, three elements must be available at the same time: elevated temperature, oxygen, and fuel.
- Fire spreads from an ignition source to a fuel source to other fuel sources
- The spread can either be by conduction, convection and radiation.
- Conduction transfers heat through contact with solid material.
- Convection transfers heat through heated air.
- Radiation heat transfers through electromagnetic waves given off by flames.

Fuels

- Paper & Boxes etc.
- Expanded polystyrene beads
- Plastics
- Solvents

- Carpets
- Furniture
- Waste materials

Classes of Fire

Class of Fire	Type of Fire	Type of Extinguisher	Extinguisher Identification	Symbol
A	Ordinary combustibles: wood, paper, rubber, fabrics, and many plastics	Water, Dry Powder, Halon		
B	Flammable Liquids and Gases: gasoline, oils, paint, lacquer, and tar	Carbon Dioxide, Dry Powder, Halon		
C	Fires involving Live Electrical Equipment	Carbon Dioxide, Dry Powder, Halon		
D	Combustible Metals or Combustible Metal Alloys	Special Agents		
K	Fires in Cooking Appliances that involve Combustible Cooking Media: Vegetable or Animal Oils and Fats			

Common Causes of FIRE

- Machines not properly maintained leading to overloading
- Smoking or use of naked flame
- Excessive storage of waste and scrap materials
- Improper use or storage of flammable liquid e.g. thinner and paint
- Short-circuiting, overloading or poor joints in electrical cables
- Defective electrical equipment and wiring

4.5.4. Revised IRR of the Fire Code of 2008 (RA 9514)

Rule No. 09 Enforcement and Administration of Fire Safety Measures

Section 9.0.3.5
Fire Safety Practitioners – any qualified person, recognized by the BFP, engaged in, but not limited to, the design, construction, installation, repair and maintenance, assessment, and rehabilitation of fire safety construction, suppression and control systems, protective and warning systems and life safety related services, or employed as a safety officer of public and private establishments/companies.

Only FSP issued with Certificate of Competency (COC) shall be allowed to prepare, sign and certify the FSCR, FSCCR and FSMR.

Section 9.0.3.1 Applicability
Under the RIRR, Submission of FSCR, FSCCR and FSMR are now required for

a) All private and public buildings, facilities and structures to be constructed, altered or modified, which by reason of their use, size and height are required to install any or combination of the following:
   (1) wet standpipe system;
   (2) automatic fire suppression system and
   (3) automatic fire detection and alarm system

b) Those covered by para "A" is also required to submit FSMR annually when securing FSIC for business permit, certificate of annual inspection, DOH license to operate and other permits or licenses.
   - The Fire Safety Compliance Certificate (FSCR)
   - The FSCCR is required prior to the issuance of FSIC for Occupancy Permit
   - The FSMR is required for renewal of FSIC for business permit and other permits

Section 9.0.3.2
What is Fire Safety Compliance Report (FSCR)?

- a written report composed of plans, specifications and design analysis for building prepared by its Engineer Architect –of-Record and Fire Safety Practitioner.
- The Fire Safety Compliance Report is a pre-requisite in granting Fire Safety Evaluation Clearance and FSEC is a pre-requisite for the issuance of Building Permit.

Section 9.0.3.3
What is Fire Safety Compliance and Commissioning Report (FSCCR)?

A compilation report of all approved submittals, test and acceptance forms of all fire protection and life safety features, which shall form part of the "as-built" documents turned over by the contractor to the building owner.

FSCCR is a prerequisite for granting of FSIC for occupancy.

Section 9.0.3.4
What is Fire Safety Maintenance Report (FSMR)?

A written report prepared by the building owner, his/her fire safety practitioner or authorized representative. This is a compilation of the maintenance and testing records kept by the building's engineering and maintenance department, as a pre-requisite for the issuance of FSIC for Business Mayor's Permit renewal, Certificate of Annual Inspection for Hospitals, DOH License to operate and other permits or licenses being issued by other government agencies.

4.5.5. Fire Prevention, Detection and Suppression

Fire Prevention

- best way to deal with fire
- requires anticipation of fire sources
- create and impose relevant policies

Some tips to Prevent Fire

- Store LPG cylinders and other flammable materials properly
- Turn-off LPG at the cylinder when not in use
- Make sure everyone abides by site rules on smoking
- Practice permit-to-work system
- Keep site tidy and clear rubbish away promptly and regularly
- Avoid unnecessary stockpiling of combustible materials

Fire Detection

- Designed to discover early in the development
- Start control effort while fire is still small
- Allows safe evacuation of occupants
- Protect the safety of emergency response personnel
- Detectors must be coupled with alarms
- Alarm system provide notice to building occupants and to some extent to the fire department
- Fire detection/suppression system required depends on the Fire Code of the Philippines
- Most basic is fire extinguishers and fire exits (refer to Section 9 of RA 9514 – RIRR of the Fire Code
- FDAS – Fire Detection and Alarm System

Fire Suppression - system to control fire

- Automatic sprinklers
- Fire extinguishers
- Wet stand pipes
- Fire hose system
- Fire trucks

Fire Procedure – Evacuation

- Electrically locked security doors
  - Lock will auto release when the alarm activates, just push the door open
  - Break glass release button only if door does not unlock
  - If you break glass notify the Porters or the Buildings Manager for replacement

- People with disabilities
  - Need to be assisted by volunteers or nominated personnel, detail will be available in their Personal Emergency Evacuation Plans (PEEP's)

- On exiting the building
  - Report to designated assembly point promptly
  - Don't block any Emergency Services route to the building.
  - Report any missing colleagues to your Fire Warden
  - Report any disabled persons left at Refuge Points
  - Remain at assembly point until advised otherwise
  - Do not wander off as it may be assumed that you are trapped in the building

If you fight a fire using a fire extinguisher, remember the word **PASS**

PULL	PULL the pin. Some extinguishers require releasing a lock latch, pressing a puncture lever or other motion.
AIM	AIM low, pointing the extinguisher nozzle (or it's horn or hose) at the base of the fire.
SQUEEZE	SQUEEZE the handle. This releases the extinguishing agent.
SWEEP	SWEEP from side to side at the base of the fire until it appears to be out.

Watch the fire area in case fire breaks out again, and repeat use of extinguisher if necessary.

Read and follow the directions on your extinguisher. If you have the slightest doubt about whether or not to fight a fire – DON'T!

4.5.6. Key Points

- Fire threatens workers lives and company properties.
- Fire prevention is the best way to deal with fire.
- Do everything to prevent fire but be prepared if ever it happens; make emergency preparedness plan.
- Comply with the requirements of the law (Fire Code – RIRR of RA 9514)

5 – Job Hazard Analysis

The Big Idea is that writing safe job procedures and providing these to workers have been proven to be helpful in preventing workplace accidents. Job Hazard Analysis is one tool to help identify hazards and write safe job procedures.

5.1. Session Objectives

At the end of the session, participants are able to:
- explain the importance of JHA,
- describe the steps on how to conduct JHA, and
- develop safe job steps to prevent accidents

5.2. Requirements

Department Order 198-18 (IRR of RA11058) provides in:
Section 4 that it is the duty of the employer to provide complete job safe instructions and proper orientation to all workers.

> *Section 4. Duties of Employers, Workers and Other Persons. –*
> *(a) Duties of Employers – Every employer, contractor or subcontractor, if any, and any person who manages, controls or supervises the work being undertaken shall:*
> 1. *Equip the place of employment for workers free from hazardous conditions that are causing or are likely to cause death, illness or physical harm to the workers;*
> 2. *Provide complete job safety instructions and proper orientation to all workers including, but not limited to, those relating to familiarization with their work environment;*

Section 12 that covered workplaces shall conduct took box or safety meetings and Job Safety Analysis.

> *Section 12. Occupational Safety and Health (OSH) Program - Covered workplaces shall develop and implement a suitable OSH program in a format prescribed by DOLE . . .*
>
> *9. Conduct of toolbox or safety meetings and job safety analysis . . .*

Section 29 that employers shall be imposed an administrative fine of (Ph) 20,000 per day for failing to comply with this requirement.

Registration of establishment to DOLE – Rule 1020	Ph 20,000.00
Provision of job safety instruction or orientation prior to work	Ph 20,000.00

5.3. Importance of JHA

Many workplace injuries and illnesses can be prevented by closely looking into workplace operations, writing safe job procedures and providing appropriate training to workers. The findings of the job hazard analysis can be:

- used to implement controls to prevent accidents and illnesses, therefore making the workplace safer and more productive; and
- a good reference to write safe job procedures and use this procedure to train workers before they start work.

What is Job Hazard Analysis?

JHA is a technique that focuses on job tasks as a way to identify hazards before they cause harm to people in the workplace. It is one component of the larger commitment of a safety and health management system.

The analysis focuses on the relationship between the *worker*, *the task*, *the tools*, *the materials* and the *work environment.*

It is one of the best ways to determine, establish and write proper safe job procedures.

JHA is an excellent process that separates a job into its basic steps. Each step is analyzed to identify and potential hazards. Once the hazards are known, safe job procedures are developed. It gives opportunity for management to involve employees in developing safe work procedures.

Involving Employees

Involving employees is important because they have a unique understanding of the job which is valuable in finding hazards. Involving employees helps minimize oversights and gets a good "buy-in" that makes easier for workers to follow safe job procedures with less supervision.

Usually, JHA teams are composed of the process owner, supervisor, safety officer, design engineer, maintenance person. A job hazard analysis conducted and written by the Safety Officer alone is usually not effective.

5.4. Steps in Conducting JHA

There are 6 simple steps in the conduct of JHA.

1. Select the job/process to analyze

   Give priority to tasks/processes which 1) have high incidence of accidents and near misses, 2) are new, and 3) are newly revised/changed. Example:
   - Lifting power genset to 2nd floor
   - Loading of stocks to trailer
   - Cleaning glass window at 5th level

2. List the steps

   With the help of the owner of the process, break the task into steps and list in chronological order. There is no hard and fast rule of how many steps. The general guideline is not too broad to miss the basic steps and not too detailed to become unnecessarily long.

3. Describe the hazards

   In each step listed down, describe the hazard by answering the basic question "what can go wrong". Describing the hazard is best done by analyzing the relationship between:

   - the worker (experience, training, health condition, personal circumstances)
   - the task (complexity, requirement, difficulty, etc.)
   - the materials (toxicity, size, corrosive property, flammability and oxidizing property, handling requirement, etc.)
   - machines/tools/equipment (condition, complexity, motions, guarding, source of power, sharp and hot parts, etc.)
   - work environment (ventilation, housekeeping, illumination, level of noise

4. Recommend control measures

Do this step with the Hierarchy of Controls as guide. It is good to remember that not all hazards control strategies are equal. Some are more effective than the others. In recommending hazard controls consider the effectiveness, practicality and resources required.
Example, redesigning the process may be most effective, but to some situations, may not be practical if it requires highly technical expertise and a lot of money to do.

5. Write the safe job procedure

   The first 4 steps are needed to write the safe job procedure. After writing the draft procedure, consult with the owner of the process and the supervisor to finalize. Get the approval of the manager, then implement after training the process owners.

   Use this procedure in training workers before start of work and remind workers during safety meetings.

6. Review/improve the JHA

   The following are the instances/opportunities to review and improve the JHA

   - every time there are mishaps, injuries, or work-related illness occurs
   - after a near miss
   - when the process changes
   - following an employee's safety complaint
   - when equipment is damaged
   - per scheduled review

5.5. The JHA Format

The following is the most basic format of a Job Hazard Analysis:

JOB/TASK: Loading stocks to trailer		
BASIC JOB STEPS	HAZARDS – POSSIBLE INJURIES	PREVENTIVE MEASURES
1. Spotter helps driver position trailer in loading dock.	Spotter could get caught between trailer and dock.	Stay clear of the rear of the trailer. Keep other people away from the area.
2.		
3.		
4.		
5.		
SAFE JOB PROCEDURE		

STEP 1. Spot the position of the trailer as it moves near the loading dock until it is correctly positioned making sure spotter is not get caught between the trailer and the dock while backing.
STEP 2.
STEP 3.
STEP 4.
STEP 5.

5.6. Key Points

- Job Hazard Analysis is a tool to help identify hazards and write safe job procedure.
- There are 6 steps in conducting Job Hazard Analysis: 1) select the job, 2) list down the steps, 3) describe the hazard, 4) recommend control measures, 5) write the safe job procedure, and 6) improve JHA.
- Involving workers in the Job Hazard Analysis helps minimize oversights and ensure "buy-in".
- Describing the hazards is best done by analyzing the relationship among the workers, tasks, materials, equipment and the work environment.
- JHAs are reviewed or improved when there are incidents, complaints, changes in the process, equipment damage or as scheduled.

6 – Medical Screening and Surveillance

The Big Idea is "Occupational and work-related illnesses have remained a major OSH issue. An effective screening to detect diseases before medical care is sought and surveillance to optimize health status of workers where hazards exist help identify interventions to reduce incidence of ill health".

6.1. Session Objectives

At the end of the session, participants are able to:
- explain the importance of medical surveillance,
- describe the process of medical surveillance, and
- integrate medical surveillance into the OSH program.

6.2. Requirements

The OSH Law and OSH Standards requires employers to:

- promote and maintain the highest degree of physical, mental, and social well-being of workers of all occupations.
- prevent workers from departures due to health caused by their working conditions.
- protect workers in their working environment from hazards and risks usually causing adverse health effects.
- place and maintain a worker in an occupational environment adapted to his/her physiological and psychological capabilities.

6.3. Concepts of Occupational Health

Surveillance of the environment and surveillance of the health of workers are two of the most important concepts of occupational health as outlined by the World Health Organization (WHO) and International Labor Organization (ILO, 2008) that OSH practitioners need to understand.

Surveillance of the environment is accomplished through Work Environment Monitoring (WEM) while that of the health of the workers is through Medical Screening and Surveillance.

The primary tools for the prevention of illnesses in the workplace are the engineering and administrative controls in place such as properly working fume hoods and well-implemented safety and health policies.

Medical screening and surveillance are valuable secondary tools for disease prevention.

6.4. Occupational vs Work-related Diseases

Before looking into the details of medical screening and surveillance, there is a need to clarify understanding between these common yet, often confused terms: occupational disease and work-related disease.

Occupational Diseases are those having a specific or a strong relation to occupation, generally with only one causal agent, and recognized as such. While *Work-Related Diseases* are those having multiple causal agents, where factors in the work environment may play a role, together with other risk factors, in the development of such diseases (ILO Encyclopedia).

6.3.1. Occupational Diseases

Adverse health condition in the workers related to the exposure to factors on the job or in the work environment (World Health Organization). Examples:

- Physical: heat, noise, radiation
- Chemical: solvents, pesticides, heavy metals, dust
- Biological: tuberculosis, hepatitis B virus, HIV
- Psychosocial stressors: lack of control over work, inadequate personal support

- Mechanical

6.3.2. Work-Related Diseases

Adverse health condition in the worker affected by multiple risk factors, according to World Health Organization (WHO) such as:

1. Environmental/Psychosocial
   - Work overload and underload
   - Shift work
   - Opportunity for career development and promotion
   - Job design and degree of interest
   - Physical insecurity and responsibility for other people's safety
   - Low wages
   - Unemployment

2. Physical
   - Thermal environment
   - Vibration
   - Poor lighting
   - Noise
   - Radiation

3. Chemical
   - Gases
   - Mists
   - Vapor
   - Fumes

4. Social Support System
   - Inter-individual relationship at work
   - Individual susceptibility
   - Personality type
   - Sex, age

5. Behavioral and Psychosocial Reactions to Stress
   - Overeating leading to obesity
   - Alcohol and drug abuse
   - Anxiety, depression
   - Smoking
   - Fatigue
   - Hostility and aggression

6.5. Medical Surveillance Screening and Surveillance

Both are employee health services at the work site. Medical screening is the detection of a dysfunction or disease before a worker would seek medical care while medical

surveillance (sometimes called health surveillance) is an analysis of health information to identify workplace problem that require targeted prevention (Wesdock and Sokas, 2000).

There are 2 main purpose of putting health of workers under surveillance:

1. prevent illnesses by prevention and early detection approach
   - Causes of illnesses identified and controls implemented before problems arise.

2. comply legal requirements according to OSH Standards and other regulating bodies
   - Surveillance must be perform/conducted by employer in the workplace for those workers who are exposed to the harmful effects of hazards and working conditions (RA 11058; OSH Standards).

Working Conditions, according to RA 11058, refer but not limited to:
- welfare facilities (sanitary, canteens, bunkhouses) provided by the employer
- noise, heat, vibrations, radiation, illumination
- hazardous chemicals
- asbestos in the workplace
- prolonged sitting
- prolonged standing

6.4.1. Importance of Surveillance

- Early detection of illnesses and implement control measures to prevent them from getting worse.
- Provide data to analyze and help management evaluate health risks and controls.
- Allow workers to communicate their concerns about work that affects their health.
- Evaluate controls and its effectiveness.
- Provide opportunity to reinforce training and educations for workers.

6.4.2. When is Surveillance Conducted

Surveillance is likely to be necessary where there is exposure to:
- carcinogens;
- dangerous pathogens (e.g. Hepatitis B, HIV and TB);
- certain sensitizers, such as substances that may cause occupational asthma, e.g., laboratory animals, mineral oils, wood dust, solder fumes;
- substances that may cause dermatitis, e.g., latex;
- extreme heat and cold, noise, vibration, illumination and radiation; and
- substances with systemic toxicity such as lead, arsenic and mercury.

6.6. *Components of Health Surveillance*

There are 7 components.

1	Hazard and exposure assessment
2	Identification of adverse health outcomes for each hazard
3	Screening activities
4	Biological monitoring
5	Communication of results
6	Documentation/records keeping
7	Evaluation of control measures

6.5.1. *Component 1 - Hazard and Exposure Assessment*

The OH physician conducts assessment on the hazards workers may be exposed and which have the potential to cause adverse health effects. There is need to seek full understanding of the hazards through:

- Observation of work processes
- Evaluation of job tasks
- Review of MSDS
- Discussion of PPE measures
- Review of literature

The assessment is best done with the OSH front liners such as the safety officers since they are familiar with the hazards. Result of the assessment becomes basis for the development of medical screening and surveillance plan.

Exposure assessments are done comparing data to the exposure limits of certain hazards which are published by the standard authorities. Examples of published exposure limits are:

- Permissible exposure limits (PELs) by the Occupational Safety and Health Administration (OSHA) at http://www.osha.gov
- Threshold limit values (TLVs) and biological exposure indices (BEIs) by the American Conference of Government Industrial Hygienists (ACGIH) at http://www.acgih.org
- Recommended exposure limits (RELs) by National Institute for Occupational Safety and Health (NIOSH) at http://www.cdc.gov/niosh/homepage.html

6.5.2. *Component 2 - Identification of adverse health outcomes for each hazard*

The adverse health outcomes are identified for each hazard to determine who among the employees are at risk and be enrolled in proactive screening on a continuous or periodic basis. The sample table below may be accomplished.

Industry	Hazard	Possible Health Effects	Who are at Risk?
Mining, Construction	Inorganic dust	pneumoconiosis (lungs)	
Agriculture	Pesticides	6 nausea, vomiting, dizziness, convulsions, coma, death (nervous system) 7 eyes and skin irritation 8 irritation of respiratory system	
Printing	Toluene	• dizziness, headache, euphoria (nervous system) • skin dermatitis	
Stevedoring	Lifting	Musculoskeletal system (WMSDs)	
Garments Manufacturing	Noise	Noise-induced hearing loss (NIHL)	

Classifying employees into the high-risk group for surveillance is dependent on the following factors:

- type of exposure
- dose or level of exposure
- duration of exposure (short-term, high level exposure vs. long-term, low level exposure)
- likelihood of exposure
- consequence of exposure
- anticipated frequency of exposure

6.5.3. Component 3 – Screening Activities

Screening activities are often done through medical examinations, on or off the work site. These examinations are conducted in intervals. Per OSH Standards these examinations are:

1. Pre-employment/Pre-placement Physical Examinations that commonly assess:
    - the condition of a worker's musculoskeletal health,
    - overall posture and postural fatigue;
    - the range of muscle flexibility and joint movement;

- functional movement technique (bending, lifting, squatting and reaching)
- manual handling evaluation;
- cardiovascular fitness; and
- blood pressure.

Medical requirements for Pre-employment Examinations include complete blood count, chest X-ray, drug test, urinalysis, fecalysis, ECG, audiometry and lung function test (LFT).

2. Periodic Annual Medical Examinations for the following purpose:

   - primary prevention
   - identify risk factors for common chronic diseases
   - detect disease that has no apparent symptoms
   - counsel workers to promote healthy behavior
   - update clinical data since last medical examination
   - establish rapport between doctor and worker

3. Special Examinations

   Special examinations may be required where there is excessive exposure to health hazards, such as excessive noise, dust, lead, mercury, and other similar substances.

4. Return to Work Examinations

   An employee returning to work after a sick leave shall be examined by the occupational health physician to:

   - detect if illness of the worker is still contagious;
   - determine whether the worker is fit to return to work; and
   - determine possible occupational causes after prolonged absence for health reasons.

5. Separation from Employment Examination

   An employee leaving the employment of the company shall be examined to determine:
   - if the employee is suffering from any occupational disease;
   - whether the employee is suffering from injury/illness not completely healed; and
   - whether he has sustained an injury.

The table outlines the common tests with specific health risks.

Hazard	Health Risk	Test
Noise	NIHL	audiometry
Toluene	Adverse effect on nervous system and liver	• neuro-examination • liver profile • biological monitoring (urinary toluene)
Silica	Silicosis	• chest X-ray • PFT (pulmonary function test)
Asbestos	Asbestosis	• chest X-ray • PFT (pulmonary function test)
Lead	• Anemia • Nephropathy	• neuro-examination • biological monitoring (lead in blood)

6.5.4. Component 4 - Biological Monitoring

Biological monitoring refers to collection and analysis of human specimens (blood, urine, sputum, other body fluids and tissues) to look for evidence of exposure to chemical hazards (Wesdock and Sokas, 2000). It evaluates:

- unchanged chemical in the body fluids;
- a metabolite of the original chemical;
- an enzymatic alteration;
- a physiologic effect; and
- a secondary clinical finding.

The purpose of biomonitoring is two-pronged: 1) prevention of adverse effects of hazards, and 2) earlier intervention in the progression from exposure to disease.

Biomonitoring involves measurements of biomarkers in body fluids and other specimens, such as feces, hair, teeth, and nails, indicating that there is interaction between the biological system and a potential hazard which may be chemical, biological or physical (WHO).

Biological Measurements can determine:

- content of a toxic material or its metabolite in blood, urine and breath;
- effects on enzyme systems or metabolic pathways;
- early reversible tissue changes;
- physiological changes; and
- immunological changes.

Examples of biologic monitoring:

- obtaining a blood lead level or zinc protoporphyrin level in a worker with known lead exposure;
- obtaining a urinary phenol level in a worker with benzene exposure; and
- obtaining a red blood cell cholinesterase level in a worker with organophosphate pesticide exposure.

Table 8 of the Occupational Safety and Health (OSH) Standards sets the Threshold Limit Values of Airborne Contaminants. The American Conference of Governmental Industrial Hygienists (ACGIH) also publishes the Threshold Limit Values for Chemical Substances and Physical Agents in the Work environment (2008).

Potentially Hazardous Operations and Associated Air Contaminants

Process Types	Contaminant Type	Contaminant Examples
Hot Operations		
Welding	Gases	Chromates
Chemical Reactions	Particulates	Zinc and compounds
Soldering	Dust, fumes, mists	Manganese and compounds
Liquid Operations		
Painting	Vapors	Benzene
Degreasing	Gases	Trichlorethylene
Dipping	Mist	Methylene chloride
Solid Operations		
Pouring	Dusts	Cement
Mixing		Quartz (free silica)
Separation		Fibrous glass
Pressurized Spraying		
Cleaning parts	Vapors	Organic solvents
Applying pesticides	Dusts	Chlordane
Degreasing	Mists	Parathion

Examples of chemicals that can be assessed by biological monitoring

1. Measuring the chemical itself
   - Lead, cadmium, polychlorinated biphenyls using blood samples
   - Cobalt, nickel using urine samples
   - Tetrachloroethylene, carbon monoxide using breath

2. Measuring a metabolite
    - Bromide from methyl bromide exposure using blood samples
    - Mandelic acid from styrene using urine samples
    - Trichloroacetic acid from trichloroethylene using urine samples

Blood and urine are the most common biological samples tested. Blood can be analyzed for a wide range of materials which indicate ill health or travel of a substance/metabolite, like:

- Full Blood Count and Hemoglobin – lead, benzene, alcohol
- Serum (Deep Frozen) – baseline antibody levels in pathogen exposure
- Liver Function Test – alcohol, hepatotoxic chemicals
- Renal Function Test – Kidney Toxins
- Toxin and Metabolite Levels - lead

Urine can be tested for a wide variety of purposes:

- Cells (exfoliate cytology) – bladder cancer
- Level of toxin e.g. mercury
- Level of metabolite e.g. tricarboxylic acid
- Protein (especially kidney damage)
- Bile (jaundice)
- Sugar (diabetes) – relevant to shift work, public service vehicle driving

6.5.5. Component 5 – Communicating Results

Communicating results to the individuals or groups and to the company completes the cycle of medical surveillance. Depending on the policy of the company and its documented OSH Program, results are submitted to at least 3 recipients:

The OSH Committee

- facilitates continuous review of preventive programs
- provides a mechanism for continuously improving OSH performance
- update OH policies and programs based on the result (e.g. top illness of the company)

Individual worker

- determines employee's fitness for duty
- determines medical capability to wear PPEs
- recommends medical protection

Surveillance group

- address overall findings and trends
- disclose cluster of employees demonstrating abnormal facets of health
- recommend strategies to prevent or reduce likelihood of adverse effects

Important reminders in handling results of medical screening and surveillance:

- ensure confidentiality
- explain in detail to the employee concerned
- compare with previous results, if appropriate
- use results to prepare action plan to remedy matters of concern
- discuss meaningfully with other teams to look for opportunity to integrate results into the surveillance program

6.5.6. Component 6 – Documentation and Records Keeping

- Medical records keeping ensuring preservation of data and confidentiality
- Worker's medical history and PE results, diagnostic test results, interpretation, and record of notification are compiled and submitted to DOLE as Annual medical Report (AMR) submitted every end of March
- Exposure evaluations
- Control measures implementation
- Resulting environmental modifications
- Control measures implemented
- Requirements, procedures, and interpretations of findings for medical surveillance as specified by OSH Law

6.5.7. Component 7 – Evaluation of Control Measures

The control measures as indicated in the action plan developed after communicating the results of medical screening and surveillance and the control measures indicated in the HIRAC shall be subjected to periodic evaluation for adequacy and effectiveness.

The general guideline to evaluate is looking for data as evidence to prove that workers are no longer getting sick and are kept healthy after control measures are implemented.

Results of evaluation is used to design and implement continuous improvement initiatives of the general OSH program of the Company.

Ethics in Occupational Health Surveillance

- Health surveillance action must be transparent.
- Must ensure worker's privacy and confidentiality.
- Medical health checks must not be used for discrimination.

6.6. Key Points

- Occupational health is important in OSH in that occupational diseases and work-related diseases have remained a big concern in the workplace over safety issues.

- Medical screening and surveillance are considered valuable secondary tool in disease prevention in workplaces, the first being engineering and administrative risk controls.

- Early detection and analysis of surveillance data are the most effective strategies in preventing diseases.

- There is a need for OH personnel to be working closely with the front line safety personnel in identifying and assessing hazards and in developing action plans to address health concerns after surveillance.

- Medical screening and surveillance data need to be handled with utmost care and confidentiality.

- Findings from medical surveillance are best addressed by integrating control measures into the bigger OSH program which are subject to evaluation for adequacy and effectiveness.

7 – Work Environment Monitoring

The Big Idea is "to ensure healthy working environment, there must be monitoring in the workplace through systematic surveillance of the factors in the working environment to determine health hazards in the workplace which are not seen during inspection".

7.1. Session Objectives

At the end of the session, participants are able to:

- describe the importance of monitoring the work environment in evaluating employee exposure to hazards,
- determine compliance requirement of the law and the standard, and
- explain the concept of occupational exposure limit or threshold limit values.

7.2. Requirements

Work Environment Monitoring is required in every workplace by Rule 1077 of the Occupational Safety and Health (OSH) Standards.

- The employer shall exert efforts to maintain and control the working environment in comfortable and healthy conditions for the purpose of promoting and maintaining the health of workers.

- The employer shall carry out the WEM in indoor or other workplaces where hazardous work is performed and shall keep a record of such measurement which shall be made available to the enforcing authority.

- The WEM shall be performed periodically as may be necessary but not longer than annually.

- WEM shall be performed by safety and medical personnel who have taken adequate training and experience in WEM (internal monitoring).

In the event of inability to perform the WEM, the employer shall commission the OSHC and other institutions accredited or recognition by DOLE, to perform the measurement. Check the OSH Center website to know the list and contact of organizations accredited to perform WEM at http://www.oshc.dole.gov.ph/34-accreditation/114-work-environment-measurement-providers

7.3. General Framework

The consequence of occupational health hazards may not manifest for many years. Before they develop into incurable disease among workers, it is important to identify potential risks the earliest possible time (ILO, 2008).

The work environment gets contaminated from the a single and a combination of hazards inherent to the processes in the workplace.

For example, the materials and equipment during the production process generate gases, vapors, fumes, dusts, mists, heat, noise, radiant energy, etc. that cause contamination of the work environment through the process of dispersion and diffusion.

The risk factors in a contaminated environment may enter into the worker's body through 3 routes:

- inhalation through the nose;
- direct contact through the skin; and
- ingestion through the mouth.

Through metabolic reaction, the risk factors are either excreted from the human body or accumulated which over time could cause injury, illnesses and even death.

To prevent injuries, illnesses and death, a work environment monitoring is required to identify and assess hazardous substances that the workers may be exposed and adversely affect their health (ILO).

Work Environment Measurement (WEM)

WEM is the determination of environmental hazards/stresses and their hazardous effects on workers' health by directly measuring hazards through sampling and analysis of the atmospheric working environment and other fundamental elements of working environment for the purpose of determining actual conditions (Rule 1077, OSHS), including:

- Noise
- Temperature
- Humidity
- Pressure
- Illumination
- Ventilation
- Concentration of substances

WEM is a useful tool of accomplish the following:

- determine compliance to Threshold Limit Values (TLV);
- determine work-relatedness of worker's diseases;
- assess magnitude of harmful substances in the environment;
- monitor exposure of workers to harmful substances; and
- evaluate effectiveness of control measures.

7.4. Industrial Hygiene

An overview of the elements of Industrial Hygiene (IH) and the IH approach, helps in understanding Work Environment Measurement. The IH approach involves 4 stages:

- Stage 1: Anticipation of potential risks by reviewing
  - SDS of chemicals
  - Work practices and general work conditions
- Stage 2: Recognition of health hazards
  - Chemical agents (gases, vapors, mists, dusts, fumes)
  - Physical agents (noise, vibration, heat, radiation, pressure)
  - Biological agents (biohazards)
  - Ergonomics (repetition, posture, workforce)
- Stage 3: Evaluation of the magnitude of the hazards
  - Qualitative methods (walk-through survey)
  - Quantitative (sampling and use of measuring equipment/instruments)
- Stage 4: Control measures
  - Evaluate adequacy and effectiveness of existing controls
  - Recommend of additional controls, if needed

Note that in the broad concept of Industrial Hygiene, WEM is part of Stage 2 and 3 (recognition and evaluation of the magnitude of the hazards).

7.5. Methods of Environmental Monitoring

1. Exposure or Personal Monitoring
   - Measures worker exposure to airborne contaminants
   - Sampling device that collects data is attached to the worker's clothing
   - Data collected approximates the concentration of contaminants

2. Biological Monitoring
   - Measures changes in composition of body fluids, tissues or expired air to determine absorption of contaminants in the environment

3. Work Environment (Area) Monitoring
   - Measures presence and concentration of contaminant in the work area
   - Helps pinpoint work areas with high or low exposure levels of contaminants

7.6. The WEM Process

1. Conduct walk-through or survey of the work area
   - Identify the health hazard of concern
   - Identify the person involved and in which particular location
2. Identify and prepare (check calibration status) the appropriate measuring equipment
3. Conduct the WEM
4. Analyze samples and evaluate results
5. Evaluate existing control measures and recommend improvement

Important Notes:
- WEM can only be conducted by competent persons, preferably industrial hygienist who has the appropriate training.
- Equipment/instruments must be in working condition and are calibrated
- Common WEM Equipment
  - Lux Meter – light intensity
  - Sound Level Meter – sound intensity level
  - Psychrometer – relative humidity
  - Anemometer – speed of wind
  - Multi gas tester – detects Co, H2s, O2 and CH4 gas

7.7. Analysis of Results

Resulting data of measurement are evaluated against existing values/standard published by standard bodies. The most common *Threshold Limit Values (TLV).*

TLVs are the maximum average airborne concentration of a hazardous material to which healthy adult workers can be exposed during an 8-hour workday and 40-hour workweek—over a working lifetime—without experiencing significant adverse health effects (ACGIH).

TLV has three components:

1. Time-weighted Average (TWA) concentration
   - concentration of a contaminant averaged over a workday (usually 8 hours long)
   - measured in a workplace by sampling a worker's breathing zone
2. Ceiling value
   - concentration of a toxic substance in air not be exceeded at any time during the workday
3. Short-term Exposure Limit (STEL) value
   - concentration of toxic substance not exceed over 15 minutes even if the 8-hour TWA is within the standards
   - applies to contaminants for which short-term hazards are known

Important Note: Refer to Table 8 of the OSH Standards for the Threshold Limit Values of Airborne Contaminants or access the American Conference of Government Industrial Hygienists (ACGIH) at http://www.acgih.org

7.8. Key Points

- WEM is required in every establishment to keep the work environment healthy by detecting the presence of chemical health hazards and implementing controls before the workers are adversely affected.

- The hazardous substances in the workplace enters into the worker's body through inhalation, ingestion and skin absorption which through metabolic reaction may be excreted or accumulated that overtime could cause injury, illness or even death.

- WEM requires measuring equipment, competent person and *standard values* to compare measurement data from during evaluation.

9 – OSH Inspection

The Big Idea is "a critical examination of the workplace help identify and record hazards for corrective action and is essential to promote and monitor compliance with OSH legislation. When adequately combined with prevention policies, effective inspection system can avoid or eliminate the risk of occupational accidents and diseases".

8.1. Session Objectives

At the end of the session, participants are able to:

- articulate the purpose of safety and health inspections,
- plan an OSH inspection, and
- carry-out an OSH inspection.

8.2. Requirements
Department Order No 198-18 (IRR of RA 11058)

- Section 3 (g) of Department Order 198-18 defines safety and health inspection as "examination of the work environment, including the location and operation of machinery adequacy of work space, ventilation, lighting, conditions of work environment … and other possible sources of hazards in the workplace.

- Section 14 (b) of the same Department Order states that one of the roles of the safety officer is to frequently monitor and inspect health and safety aspects of the operation which is consistent with Rule 1047 (5) of the Occupational Safety and Health Standards (OSHS) stating that the Safety Man conducts health and safety inspections.

8.3. Inspection vs Audit

An OSH inspection is a structured walk-through of a workplace or facility to identify hazards, verify compliance with standards, and evaluate safety performance (ISRI).

This is an excellent way to reference the commitment to safe work practices and provide a systematic method for involving supervisors, employees, safety coordinators, and safety committees in the process of eliminating workplace hazards.

It may be preferred to as "preventive maintenance" for facility safety, where the goal is not to discover how many problems there are but rather identify improvements to operations.

Safety inspections focus on compliance of standards pertaining to the physical environment: emergency exits, fire extinguishers, machine guards, hazardous material storage, etc. while *safety audits*, on the other hand, focus on work processes.

Benefits of Inspections

Over and above the main purpose of OSH inspections to meet compliance requirements there are other benefits that organizations gain from. OSH inspections can be an opportunity to:

- listen to the concerns of workers;
- gain further understanding of the tasks;
- identify existing and potential hazards;
- determine underlying causes of problems;
- recommend corrective actions; and
- monitor actions taken.

8.4. Planning for Inspection

There are 4 main types of inspection: 1) formal or planned, 2) informal or on-the-spot, 3) specialized or technical inspection, and 4) regulatory. This module is focused on how to conduct formal or planned OSH inspections.

Planning is essential for an effective inspection to ensure that the following are defined in a written procedure:

- what to inspect;
- who to inspect;
- where to inspect;
- when to inspect; and
- how to inspect.

Part of the planning is to take note of the items that are most likely to develop into unsafe or unhealthy conditions because of stress, wear, impact, vibration, heat, corrosion, chemical reaction or misuse. Include areas where no work is done regularly, such as parking lots, rest areas, office storage areas and locker rooms.

Must be included and given priority in safety inspections are machinery, tools, equipment and materials as well as facilities and building structures.

The inspection team should include both employee and employer representatives who have been appropriately trained on how to conduct OSH inspections, specifically:

- safety professionals
- company or facility management
- first – line supervisor or foreman
- mechanical engineer or maintenance supervisor
- employees
- maintenance personnel
- other inspection teams
- contractors' inspection services

Frequency of formal/planned inspections is determined according to the OSH program where the OSH committee outlines the schedule. The schedule is generally based on the regulatory or legislation requirements, results of hazard analysis and risk assessment, incident history and recommendation of the equipment manufacturers. Ideally,

inspections are done at a time that won't interrupt operations to prevent unsafe conditions.

The most common approach to conduct formal or planned inspections is to divide the workplace into areas where inspection teams are assigned.

Usually, formal checklists tailored to the items or area to be inspected are required so that items are not missed and findings are documented – an important input for the preparation of the inspection report.
Checklist is a basic tool to clarify inspection responsibilities, controls inspection activities and provides a report of inspection activities (Work Safe).

It is important to remember that checklists need to be updated every time inspections are done to consider changes in the process, recent incidents and results of the previous inspections that might need to be included as new items.

8.5. Sample Inspection Checklist

Items Inspected	Hazards Identified	Hazard Classification*	Proposed Corrective Action	Target Date of Corrective Action
Workplace conditions *(dusts, ventilation, lightings, housekeeping, etc.)*				
Buildings and structures *(stairways, doors and windows, aisles, floors, ramps)*				
Firefighting equipment *(fire hose cabinets, standpipes, alarms, sprinkler system, extinguishers)*				
Storage facilities *(bins, racks, exits, signage, lightings, cabinets, shelves, closets)*				
Warning and signaling devices *(crossing lights, blinkers, sirens)*				
Power source equipment *(electrical control room, gas engine, air*				

compressor, electrical motors)				
So on …				

(Source: Work Safe. OSH Inspection)

8.6. Conducting the inspection

Carry-out the inspection according to the written procedure of the Company and aided by the checklist. Best practice, however, suggests the following:

- planning the inspection route;
- observing tasks being done;
- asking questions, making notes;
- examining equipment, checking maintenance records;
- checking that work area is tidy and tools have a storage place; and
- looking for what might not be obvious such as fire doors not opening outward or being blocked.

Note: While checklists are very important, inspectors should be overly dependent on them that they might overlook hazards not covered by the checklist.

Because the purpose is finding opportunities to improve and not finding faults, it is imperative that cooperation of the workers is needed. Inspectors, therefore, need to conduct inspections in a manner that would not threaten workers. Good communication skill is the key.

8.7. Reporting the findings

Identified hazards must be classified* (column 3 of the checklist), using a hazard classification system. The purpose of classifying is to ensure that hazards are addressed by priority, depending on the urgency and level of risk. An organization may develop its own system of classification.

An example of classification system developed by WorkSafe - Canada can be a good reference:

Classification	Description	Recommended Action
Major (Type A)	Likely to cause permanent disability, loos of life and properties.	Corrective action needed immediately
Serious (Type B)	Likely to cause serious injury, temporary disability, property damage.	Corrective action needed within days
Minor (Class C)	Likely to cause minor non-disabling injury, non-disruptive property damage.	Corrective action needed on long to medium term

Accomplish column 4 and 5 by writing down proposed corrective actions by the supervisor or process owner and agree on a target date. Affix the name and signature of the inspector and the date of inspection and submit to Safety Office or management depending on what is indicated in the procedure.

8.8. Follow-up and Monitoring

Because the real intention of inspections is for improvement, OSH inspections can be viewed as a cycle of planning – doing – checking – acting (PDCA). Therefore, the work of the OSH Inspection Team does not end at submitting the inspection report.

OSH inspection teams are duty-bound to check (at an agreed time) if proposed corrective actions were done and results are effective.

Depending on the results of the previous inspection, a new inspection checklist is developed for the next schedule of inspection with the results of the previous results included.

Systematically keeping records of OSH inspections is vital.

8.9. Key Points

- OSH inspections are essential to monitor compliance to regulations and identify workplace improvements for safety performance.
- One of the duties of Safety Officers is to conduct regular inspections of the workplace as a way to prevent injuries and illnesses by identifying existing and potential hazards and correcting them before they cause harm.
- A clearly written procedure and a carefully-laid inspection schedule based on the OSH Program are essential.
- All inspections require a checklist to ensure nothing is missed out and findings documented.
- OSH inspections are planned to determine what to inspect, who to inspect, where to inspect, when to inspect and how to inspect.
- The ultimate purpose of inspection is to identify areas to improve safety performance and not to find fault with people and of the system.

9 – Hazard Control

The Big Idea is "hazard exists in every workplace. After they are identified and assessed for risk, effective controls must be in place to help prevent accidents and illnesses".

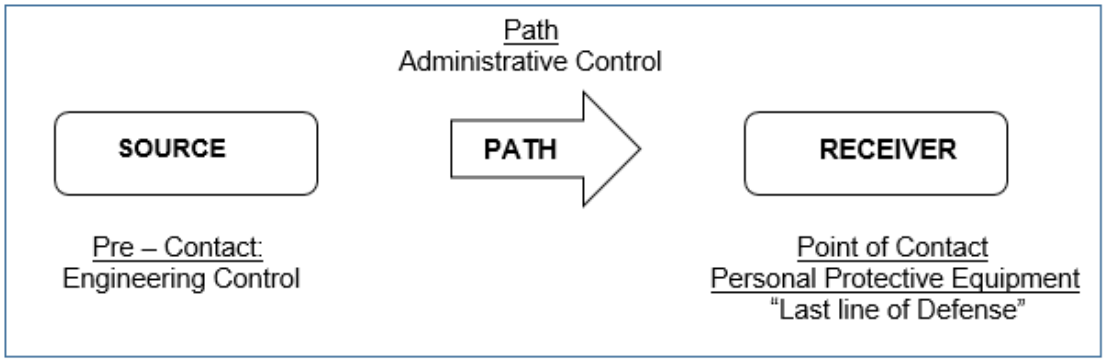
9.1. Session Objectives

At the end of the session, participants are able to:

- explain the levels of controls to prevent injury and illness, and
- decide which controls are appropriate for each hazard identified.

9.2. System to Control Hazards

In order to control hazards and prevent them from causing injury or illness, it helps to have a good understanding of the location of the hazard. The illustration below presents that hazards can be controlled at the source, at the path and at the receiver.



Engineering controls are usually used to control hazards at the source, administrative controls to control hazards at the path and personal protective equipment (PPE) to control hazards at the point of the receiver (the workers).

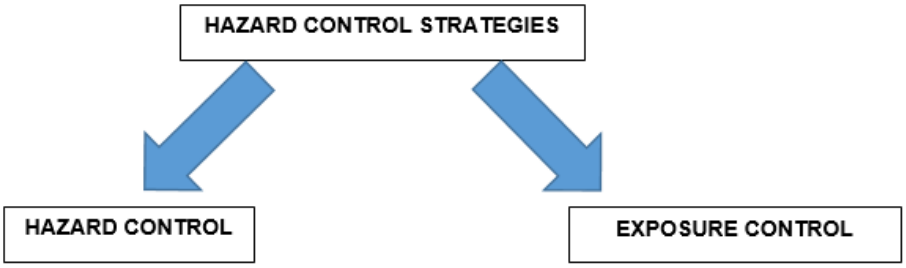
9.3. The Hierarchy of Controls

Organizations must establish a process and determine controls for achieving reduction in OSH risks using a Hierarchy of Controls in 5 Levels:

Level 1	Elimination	Physically removing the hazard
Level 2	Substitution	Replacing the hazard
Level 3	Engineering	Isolating people from the hazard
Level 4	Administrative	Changing the way people work
Level 5	Personal Protective Equipment	Protecting the worker by using protective clothing

9.4. Primary Hazard Control Strategies

There are 2 primary hazard control strategies. One - get rid of the hazard (hazard control) and two - reduce exposure to the hazard (exposure control).



9.3.1. Hazard Control

Engineering methods are used to control hazards. These controls are focused on the source of the hazard. The intention is to eliminate the hazard, but if cannot be eliminated, for whatever reason, hazards should be reduced/minimized.

1. Substitution – Substitute with something that is not hazardous or less hazardous.
   Examples:
   - Replacing defective tools, hazardous equipment and machinery
   - Substituting toxic substances with non – toxic or less – toxic substances

2. Design - If feasible, design or redesign the facility, equipment, or process to remove the hazard and/or substitute something that is not hazardous or less hazardous.
   Examples:
   - Redesigning tools, equipment, machinery and materials
   - Designing workstation to be more ergonomically correct

3. Enclosure - If removal is not feasible, enclosure the hazard to prevent exposure in normal operations.
    Examples:
        - Complete enclosure of moving parts of machinery
        - Complete containment of toxic liquids or gases
        - Complete containment of noise, heat, or pressure – producing processes

4. Barriers - Where complete enclosure is not feasible, establish barriers to prevent access to the hazard.
    Examples:
        - Machine guarding, including electronic barriers
        - Baffles used as noise – absorbing barriers

5. Ventilation - General or local ventilation to reduce exposure to the hazard in normal operations.
    Examples:
        - Ventilation hoods in paint booths and laboratories
        - Force air ventilation in confined space

9.3.2. Exposure Control

Administrative management methods are used to control exposure. These controls are focused on the employees exposed to the hazards. The intention is to eliminate exposure, but if cannot be eliminated, for whatever reason, exposure to the hazard should be reduced/minimized.

1. Practices - Some of these are very general in their applicability. They include housekeeping activities such as:
    Examples:
        - Using personal protective equipment (PPE)
        - Placing warning signs that inform and restrict access
        - Removing tripping, blocking, and slipping hazards

- Removing accumulated toxic dust on surfaces
- Wetting down surfaces to keep toxic dust out of the air

2. Procedures - These procedures apply to specific jobs in the workplace. Use the JHA to help develop procedures.
   Examples:
   - Permit – required confined space entry procedures
   - Hot work permitting procedures
   - Lock – out/Tag – out procedures
   - Lifting procedures
   - Safety inspection procedures

3. Schedules - Measures aimed at reducing employee exposure to hazard changing work schedules. Such measures include:
   Examples:
   - Lengthened rest breaks
   - Additional relief workers
   - Exercise breaks to vary body motions
   - Rotation of workers through different jobs

4. Safety Signage - Emergency or danger signs and warning signs of safety instructions of standard colors and sizes as described in Table II of the OSH Standards.
   Examples:
   - Danger signs
   - Warning signs
   - Caution signs

9.5. Safety Signages or Warning/Safety Signs

Visual alerting device in the form of a label, placard or other marking. Its purpose is to advise the observer of the nature and degree of potential hazards. It supplements proper guarding or warning of hazardous conditions but not a substitute for engineering or administrative controls, including training, to eliminate identifiable hazards.

Guidance and Standard for Safety Signs and Signage

Safety Signs and Labels	ANSI Z535.4
Color Codes	ANSI Z535.1
Safety Symbols	ANSI Z535.3

**ANSI – American National Standards Institute*
**Standard colors and dimensions in Table 11 of the OSH Standards (Yellow Book)*

Safety Signs have 3 panels and 4 components. A panel is the area of safety sign having distinctive background color different from adjacent areas of sign, which is clearly delineated by a line, border or margin.

9.4.1. Safety Signages: Standard Color of Signs

SAFETY RED: Fire Protection	To call attention to fire protection equipment apparatus and facilities (fire extinguishers, pumps, buckets, hose, hydrant).
SAFETY GREEN Designating Safety	Location of first aid equipment; location of safety devices; safety bulletin boards.
SAFETY WHITE Traffic	White, black, or a combination of these are the basic colors for the designation of traffic and housekeeping marking.
SAFETY YELLOW: Caution	Designate caution and for marking physical hazards, such as striking against, stumbling, falling, tripping and caught in between.
SAFETY ORANGE: Alert	Designate dangerous parts of machines and energized equipment which may cut, crush, shock.
SAFETY BLUE Precaution	Designate caution, limited to warning against starting use of, or the movement of equipment which is under repair or being worked upon.
SAFETY PURPLE Radiation	Designate radiation hazards. Yellow is used in combination with purple for markers, such as tags, labels, signs and floor markers.

9.4.2. Where Signage are needed

- Usage of PPE prior to entry to the worksite
- Potential risks of falling object
- Potential risks of falling
- Explosives/flammable substances are used or stored
- Tripping or slipping hazards
- Danger from toxic/irritant airborne contaminants may exists
- Contact with or proximity to electrical/facility equipment
- Contact with dangerous moving parts of machines
- Fire alarms and firefighting equipment
- Instructions on the usage of specific equipment
- Periodic updating of man – hours worked and/or lost
- Road construction or repair works
- Other worksites where the public can greatly be affected

To maximize benefits from Signage and Markings, the following criteria is helpful:

Conspicuous	Signage has to be seen
Clear	Needs to be legible (color, text size and symbols)
Comprehensible	Need to be understood (concise – too many words may make the whole message unclear or confusing)
Credible	Message has to be believable – otherwise viewers will tend to ignore it
Consistent	Does not contradict with other signs/markings/labels

9.5. Personal Protective Equipment

PPE is defined by OSHA as equipment or clothing worn to minimize exposure to hazards that cause serious workplace injuries and illnesses which may result from contact with chemical, radiological, physical, electrical, mechanical, or other workplace hazards.

PPEs may include gloves, safety glasses and shoes, earplugs or muffs, hard hats, respirators, coveralls, vests and full body suits.

9.5.1. Requirements

Section 8 of DO 198-18 and Rule 1080 of the Occupational Safety and Health Standards provides that employers shall provide workers with appropriate PPEs free of charge.

Section 29 of DO 198-18 provides that employers shall be imposed a penalty to P50,000 per day for not providing PPEs to workers or for charging PPEs to the account of the workers.

9.5.2. When are PPEs are necessary

Employers must provide personal protective equipment to workers when engineering, work practices and administrative control strategies are not feasible or do not provide sufficient protection.

Employers do not only issue PPEs to workers but must ensure that these are properly used to give maximum protection. The best practice is for employers to train each worker required to use personal protective equipment to know:

- when it is necessary;
- what kind is appropriate;
- how to properly put it on, adjust, wear and take it off;
- the limitations of the equipment; and
- proper care, maintenance, useful life, and disposal of the equipment.

A properly-designed PPE program is the basis for providing these to workers. A PPE program must be designed after a thorough risk assessment is done to match the PPEs with the hazards; the selection, maintenance, and use of PPE; the training of employees; and monitoring of the program to ensure its ongoing effectiveness.

9.5.3. Precautions with PPE

Make employees understand that PPEs have limitations and do not offer total protection. PPE can create another hazard, example, gloves prevent skin damage while working with moving equipment, but can create an entanglement hazard when working with a rotating machine.

In deciding PPE use, employers must consider that:

- regulatory requirements are met;
- it is not the first and only protection;
- it does not eliminate the hazard; and
- it only minimizes exposure and reduce severity of injury or illness.

9.5.4. The Philippine Standard Requirements for PPE

The Occupational Safety and Health Center (OSHC) is the duly recognized agency for testing and setting standard specifications of Personal Protective Equipment and other safety devices in the Philippines.

It is the responsibility of the employers and the responsibility of the Safety officers of establishments to ensure that PPEs issued to workers are within the standard and are duly tested by the OSHC. To ensure that PPEs purchased are within the standard, the Safety Officers may check with the OSHC website which publish the updated list of brands and distributors of the following:

Fall Protection -
http://www.oshc.dole.gov.ph/images/Files/Passed_Fall_Protection_Equipment.pdf

Eye and Face Protective Equipment –
http://www.oshc.dole.gov.ph/images/Files/Passed_Eye_and_Face_Protective_Equ ipment.pdf

Hard Hat Class E
http://www.oshc.dole.gov.ph/images/Files/Passed_Hard_Hat_Class_E.pdf

Hard Hat Class G
http://www.oshc.dole.gov.ph/images/Files/Passed_Hard_Hat_Class_G.pdf

Hard Hat Class C
http://www.oshc.dole.gov.ph/images/Files/Passed_Hard_Hat_Class_C.pdf

Heavy Duty and Static Dissipative Footwear without Mid-Sole
http://www.oshc.dole.gov.ph/images/Files/Passed_Safety_Shoes_D.pdf

Heavy Duty and Electrical Hazard Resistant Footwear without Mid-Sole
http://www.oshc.dole.gov.ph/images/Files/Passed_Safety_Shoes_C.pdf

Heavy Duty and Static Dissipative Footwear with Mid-Sole Device
http://www.oshc.dole.gov.ph/images/Files/Passed_Safety_Shoes_B.pdf

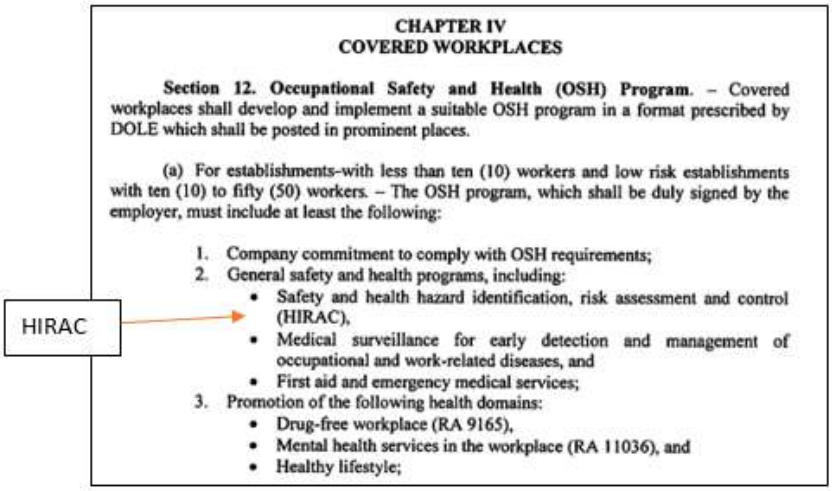
Heavy Duty and Electrical Hazard Resistant Footwear with Mid-Sole Device
http://www.oshc.dole.gov.ph/images/Files/Passed_Safety_Shoes_A.pdf

9.6. Key Points

- Hazards are effectively controlled at three important points: 1) at the source where hazards come from; 2) along the path where hazards travel; and 3) at the receiver – the worker.
- The 5 levels in the Hierarchy of Hazard Controls are: 1) elimination; 2) substitution; 3) engineering; 4) administrative; and 5) personal protective equipment.
- The 2 primary hazard control strategies: 1) hazard control to get rid of the hazard which uses engineering methods and 2) exposure control to reduce exposure to the hazard which uses administrative approaches.
- Safety signage and warning signs are important administrative approach to advice and alert persons of the nature and degree of potential hazards.
- Use of appropriate PPEs is required by law to give workers protection when engineering and administrative controls are not feasible or do not provide sufficient protection.
- A properly-designed PPE program helps match the PPE to the hazard.

10 – Hazard Identification, Risk Assessment and Determination of Control

The Big Idea is –
"Hazards exist in every workplace. The fundamental requirement to a safe workplace is to have a robust occupational health and safety risk assessment process."



10.1. Session Objectives

At the end of the session, participants are able to:

- explain the importance of risk assessment,
- identify hazards in every activity,
- determine the risk associated with a hazard, and
- come up with risk rating/significance.

10.2. Requirements

Department Order No. 198, Series of 2018 which is the Implementing Rules and Regulations of RA 11058 (OSH Law) requires establishments to develop and implement an Occupational Safety and Health (OSH) Program which shall include Hazard Identification, Risk Assessment and Control (HIRAC).

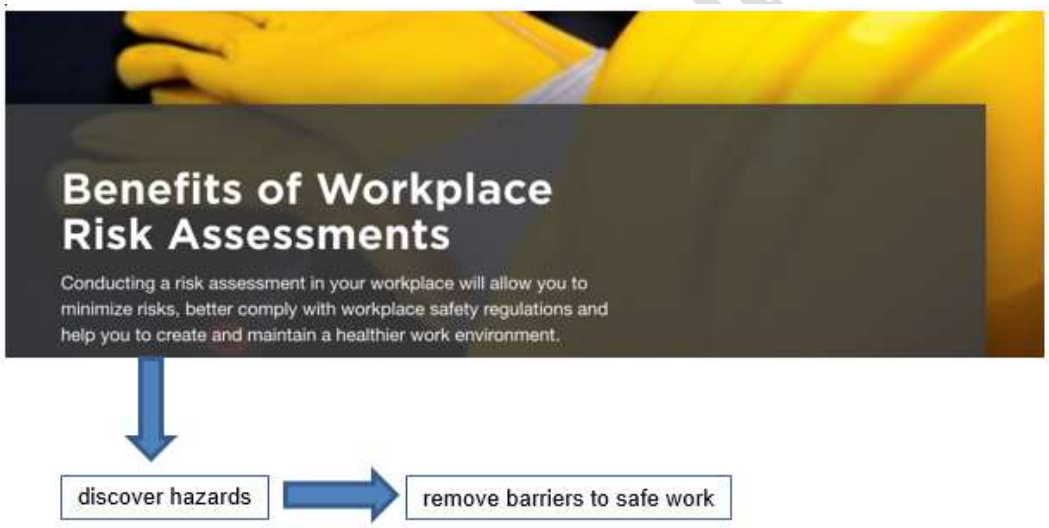
Labor Advisory 04-19 (Guide for Compliance of Establishments to DO 198-18 requires establishments to determine its own level of risk (whether low, medium or high) based on the Hazard Identification, Risk Assessment and Determination of Control (HIRADC) conducted by the company.

Labor Advisory 04-19 Guide for Compliance of Establishments to DO 198-18

1. Classification of Establishments – The establishment shall be responsible in determining its own level of classification (low risk, medium risk, high risk) based on Hazards Identification, Risk Assessment and Control (HIRAC) conducted by the company. Results of the HIRAC and number of workers shall be the bases for determining the required number of safety officers, OH personnel, medical services and facilities pursuant to Section 14 and Section 15 of the IRR/DO 198-18.

10.3. Workplace Assessment

OSH Risk Assessment is a process or method of assessing the likelihood of a risk factor to cause harm/illness to the worker, determining the severity or consequence of the risk factor and rating OSH risks in terms of significance as basis for identifying control measures.



Doing an OSH Risk Assessment in the workplace is so important to make it integral part of an occupational health and safety management plan. Among its benefits are:

- help create awareness of hazards and risks;
- identify who may be at risk (e.g., employees, visitors, contractors, the public, etc.);
- determine whether a control program is required for a particular hazard;
- determine if existing control measures are adequate or if more should be done;
- determine if existing control measures are adequate or if more should be done;
- prevent injuries or illnesses, especially when done at the design or planning stage;
- prioritize hazards and control measures; and
- meet legal requirements where applicable.

10.4. What is HIRAC?

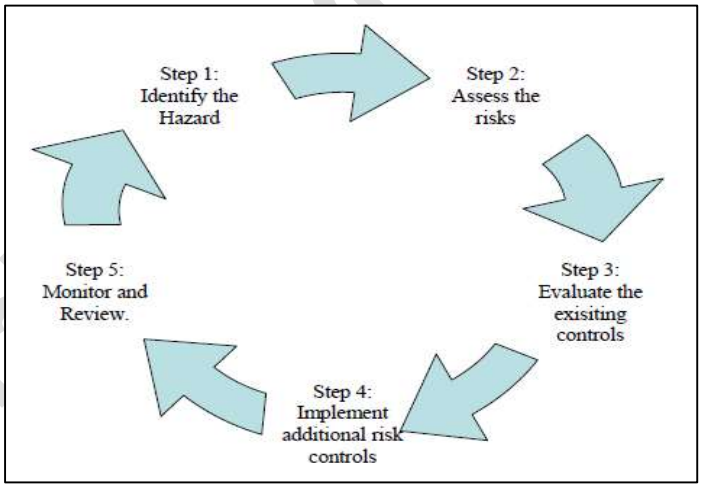
It is a tool used to identify hazards in the work area or in work activities, perform risk assessment, determine and implement controls and to monitor and review effectiveness of such controls. It is the heart of the occupational safety and health management system.

The goal is to seek answers to the following:

HI	•What can happen? •What are the possible consequences?
RA	•How likely will the consequences occur? •How severe will the harm be?
DC	•What can be done to control the harm? •Are the controls effective?

Note: HI – Hazard Identification; RA – Risk Assessment; DC – Determination of Control

10.5. The HIRAC Process



Step1: Identify the Hazards and Possible Consequences

Hazard is defined in Session 1 as potential to cause injury, harm or damage. It can be health hazards (biological, chemical, physical and ergonomic) or safety

hazards (poor housekeeping, improper materials handling, mechanical, electrical, fire, etc.).

In this step, identify first the activity, example, window cleaning at 3rd floor of a building; second the hazard(s), example, height and poorly maintained ladder; and third, the possible consequence(s), example, fall. Thus:

Activity	Hazard	Possible Consequence
Cleaning window at 3rd floor	Height	Fall
	Poorly maintained ladder	

10.4.1. Step 2: Assess the Risks

Risk is defined in Session 1 as the degree of uncertainty expressed in likelihood of the consequence to occur and the severity of that consequence if, indeed, it will occur. In this step, after assessing likelihood and severity, there is need to calculate risk rating and find out risk significance.

Example, if we pursue the example in Step 1, risk assessment would be:

Activity	Hazard	Possible Consequence	Likelihood	Severity	Risk Rating	Risk Significance
Cleaning window at 3rd floor	Height Poorly maintained ladder	Fall	3	2	6	Medium

Note: There are different methods used in assessing likelihood and severity. For the purpose of this training, a 5 by 5 Risk Assessment Matrix is used with the following likelihood and severity rating guides:

*Likelihood Rating**

Score	Description	Condition(Example)
1	Rare	May only occur in exceptional circumstances
2	Unlikely	Could occur some time
3	Possible	Might occur some time
4	Likely	Will probably occur at some time
5	Almost	Expected to occur in many circumstances

Severity Rating**

Score	Description	Condition(Example)
1	Insignificant	No injuries

2	Minor	First aid treatment
3	Moderate	Medical treatment required
4	Major	Extensive injuries, e.g. permanent disability
5	Catastrophic	Fatality

Note: Risk Rating (RR)is computed by multiplying likelihood score and severity score, while Risk Significance (RS) is determined with the following guide:

Risk Significance (Legend)

Risk Rating	Risk Significance	Decision Guide
15 - 25	Extreme Risk	Unacceptable level of risk. Activity must not proceed in current form.
8 - 12	High Risk	Unacceptable level of risk. Activity must be modified to include further control measures.
4 - 6	Medium Risk	Relatively acceptable. Activity can proceed subject to close supervision.
1 - 3	Low Risk	Considered acceptable. Activity can proceed subject to compliance with the specified control measures.

Looking back at the example in Step 2, the Risk Rating is 6 (Likelihood = 3 X Severity = 2). Based on the Risk Significance guide, the activity "cleaning window at third floor" is Medium Risk (score of 6), a risk that is relatively acceptable.

Urgent action is required for risks assessed as Extreme, as indicated in the column "Decision Guide" in the *Risk Significance Matrix* above. The actions required may include:

- instructions for the immediate end of the work, process, activity, etc
- isolation of the hazard until more permanent measures can be implemented.

Actions taken to address an Extreme risk must be documented. Documented control plans with responsibilities and completion dates are required for High and Medium risks.

10.4.2. Step3: Evaluate Existing Risk controls

There is a need to closely examine the existing risk controls and their effectiveness in controlling the risk at an acceptable level. The risk assessment

team examines existing data of accidents, near misses, illnesses to determine if existing control measures are adequate.

The result of the evaluation in Step 3 is helpful to determine the residual risk which is the level of risk that remains after control measures are applied. If the residual risk is evaluated to be significant, additional control measures will be recommended.

10.4.3. Step 4: Implement Additional Risk Controls

If evaluation in Step 3 finds that existing risk controls are not adequate as evidenced by a significant residual risk, additional control measures shall be implemented, as recommended in Step 3.

10.4.4. Step 5: Monitor and Review Effectiveness of Risk Control

Note: OSH Risk Assessment which uses HIRAC as tool is an on-going process like a cycle because after risk is evaluated, controls are implemented, monitored and reviewed and then another round of hazard identification is done.

HIRAC is done with active involvement of workers and management in teams. A HIRAC done by a single or a few people is less effective.

10.4.5. The HIRAC Form

The following is the basic and standard form used in doing HIRAC.

HIRAC FORM			
Company	ABC Company (Example)	Process	Warehousing (example)
Conducted by		Approved by	
Date		Date	

No.	Activity	Hazard	Consequences	Existing Controls	Risk Analysis				Additional Control Measures
					Likelihood	Severity	Risk Rating	Risk Significance	
1									
2									
3									
4									
5									

10.4.6. Sample HIRAC

If we are going to put into the HIRAC Form the example we have just discussed, it would look like the following:

No.	Activity	Hazard	Consequences	Existing Controls	Risk Analysis				Additional Control Measures
					Likelihood	Severity	Risk Rating	Risk Significance	
1	Cleaning window	Height Poorly maintained ladder	Fall	None	3	2	6	Medium	1 Regular inspection of ladder 2 Fall arrest system/PPE 3 Working at Heights Trng
2									

Note: *Column No. 5 (Existing Controls) shall be filled-out if there is(are) hazard control measures already practiced by the establishment every time the concerned activity is performed. It there is already an existing hazard control, consider it in deciding for the* ***Likelihood*** *and* ***Severity*** *under* ***Risk Analysis****.*

10.4.7. Practice HIRAC

Let us do a practice. Please pick an activity in your establishment, example, *disinfecting the storage room*. List it under Activity No. 1. Then follow the steps of conducting HIRAC as explained above and following the example we just completed.

No.	Activity	Hazard	Consequences	Existing Controls	Risk Analysis				Additional Control Measures
					Likelihood	Severity	Risk Rating	Risk Significance	
1									
2									
3									
4									
5									

Then when you do the real HIRAC back to your workplace, do Activity No. 2 and so on. Remember to do HIRAC in a team, not just you – the Safety Officer.

10.5. Key Points

- An effective OSH Workplace Risk Assessment process is a fundamental requirement of a safe workplace.
- Conduct of HIRADC in every workplace is a requirement of RA 11058 – the OSH Law without which a penalty is imposed.
- Among the benefits Risk Assessment offers are help in creating awareness about hazards and risk, identifying who may be at risk, determine sufficiency and effectiveness of controls, help prioritize implementation of control measures and help determine if applicable requirements are met.

- OSH Risk Assessment is the process of identifying hazards, assessing risk and determining controls while HIRADC is the tool to perform OSH Risk Assessment.

- HIRADC is a continuous process and requires involvement of teams.

11 – Workplace Emergency Preparedness

The Big Idea is "emergencies can strike anyone, anytime, anywhere. Everybody in the workplace can be injured or get ill. The best way is to develop an emergency action plan to guide everybody when immediate action is needed."

11.1. Session Objectives

At the end of the session, participants are able to:
- explain the importance of emergency preparedness,
- describe the process of emergency action planning,
- enumerate the elements of a basic emergency action plan.

11.2. Requirements

The OSH Law (DO 198-18) provides in:

Section 11 (d) that employers shall provide workers adequate and suitable information on emergency and disaster management protocols including proper evacuation and shutdown procedures.

Section 12(14) that establishments are to develop a comprehensive OSH program that includes a plan to respond to emergencies and disasters.

11.3. Workplace Emergency

OSHA defines "workplace emergency" as situations that threaten employers, employees, customers and the public; disrupts or shuts down operations; or causes physical or environmental damage (OSHA).

Emergencies may be natural or man-made. Many types of emergencies , however, can be anticipated which can help employers and workers plan to prepare how to respond to unpredictable situations. People can not think clearly and logically during crisis.

Emergencies can be in the form of the following:

– Floods	– Chemical spills
– Earthquakes	– Radiological accidents
– Hurricanes and tornadoes	– Explosions
– Disease outbreaks	– Civil disturbances

– Fire – Toxic gas release	– Workplace violence – Collapse of structures

11.4. Emergency Action Planning

Emergency preparedness is a widely-accepted concept of protecting workers' safety and health. The way is to put together a well-thought of Emergency Action Plan. Commitment of both the management and the workers is vital.

Emergency action planning is a process of hazard assessment to determine what, if any, hazards inside or from outside the workplace could cause an emergency situation. Many establishments claim they find it beneficial to include a diverse group of representatives in the planning process.

Emergency Action Plan (EAP) is a document that outlines actions of employers and employees during emergency situations. It describes how workers will specifically respond to different types of emergencies, taking into account specific worksite layouts, structural features, and emergency systems.

11.5. Steps in Action Planning

Brainstorming method is helpful and as a general rule, in there are 3 broad steps: 1) identify potential emergencies; 2) assess how they would affect people in the workplace including the worst-case scenario; and 3) plan how to respond.

11.6. What should an EAP include?

At the minimum, the following 12 items should form part of Emergency Action Plan:

1. Method for reporting the emergency
   - make sure alarms are recognized by employees
   - make available communication system
   - maintain updated list of personnel

2. Evacuation policy and procedures
   - determine conditions that makes evacuation necessary
   - clear chain of command
   - evacuation procedures including routes and exits

3. Procedure for workers who remain to perform critical operation
   - perform essential services that cannot be shut down
   - designation of employees to continue or shut down operations

- operate fire extinguisher

4. Emergency escape procedure and route assignment
   - floor plans
   - exit locations
   - assembly point

5. Names, titles, departments and contact numbers for explanation of duties and responsibilities under the EAP
   - select who leads and direct and coordinate
   - employees should know who the coordinator is
   - all must be fully aware who is authorized to do what

6. Establish evacuation routes
   - clearly marked and well-lit
   - wide enough to accommodate many
   - unobstructed, clear of debris at all times
   - unlikely to expose evacuating personnel to another hazard
7. Procedure to account personnel
   - designate assembly areas
   - do head count after evacuation
   - establish method to account for non-employees
   - establish system for further evacuation

8. Rescue by those who are:
   - trained
   - equipped
   - certified

   **If there are confined space operations, include procedure or confined space entry in the Emergency Action Plan.*

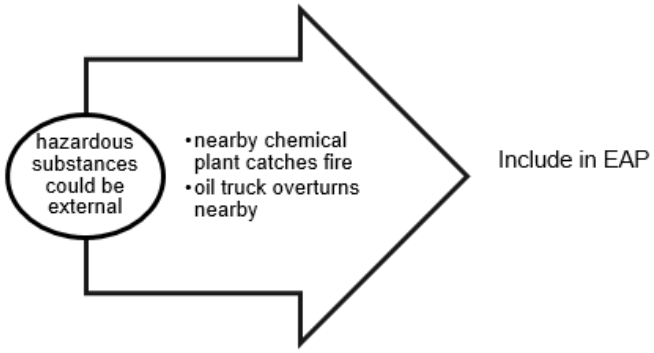
9. Emergency Medical Services
   - provide employees with written medical procedure to minimize confusion during medical emergency
   - if infirmary, clinic/hospital is far, ensure qualified first aider is available
   - first aid supplies must be available
   - transportation available for emergencies

10. Role of Employees
    - include employees in the planning process
    - specify what employees should do before, during and after emergencies
    - employees should be properly trained

- make copies of EAP available/accessible to all employees
- personal information of all employees must be available

11. Employee Training
    Generally, training includes:
    - individual roles and responsibilities
    - threats, hazards and protective actions
    - notification, warning and communication procedures
    - means of locating family members in an emergency
    - emergency response procedures
    - evacuation, shelter and accountability procedures
    - location and use of common emergency equipment
    - emergency shutdown procedures
    - practice drills as often as necessary

12. Hazardous Substances



11.6. Safety Tips During Emergency Situations

The following are helpful tips Safety Officers can teach the employees. This will help prepare the employees to what to do in case emergencies like fire and earthquake happens.

In case fire happens in the workplace:

- **Raise the alarm.** Regardless of how small the fire, the alarm must be raised immediately because fire can develop very quickly. The Incident Commander evaluates and decides whether to extinguish the fire using the company's fire fighting equipment or to alert the Fire Department.

- **Evacuate.** In a calm and organized manner everyone must head immediately to the nearest exit without stopping to collect things and not using elevators or lifts. Hazardous machines need to be shut-down as part of the emergency procedure. Put hands against the doors to check that the fire is not on the other side. If the escape route is enveloped by smoke, drop to the ground and crawl towards nearest exit.

- **Stay at the assembly point.** Upon exit, all should meet at the designated assembly point where a head count is performed to make sure all are accounted for. Nobody

should leave or re-enter the building until the Incident Commander or Fire Marshall or the Supervisor gives instructions to do so.

- **If trapped.** If trapped inside a burning building, get to a room with a window. If on the ground floor, open the window and lower yourself then drop to the floor. If you are too high to jump safely, call for help from the window and cover gaps with any materials that can prevent smoke from entering. If your clothes catch fire, remember not to run around, instead drop yourself to the ground and roll. (Reference: https://www.fireaction.co.uk/news/what-to-do-if-theres-a-fire-in-your-workplace/)

In case earthquake happens in the workplace:

- **Drop, cover and hold on.** Do not panic**.** Try to consciously protect your head and torso and limit your movement. Most of the injuries during earthquake are due to movement of people that result to head injuries, fall, sprains and fractures.

- **Stay indoors.** Remain inside the building until the shaking stops and you are sure that it is safe to go out. Do not use elevators when exiting the building because aftershocks may happen or there might be power outage.

- **Check for debris.** Before deciding to exit the building after the shaking stops, make sure there are not debris that might fall on you while exiting.

- **If you are outdoor.** Go to the nearest clear spot and drop to the ground until the shaking stops.

- **Stay away from buildings.** Do your best to stay as far away from structures that might collapse like buildings, power lines, trees and streetlights.

- **After the earthquake.** Return only when authorities give clearance. Check yourself for injuries and get first aid, if necessary. Expect and be prepared for aftershocks which may cause landslides or tsunamis. (Source: https://www.redcross.org/get-help/how-to-prepare-for-emergencies/types-of-emergencies/earthquake.html.

In case flooding happens in the workplace:

- **Listen to advisories.** Keep informed of the latest developments through the radio or television. Usually, the authorities give warning if there is need to evacuate.

- **Be aware of possibility of flash floods.** If there is possibility for flash floods, move to higher ground immediately. Be aware that flash floods can occur in in certain places even without usual indicators like clouds and heavy rains.

- **Secure the building and yourself.** Turn-off main power switches or valves. Disconnect electrical equipment and appliances. Do not touch electrical equipment when you are wet or standing on water.

- **Stay on firm ground.** Moving water at 6 inches deep can already can already sweep you off your feet. There is also danger of water being electrically charged from power pipelines.

- **After the flood subsides.** Return only after the place is declared safe. Structures might have weakened or landslide might occur. (Reference: https://www.ci.patterson.ca.us/488/What-To-Do-Before-During-and-After-a-Flo)

11.7. Key Points

- Emergencies happen anytime, anywhere and can affect anybody in the workplace. They can be anticipated and therefore appropriate response can be planned.
- Establishments with well-prepared Emergency Action Plans are better prepared and guided to protect workers against injuries and fatalities and properties against loss or damages.
- Emergency action planning has 3 broad steps: 1) identify potential emergencies, 2) assess how they can affect people in the workplace, and 3) plan how to respond.
- A well-developed Emergency Action Plan combined with proper worker training result to lesser injuries to workers and lesser damages to properties.
- The commitment and support of all workers and employers is critical to the EAP's success. Involving workers in putting together the plan and implementing an EAP is the key.

12 – Developing an OSH Program

The Big Idea is "unless there is an organized, written, well-defined OSH Program, all of the hard work, expenses, and hopes for a successful program will be for nothing."

12.1. Session Objectives

At the end of the session, participants are able to:

- enumerate the requirements of the law regarding OSH program,
- articulate the value of OSH programs, and
- explain the core elements of an OSH program.

12.2. Requirements

The OSH Law (RA 11058) and its IRR (DO 198-18) require covered establishments to develop and implement a suitable OSH Program (Section 12). This OSH Program shall be:

- communicated to everybody in the workplace;
- inclusive of the core elements:
  - management commitment
  - employee involvement
  - workplace risk assessment
  - hazard prevention and control
  - safety and health training and education
  - OSH program evaluation
- submitted and approved by the Department of Labor and Employment (DOLE); and
- reviewed and evaluated at least once a year.

Non-compliance to this requirement carries a penalty of *P40,000.00* per day until complied (Section 29 of DO 198-18).

12.3. What is Safety and Health Program (OSH Program)?

A safety program is a systematic plan to identify and control hazards and respond to emergencies. It lays out responsibilities, resources, and procedures for keeping the workplace safety and healthy.

Effective OSH programs reduce the extent and severity of work-related injuries and illnesses, improves employee morale and productivity and reduces workers' compensation costs. OSH programs are developed guided by the following criteria:

- workplace specific;
- input from the workers;
- clear responsibilities and accountabilities;
- each of the program's elements must be in writing;
- must also address the safety and health of contractors, guests, suppliers and community; and
- be available and effectively communicated.

12.4. Core Elements of an OSH Program

12.3.1. Management Commitment

Management must demonstrate commitment and support without which success of implementation is not assured. This commitment can be in terms of:

- providing leadership and resources such as time, money and personnel;
- ensuring that employees receive the appropriate training or certification;

- making all applicable health and safety information available to all employees;
- including health and safety performance as part of employee performances appraisals; and
- participating to health and safety activities/meetings.

Management commitment is usually expressed through a written Policy Statement stating top management's safety objectives, level of safety that can be performed by the organization and the responsibility of the organization's members for executing the policy and ensuring safety.

An OSH Policy must be:

- specific to the organization, concise, clearly written, dated, signed;
- indicates management commitment, support and accountability;
- includes objective of protecting all members of the organization;
- states compliance with OSHS and related laws;
- states objectives to continually improve the OSH;
- communicated to all employees; and
- covers all workers and community.

12.3.2. Employee Involvement

Some strategies to involve workers

- Letting workers should know their roles in the safety and health program including their rights and responsibilities.
- Consulting workers directly.
- Requiring and encouraging workers to report safety and health concerns promptly.
- Encouraging workers to suggest improvements in the safety and health program.
- Assignment of responsibility and accountability to:
  - CEO/Manager or his representative
  - Supervisors
  - Workers' Representatives (union members if organized)
  - Company Physician, nurse or first-aider
  - Safety Officer
  - Safety and Health Committee

12.3.3. Workplace Risk Assessment

Workplace risk assessment identifies the hazards, analyzes the risk level and recommends hazard controls. The HIRAC forms part of the OSH Program. The goal is to try to answer the following questions:

- What can happen and under what circumstances?
- What are the possible consequences?
- How likely are the possible consequences to occur?

- If they do occur, how serious is the consequence?
- Is the risk controlled effectively, or is further action required?

12.3.4. Hazard Prevention and Control

With the risk assessment as reference, hazard prevention and control plans are developed where specific items may be needed to address workplace specific activities such as:

- hazardous materials information system;
- lock out-tag out procedures;
- confined space entry procedures;
- hotwork permitting system;
- material handling rules;
- plant maintenance;
- fire safeguards;
- vehicle safety rules;
- working alone guidelines;
- personal protective equipment requirements; and
- preventive maintenance.

12.3.5. Safety and Health Training and Education

Training and education are required to implement health and safety procedures into specific job practices and to raise awareness and skill levels of employees to an acceptable standard.

The law requires the establishments to provide appropriate training to:

– All workers	mandatory 8-hour OSH orientation
– Personnel engaged in highly hazardous processes like scaffolding work, structural erections, excavation, blasting, demolition, confined space, hazardous chemicals, welding and flame cutting	specialized training, retraining
– Safety and health personnel	mandatory training for safety officers, first aider and health personnel
– Operators of heavy equipment	heavy equipment safety
– New hires	OSH orientation

A re-orientation for workers in high risk establishments shall be conducted not less than once a year.

12.3.6. OSH Program Inclusions

OSH Programs, as prescribed by DOLE, must include at least the following:

**Red* – are required for medium to high risk establishments*

1	Company commitment
2	General safety and health program (HIRAC, medical surveillance, first aid)
3	Promotion of mental health services and drug-free workplace
4	Prevention of HIV, tuberculosis, Hepatitis B
5	Complete company/project details
6	Composition and duties of OSH Committee
7	OSH personnel and facilities
8	Training and safety orientation of all workers and permit system
9	Conduct of toolbox meeting and job safety analysis
10	Accident investigation and reporting
11	Provision and use of PPE
12	Provision of safety signages
13	Dust control and management, regulation on temporary structures, lifting, etc.
14	Provision of workers' welfare facilities
15	Emergency and disaster preparedness and drills
16	Solid waste management system
17	Control and management of hazards
18	Prohibited acts and penalties of violations
19	Cost of implementing OSH program

12.5. OSH Program Evaluation

The establishment, through its Safety and Health Committee, shall review and evaluate the OSH Program, at least once a year, to ensure that its objectives are met.

Although commonly-used, accident frequency and severity rates are not always the only measures to use for evaluating the effectiveness of a health and safety program.

Safety audits have been found to be effective to measure the effectiveness of OSH Programs. The audit identifies weaknesses and areas for improvement. Once weaknesses are identified and corrective actions are implemented, continuous improvement of the OSH Program is assured.

12.6. DOLE OSH Program Template

Establishments that intend to develop an OSH Program may use the OSH Program Template designed by the Department of Labor and Employment (DOLE) which contain the minimum requirement. The template which can be downloaded in the link below or from the DOLE-Bureau of Working Conditions website http://www.bwc.dole.gov.ph/safety-and-health.

12.7. Key Points

- Effective OSH programs reduce the extent and severity of work-related injuries and illnesses, improves employee morale and productivity and reduces workers' compensation costs.
- A written OSH program containing the minimum core elements is a requirement of the law to covered establishments. Non-compliance of this requirement carries a penalty of *P40,000* per day until complied.
- Developing, implementing and evaluating effectiveness of the OSH Program is the role of the OSH Committee.
- Minimum core elements of an OSH program as required by the Department of Labor and Employment are: 1) management commitment, 2) employee involvement, 3) workplace risk assessment, 4) hazard prevention and control, 5) safety and health training and education, and 6) OSH program evaluation.
- OSH programs must be written, workplace specific, have inputs from workers, clearly defines responsibilities and accountabilities, address the safety and health of contractors, suppliers, guests and the public and communicated to everybody in the workplace.
- Establishments may use the OSH Program Template designed by the Department of Labor and Employment (DOLE).

13 – Accident Investigation and Reporting

The Big Idea is "accident investigation will lead to the real cause of why something happened, and armed with that knowledge, affirmative steps to prevent future accidents from occurring can be taken."

13.1. Session Objectives

At the end of the session, participants are able to:

- comply with the reporting requirements of RULE 1050,
- explain the meaning and impact of accidents,
- identify different types of accident causes,

- know the purpose of accident investigation, and
- explain how to conduct an accident investigation.

13.2. Requirements

Rule 1050 of the OSH Standards which is "Notification and Keeping of Records of Accidents and/or Occupational Illnesses" is the main document that outlines the requirement for employers in terms of reporting accidents. The Rule stipulates that:

- All work accidents or occupational illnesses resulting in disabling condition or dangerous occurrence shall be reported by the employer to the Regional Labor Office using form DOLE-BQF-WAIR comprising of:

Covid-19 WAIR	Covid-19 Prevention and Control Compliance Report	Due every 30th of the month
WAIR-A	Work Accident Injury Report	Due 30 after the date of accident
WAIR-B	Patient's Data Page (an attachment to WAIR-A)	

- The formal report shall be submitted on or before the 20th day of the month following the date of occurrence and an investigation report in the prescribed form shall be submitted on or before the 30th day of the same month.

- In case employee has not reported back to duty on the closing date of reporting, an estimate of the probable days of disability shall be entered in the report and corrected after the return of the injured. After the return of the injured, the corrected days of absence shall be used.

- Where the accident results in death or permanent total disability, the employer, in addition to the written report, shall initially notify the Regional Labor Office within twenty-four (24) hours after occurrence.

- All deaths and permanent total disabilities shall be investigated by the Regional Office within forty-eight (48) hours after receipt of the initial report of the employer.

13.3. Incident and Accident

Incident is unplanned and unwanted event that disrupts work processes that may or may not result to injury, harm or damage. *Accident* is unplanned and unwanted event that results to personal injury, illness or property damage.

OSHA strongly suggests to investigate both incidents and accidents since a "near miss" or sometimes called "close call" might still hurt workers if circumstances are slightly different.

Investigate both because a near miss is an accident in progress. A hazard that caused a "near miss" is the same hazard that can cause a fatality. An incident-accident relationship is like an iceberg: visible fatalities are few but the hidden near misses are many.

13.4. Incident/Accident Investigation

- A well-ordered and thorough process to identify and correct shortcomings in the safety and health management programs that helps employers to look beyond what happened and discover why it happened.

- Designed not to apportion blame but to find root cause.

- Ensure that any failure in the process or system are rectified and does not happen again.

13.5. Why Investigation is Important?

The main reason for investigation is the belief that all incidents/accidents do not just happen, they are caused and therefore, can be predicted and prevented.

The basic principle is that incidents/accidents do not have to occur; they can be prevented by addressing the shortcomings of the safety and health management system.

Finding these shortcomings (causes) is the main purpose of investigations. Once shortcomings are identified, these are rectified/corrected so that the incident won't happen again.

Besides, it is a requirement of the law (Rule 1050). Non-submission of reports is a violation imposed with a P30,000 penalty and failure to develop and implement Safety and Health Program, which includes Accident Investigation, with P40,000 penalty.

13.6. Steps in Incident/Accident Investigation

There are 4 straight-forward steps in conducting the investigation. These are: 1) gather data, 2) analyze, 3) make recommendation, 4) implement and evaluate corrective actions.

13.5.1. Gather Data

- Interview witnesses and victims (if possible)
- Gather pieces of evidences
- Draw and take measurements of the accident area
- Take samples

Note: Before starting the first step, however, ensure that the victim has been appropriately attended to and the accident scene secured to prevent others to be exposed to the hazard and to preserve evidences.

13.5.2. Analyze

Incidents/accidents are usually analyzed in two ways: events analysis and cause analysis.

1. Event analysis helps investigator determine the sequence of events that ultimately led to the incident/accident. The output of an event analysis is a story that presents events in chronological order from the actual event to the point when the incident actually happened. Event analysis includes:

   - Actual events that are verifiable and have witnesses
     Example: Ronnie saw Jigger turn-off the power switch.

   - Assumed events that must have happened
     Example: If Jigger's hand was crashed, it is assumed that he failed to perform lock-out, tag-out.

   - Non-events that are supposed to happen but did not
     Example: If Jigger did the lock-out, tag-out procedure, he missed (or did not do) a step to verify or try-out the procedure.

   - Simultaneous events happening at the same time
     Example: Another worker wondered why the power was off and turned it back on while Jigger was loading something on the machine.

2. Cause analysis helps investigators pinpoint the causes at 3 levels: direct cause of the injury/illness; surface or contributing cause; and the underlying or root cause.

   - Direct cause is the harmful transfer of energy that caused injury/illness.
     Example: Contact with electricity is the direct cause of a victim that got electrocuted while doing scaffolding work.

   - Surface or contributing cause is the specific unsafe act or unsafe condition that led the worker to have contact with electricity. This is determined by asking why the worker had contact with electricity.
     Example: The worker hit the overhead wire nearby with the metal scaffolding tube.

- Root or underlying cause is failure or weakness of the system that allows the unsafe act or unsafe condition to exist. This is determined by asking why the unsafe act or unsafe condition exist.
  Example: There was no inspection conducted prior to start of scaffolding work to check live wires within 10 feet near the work area.

13.5.3. Make Recommendations

Investigators make recommendations based on the event and cause analyses. It is important to note that recommendations should address the root cause and the unsafe behavior or unsafe conditions.

Correcting unsafe behavior and unsafe conditions and not their underlying causes does not ensure that incidents/accidents would not happen again (OSHA, 2015).

Investigations that seeks to address the real underlying causes not only prevent future incidents, but also improve workplace morale. Putting the blame on and punishing the workers do not offer much help.

Avoid superficial and general recommendations because they result to weak corrective actions and do not offer much help in improving safety and health performance.

13.5.4. Implement and Evaluate Corrective Actions

Incident/accident investigations are of no use and never complete without corrective actions. Like in doing recommendations, corrective actions must address the root or underlying cause(s).

Note that most corrective actions intended to address the root cause are systems-based and cannot be quickly corrected. They take time, effort, resources and importantly management support. Examples are:

- Revising a process or procedure
- Developing plans (maintenance plan, inspection plan, etc.)
- Writing policies
- Updating the OSH program

Corrective actions are implemented by the supervisors of the department not by the investigation team. Monitoring of the implementation and evaluation of the corrective actions' effectiveness are done at an appointed time by whoever is given the responsibility by the management.

Corrective actions are deemed effective when the incident or accident do not happen again.

13.7. Incident/Accident Investigation Program

Developing a clearly-written Incident/Accident Investigation Program is desirable. This program should include guidelines such as:

- When and how management is notified of the incident/accident?
- How, when and who notifies the Department of Labor and Employment (DOLE) of the incident/accident
- Who is authorized to notify outside agencies like fire department
- Who composes the investigation team
- What training they need to undergo?
- When investigations should be completed
- Who receives the report?
- Who implements corrective actions?

13.8. Key Points

- Incident/Accident investigation is a way to prevent injuries and illnesses in the workplace by carefully looking at the real causes of incidents/accidents and addressing them. It is also a requirement of the law.

- The ultimate intention of incident/accident investigation is to prevent the same incident/accident to happen again in the future.

- There are 4 steps in conducting effective investigation. They are: 1) gather data, 2) analyze, 3) make recommendations, 4) implement and evaluate corrective actions.

- Seeking to address the root cause and not making conclusions focused on employee actions not only prevents future accidents but also improves morale in the workplace.

- Having a clearly-written Incident/Accident Investigation Program helps carry out an effective investigation.

14 – Roles of Safety Officers and the OSH Committee

The Big Idea is "the law requires Safety Officer(s) and an OSH Committee in every workplace. Both have critical roles to play to achieve OSH goals."

14.1. Session Objectives

At the end of the session, participants are able to:

- perform the duties and responsibilities of a Safety Officer, and
- describe the roles and responsibilities of the OSH Committee.

14.2. Requirements: Rule 1040 Health and Safety Committee

Employers are required to employ or designate qualified Safety Officers to oversee the overall management of the OSH program (DO198-18, section 12).

The classification and the number of Safety Officer depends on the level of risk and the number of employees. Failure to provide a Safety Officer is subject to an administrative fine of P40,000/day until complied.

In the same manner, employers are mandated to organize their OSH Committee to plan, develop, oversee and monitor implementation of the OSH Program (DO 198-18, Section 13).

The type of the OSH Committee depends on the level of risk and the number of employees. Failure to organize the OSH Committee is subject to an administrative fine of P40,000.00/ day until complied.

14.3. Safety Officers

"Any employee or officer of the company trained by DOLE or DOLE-accredited Training Organization, tasked by the employer to implement the OSH program ensuring that OSH standards are complied" (DO 198-18, Section 3.u).

Safety Officer are classified into four: Safety Officer 1 (SO1); Safety Officer 2 (SO2); Safety Officer 3 (SO3); and Safety Officer 4 (SO4). The following are their respective qualifications:

Safety Officer 1 (SO1)	– Completed the mandatory 8-hour OSH Orientation Course applicable to its industry – 2-hour trainers' training
Safety Officer 2 (SO2)	– Completed the mandatory 40-hour OSH Training Course applicable to its industry and other industry-specific course as may be prescribed
Safety Officer 3 (SO3)	– Completed the mandatory 40-hour OSH Training Course applicable to its industry and other industry-specific course as may be prescribed. – ***Additional 48 hours of advanced/specialized occupational safety training course relevant to the industry*** (e.g. industrial hygiene, safety audit, accident investigation, OSH programming, chemical safety, etc.) – Other requirements as prescribed by the OSH standards

	– At least 2 years experience in OSH
Safety Officer 4 (SO4)	– Completed the mandatory 40-hour OSH Training Course applicable to its industry and other industry-specific course as may be prescribed – Additional ***80 hours of advanced/specialized occupational safety training course relevant to the industry,*** (e.g. industrial hygiene, safety audit, accident investigation, OSH programming, chemical safety, etc.) – An ***aggregate of 320 hours of OSH related training or experience (additional training may be converted to years of experience where 80 hours of training may equal to 1 year of experience and vice versa)*** and – Other requirements as prescribed by the OSH standards – Actual experience as SO3 for at least 4 years

14.4. Principal Function

The Safety Officer is the "principal assistant and consultant to remove hazards and correct unsafe practices in the workplace".

Duties and responsibilities per Rule 1047 of OSHS and Sec. 14 of DO 198-18

- Serves as secretary to the OSH Committee
  - *Prepare minutes of meeting*
  - *Report status of recommendations made*
  - *Send notification for meetings*
  - *Update employer on activities of the committee and recommendations made*
- Acts as advisor in all matters pertaining to OSH for the guidance of the employer and workers
- Conducts investigation of accidents as part of the OSH committee and send separate report to employer
- Coordinates OSH trainings for workers and employers
- Conducts OSH inspection as part of the OSH committee
- Helps maintain an accident record system
- Coordinates actions to eliminate causes of accidents
- Assists government inspectors during inspection and accident investigation
- Submits all mandated reports – remember WARMA?

Work Accident/Illness Report (WAIR)	30th day of the month following date of occurrence; monthly under the DTI & DOLE Intermin Guideline for Prevention and Control of COVID
Annual Exposure Data Report (AEDR)	On or before January 31

Report of Safety Organization (RSO)	Within 1 month after organized
Minutes of OSH Committee Meetings	Quarterly
Annual Medical Report (AMR)	March 30

Authority and Accountability

As provided in RA 11058, Section 14 (d) Safety Officers are authorized to remove hazards and issue work stoppage when necessary based on the procedure provided by the OSH Standards.

The Safety Officer is accountable to the employer. For purposes of effectiveness, the Safety Officer shall report directly to the employer according to Rule 147 (8).

14.5. OSH Committee

The Occupational Safety and Health (OSH) Committee is the planning and policy making group in all matters pertaining to safety and health according to Rule 1040 of OSHS. It is a body created within the workplace tasked with the authority to plan, develop and implement OSH policies and programs, monitor and evaluate the OSH program, and inspect and investigate all aspects of work pertaining to the safety and health of all workers.

General Requirement

- OSH Committee shall be organized in all places of employment one month from the date the business starts and reorganized every year.
- Report to DOLE using RSO Form within 1 month after creation or reorganization.

Composition

- Less than 10 workers and low risk establishments with 10-50 workers and low to high risk establishments with 50 workers and above:

Chairperson	Company owner or manager
Secretary	Safety Officer
Member	At least 1 worker

- Medium to high establishments with 10-50 workers and low to high risk establishment with 51 workers and above:

Chairperson	Employer or representative
Secretary	Safety Officer
Ex-officio Members	First aider, OH personnel

Members	Safety officers of contractors/subcontractors, worker representative

- Two or more establishments housed in one building/complex, Joint Coordinating Committee:

Chairperson	Building owner or representative
Secretary	Safety Officer of the complex appointed by the Chairperson
Members	At least 2 worker representatives

14.6. Duties and Responsibilities of OSH Committee

The principal duties of the safety and health committee are the following:

- plans and develops accident prevention programs;
- directs the accident prevention efforts in accordance with the OSH program and government regulations;
- conducts safety meetings at least once a month;
- reviews reports of inspection, accident investigations and implementation of program;
- submits reports to the manager on its meetings and activities;
- provides necessary assistance to government inspecting authorities;
- initiates and supervises safety training for employees; and
- develop and maintains disaster contingency plan and organizes emergency preparedness plan.

Preparing the AEDR (per Rule 1050 – Notification & Keeping of Records)

The Annual Exposure Data Report (AEDR) is part of the mandatory reportorial requirement using Form DOLE/BWC/HSD-IP-6b which is submitted to the Regional DOLE Office on or before January 31 every year.

The AEDR uses 2 measures of injury/illness experience: the Frequency Rate (FR) and Severity Rate (SR).

1. Disabling Injury/Illness Frequency Rates (FR) is based upon the total number of deaths, permanent partial, permanent total and temporary total disabilities in the period (year) covered. This expresses the injury/illness in million man-hour unit with the formula:

$$Frequency\ Rate\ (FR) = \frac{No\ of\ disabling\ injury\ or\ illness\ x\ 1{,}000{,}00}{Employee\ hours\ of\ exposure*}$$

**total number of employee hours worked by all employees*

2. Disabling Injury/Illness Severity Rate (SR) is based on the total of all scheduled charges deaths, permanent partial, permanent total disabilities plus the total actual days of temporary total disabilities in the period (year) covered. This expresses the loss in terms of million man-hour unit with the formula:

$$Severity\ Rate\ (SR) = \frac{total\ days\ lost\ x\ 1{,}000{,}000}{employee{-}hours\ of\ exposure}$$

14.7. Some Important Terms

- Disabling Injury/Illness - work injury which result in death, permanent total disability, permanent partial disability or temporary total disability.
- Permanent Total Disability (PTD) - any injury or sickness which permanently or totally incapacitates an employee from engaging in any gainful occupation.
- Permanent Partial Disability (PPD) - injury which result in loss or loss of use of any member or part of a member of the body.
- Temporary Total Disability (TTD) - injury or illness which does not result in death or PTD or PPD but which results in disability from work for a day or more.

14.8. Key Points

- The law requires all establishments to provide Safety Officers and organize their OSH Committees who will be mainly responsible in safety and health related goals.
- The Safety Officer is the principal assistant and consultant to remove hazards and correct unsafe practices in the workplace. The OSH Committee is the planning and policy making group in all matters pertaining to safety and health.
- There are 4 classifications of Safety Officers. There is an appropriate classification and number of Safety Officer for each establishment depending on the level of risk and the number of employees.
- There are 3 types of OSH Committees, depending on the level of risk and the number of employees of the establishment.

15 – Employees Compensation Program

The Big Idea is “in the event accidents happen, there is a program of the government that provides compensation and benefits to the workers and their families”.

15.1. Session Objectives

At the end the session, participants are able to:

- describe the process to avail of employee compensation,
- determine who are qualified to avail of the EC program, and
- comply with the requirements to avail of the benefits.

15.2. The Employee Compensation Commission (ECC)

- A government corporation attached to the Department of Labor and Employment for policy coordination and guidance.
- Created in 1974 thru PD 626, as amended EMPLOYEES COMPENSATION & STATE INSURANCE FUND
- It is a quasi-judicial corporate entity created to implement the Employees' Compensation Program (ECP).
- Provide assistance to all Filipino workers who suffers from different work-related contingencies.

15.3. Coverage

Among the private sector, the following are covered:

- Compulsory members of SSS
- Sea-based Overseas Filipino Workers (OFWs)
- Kasambahays
- Self-employed
- Land-based Overseas Filipino Workers (OFWs)

Among the government sector, the following are covered:

- Compulsory members of GSIS
- Uniformed Personnel such as AFP, PNP, BJMP, BFP and Philippine Coast Guard

15.4. Who pays the EC Contribution?

Government pays for the government employees at P100 per month regardless of the range of monthly compensation and the employers pays for the employees in the private sector guided by following distribution:

Range of Compensation	Amount of Employer's Contribution per month
P 1,000 – P 14, 749.99	P 10.00
P 14, 750.00 and above	P 30.00

Employees' Compensation Program is designed to provide employees and their families with income benefits, medical, and other benefits in the event of work-connected sickness, injury or death.

15.5. Rules in the Compensability of Diseases

Rule #1
Not all diseases are compensable.
Only diseases caused by work or the working environment are compensable.

Rule #2
For the disease/illness and the consequent disability or death to be compensable, the disease/illness must be in the ECC's List of 32 Compensable Diseases. (insert link to the list)

Rule #3
Other diseases not in the list may still be compensable if employee can establish causal connection, the nature of his work or the working environment.
"INCREASED RISK THEORY" may help but not for pre-existing diseases.

15.6. Compensability of Injuries

For the INJURY and the resulting disability or death to be compensable, the injury must be the result of an accident arising out of or in the course of employment.

Eight instances where injury can be compensable:

- Happened at the workplace
- Happened while performing official function
- Outside of workplace but performing an order of his employer
- When going to or coming from work
- While ministering to personal comfort
- While in a company shuttle bus
- During a company sponsored activity
- Death of an Employee due to assault

15.7. Excepting Circumstances

Injuries or illness may not be compensable with the following: 1) if victim is intoxicated, 2) if proven that there is notorious negligence, and 3) if there is willful intent to injure self or others.

15.8. ECP Benefits

15.8.1. Loss of Income Benefit

Under the ECP, it is not the illness or injury that is compensated. It is the incapacity to work (DISABILITY), as a result of the illness or injury, that is being compensated.

Type of Disability

- Temporary Total Disability (TTD)

  Daily Income Benefit
  - for disability not exceeding 120 days
  - paid from first days of disability
  - may go beyond 120 days but not to exceed 240 days
  - P200/day for public sector employees
  - P480/day for private sector employees

- Permanent Total Disability (PTD)

  Monthly Income Benefit
  - complete loss of sight of both eyes
  - loss of two limbs or complete paralysis of two limbs
  - brain injury resulting in imbecility or insanity

- Permanent Partial Disability (PPD)
  - Loss of the use of a body part or function loss
  - Lump sum or monthly pension for PPD per ECC schedule

Monthly Income Benefit for Permanent Loss of the Use of Body Part or Permanent Partial Disability (PPD)

Complete and Permanent Loss of the Use of	No. of Mos.	Complete and Permanent Loss of the Use of	No. of Mos.
One thumb	10	One arm	50
One index finger	8	One foot	31
One middle finger	6	One leg	46
One ring finger	5	One ear	10
One little finger	3	Both ears	20
One big toe	6	Hearing of one ear	25
Any other toe	3	Hearing of both ears	50
One hand	39	Sight of one eye	25

15.8.2. Medical Benefits

- Ward services during hospital confinement
- Medical attendance of an accredited doctor
- Surgical expense benefit
- Reimbursement of cost of medicines

15.8.3. Career's Allowance

This is granted to employee who gets permanently and totally disabled and has difficulty taking care of basic personal needs. P1,000.00 per month allowance for the private and public sector employees.

15.8.4. Death & Funeral Benefit

In case of death, there is a Monthly Income Benefit pension to beneficiary plus 10% for each dependent child not exceeding five. Funeral benefit of 30,000 for private and public sector employees.

15.8.5. Rehabilitation Services

1. Physical Therapy Rehabilitation appliances, e.g. hearing aid, crutches, wheelchair, prosthesis, etc.

2. KaGabay Program of ECC
   - Re-skilling for re-employment
   - Training for entrepreneurship

15.9. Availing of ECP Benefits

Fill up prescribed forms and attach supporting documents such as:

- Proof of job description
- Medical/hospital records
- Incident/accident report
- EC logbook that has the following data entered:

Name	Date of Contingency	Place of Contingency	Nature of Contingency	Number of Days the	Remarks

				worker was absent for work	
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					

15.10. Filing of Claims

All EC claims may be filed by the claimant or his beneficiary at the System **(SSS for private sector, and the GSIS for the public sector employees)** nearest to the place of work or residence.

No claim for compensation shall be given due course unless said claim is filed with the Systems within **THREE (3) YEARS** from the time of sickness, injury, or death.

ARTICLE 196
Delinquent contributions. Employer's failure to remit contribution shall not prejudice the right of the employee or his dependents to benefits.

ARTICLE 200
Safety devices. Employer's failure to maintain safety devices subject to 25% penalty.

15.11. Key Points

1. Efforts to prevent accidents and illness in the workplace is not a hundred percent guarantee that accidents and illnesses would not happen.

2. If accidents do happen and illnesses proven to be work-related, the worker and his family can claim compensation and benefits from the Employees Compensation Commission through its programs.

3. Only diseases which are in the list of compensable diseases are compensable, however, if a causal connection is established, diseases not in the list may be considered.

4. The Loss of Income Benefit is granted not to compensate the injury or the illness but the worker's inability to work and earn income.

5. Prevention is still the priority option over compensation.

16 – Training the OSH Trainer

The Big Idea is that "educating workers on the basics of occupational **health** and **safety** can help reduce workplace accidents and injuries, saving companies from costly legal battles with employees and lifelong support for their families. All workers are required of the mandatory safety and health orientation which the Safety Officer is mandated to conduct."

This wisdom by Henry Ford is an inspiration: "Anyone who stops learning is old. Anyone who keeps learning stays young."

16.1. Session Objectives

At the end of the session, participants are able to:
- explain the essentials of effective presentation,
- apply the learning facilitation skills, and
- fulfill the roles of an OSH trainer

16.2. Requirements

DO 198-18, Section 16 (b) requires all workers to undergo the mandatory OSH seminar prescribed by the Department of Labor and Employment to be conducted by the Safety Officer of the establishment or any certified OSH practitioner or consultant.

16.3. What is Training?

Human Resource considers training as a process of providing skills to employees for doing a job effectively, efficiently and safely. It is the application of knowledge and gives people an awareness of rules & procedures to guide their behavior. It helps in bringing about positive change in the knowledge, skills & attitudes of employees.

Training, as a process, involves 5 steps in cycle according to the ADDIE model (David, 2014).

1	Analysis	Identify learning needs then set goals and objectives
2	Design	Line-up content and make prototype
3	Development	Create/produce the training materials as designed
4	Implementation	Actual delivery of the training

5	Evaluation	Feedback from learners, tests

In this session, focus is only in the Implementation phase consisting of training delivery/presentation and learning facilitation. But let us understand first the kinds and roles of a trainer.

Kinds of Trainers

There are 4 kinds of trainers. Which kind should an OSH trainer be?

- The average who tells
- The good who explains
- The superior who demonstrates
- The excellent who inspires

16.4. The Roles of an OSH Trainer

Safety Officers as trainers assume at least 6 roles.

1. Subject matter expert
   A trainer, who is the Safety Officer, should be knowledgeable of the topic being presented.

2. Training technologist
   There is need for trainers to know how to use presentation technologies e.g. audio-video technologies, computers and internet-enabled technologies.

3. Sensitive to adult learners
   Adults learn differently. This differentiates training from education. Adults bring with them their own knowledge, skills and experiences into the training rooms. This is where trainers need to be sensitive in dealing with adults to encourage learning and behavior formation.

4. Course designer
   Before any course is delivered or presented, they are carefully designed and developed based on the training needs analysis.

5. Group facilitator
   The trainer has the ability to facilitate learning in a group setting. Learners are different individuals with different learning styles. It is a challenge for trainers to keep the environment safe for adults to learn.

6. Presenter

A trainer is expected to be able to deliver the training in a manner that learning is conveyed effectively. A trainer should be able to get and keep the attention of adult learners.

16.5. Delivering the Presentation

One of the greatest challenge of trainers is delivering the presentation in the presence of the audience. There are 5 essentials to consider.

16.4.1. Authority

Learners decide to learn if they look up to the trainer as an authority.

- Try not to look awkward in front of your audience. Looking awkward lessens a trainer's authority.
- Looking confident, on the other hand, establishes authority.
- The best way to look confident and exude authority before an audience is to prepare. Know the topic well.

16.4.2. Involvement

The enthusiasm and excitement of the speaker extends to the learners.

- Show enthusiasm and sincerity about the topic.
- Be excited in meeting people and in the conduct of the training.
- If the audience see the speaker being excited about the session, participants get excited to learn, too.
- It is unfair to except excitement from the audience if the speaker is not excited himself or herself.

16.4.3. Communicativeness

The best way to teach something is to get the attention, sustain the interest and provide value to the listeners.

- Engage the audience, encourage and appreciate participation, listen to their stories.
- Give the best content, organize the presentation well, deliver with energy.
- Appear friendly to the audience. Smile is the most powerful to start engagement.

16.4.4. Vocal Expressiveness

The voice of the trainer is powerfully persuasive. It can be a factor in the success and failure of teaching.

- Use conversational voice just like talking to friends plus a little energy.
- There are 3 pitfalls to watch:

- *Not being heard because voice is too soft to get attention*
- *Monotony providing no variation of voice, can put people to sleep*
- *Use of artificial voice can disrupt focus of audience*

16.4.5. Physical Expressiveness

Body actions have meanings and help convey a message.

Movement	move freely as the setting allows
Posture	the basic rule is "erect and comfortable"
Gesture	just enough gesticulation is the best visual aid
Facial expression	mobile facial expression communicates worlds of ideas
Eye contact	maintain eye contact at least 90% of the time

16.6. Facilitating Learning

The Trainer is the main facilitator of learning. In conducting OSH orientation for workers who are all adults, the greatest challenge of the trainer is the fact that adults learn because they want to learn. A trainer cannot force "someone" to learn.

There are 4 facilitation skills that are proven helpful to deal with adults inside the training room. These are: 1) maintaining self-esteem, 2) responding with empathy, 3) checking for understanding, and 4) making procedural suggestions.

16.5.1. Facilitating Skills #1: Maintaining Self-Esteem

- Create "safe" learning environment
- Point-out strength
- Treat learners as competent individuals
- Acknowledge efforts

16.5.2. Facilitating Skills #2: Listening & Responding with Empathy

- Let the learner know that they are heard and understood
- Empathize with emotions

16.5.3. Facilitating Skills #3: Checking for Understanding

- Confirm or clarify understanding
- Give participants opportunity to ask questions
- Use phrases like…
  "Did I hear you say …"
  "Did we agree that …"

16.5.4. Facilitating Skills #4: Making Procedural Suggestions

- Do not blame anyone for distractions
- Show respect
- Communicate empathy

16.7. Tips to Control Nervousness

Feeling nervous when speaking before an audience is normal and very common. In fact, according to Mark Twain, there are only 2 kinds of speakers: those who get nervous and those who are liars.

Although speaking apprehension is real, there are things that can be done to lessen negative effects on the speaker's performance and even use the discomfort into adrenaline for an impressive presentation.

16.8. Techniques in Training

The following techniques are suggested by the Business Communication Center of the University of Arkansas:

16.7.1. Before Presentation

- Choose a topic that interests you.
  A speaker who is genuinely interested in the topic, will be able to communicate that during your presentation.

- Prepare ahead of time
  The more time spent on researching and organizing the more familiar the speaker will be with the presentation. Apply the 90/10 rule – 90 percent preparation, 10 presentation.

- Practice
  Practice increases confidence and quality of presentation. Envision the audience when practicing.

- Scrimmage
  Find somebody to listen while during practice. Not only will this help a speaker become more comfortable, but may also receive valuable feedback.

- Set realistic expectation
  It is unrealistic to expect perfect presentation. Do not memorize, instead, remember main points, arguments, and evidence, and speak to the audience conversationally.

- Think positively
  Communicate honestly. Preparation, practice, and attitude give the best possible advantage. Positivity is the difference between nervousness and enthusiasm.

16.7.2. During Presentation

- Start loud and strong
  The very first line of introduction sets the tone for the rest of the presentation. Begin with enthusiasm, confidence, and volume.

- Breathe deeply and slowly
  Slow breathing lowers the heart rate and prevent a speaker from speeding through the presentation. Take time.

- Channel nervousness into movement
  Walking and gesturing will help a speaker use adrenaline to engage with the audience. It also helps to gain confidence.

- Focus on friendly faces
  Find somebody who are nodding, smiling, and make frequent eye contact. This will both engage the audience and reduce nervousness.

- Do not take yourself too seriously
  If the speaker makes a mistake, simply correct the error and move on. Try to be as conversational as possible while remaining appropriate to the situation.

16.7.3. Handling Questions and Answers

Questions from the audience can be terrifying but speakers should accept that questions are opportunity for listeners to clarify and integrate learning. The following guide suggested by Barnard (2017) are useful.

Anticipate possible questions while preparing the presentation

- Know the profile of the audience.
- A clearly defined scope of the topic helps the speaker respond to questions with confidence.

Set rules

- Make clear at the start when is the preferred time for questions (any time or at the end of the presentation).
- Allowing questions anytime gives chance to clarify confusions immediately, but this approach may disrupt the presentation.
- If questions are entertained at the end, consider leaving enough time.

Be guided by the framework for responding questions

- Listen to the whole question
  - ✓ Hear the content
  - ✓ Decipher the intention

  Note: examples of intention are to truly seek for the answer, to trick the speaker, to seek attention.

Understand the context

- If a question is not clearly understood the first time, ask and clarify before attempting to answer.

Involve the audience

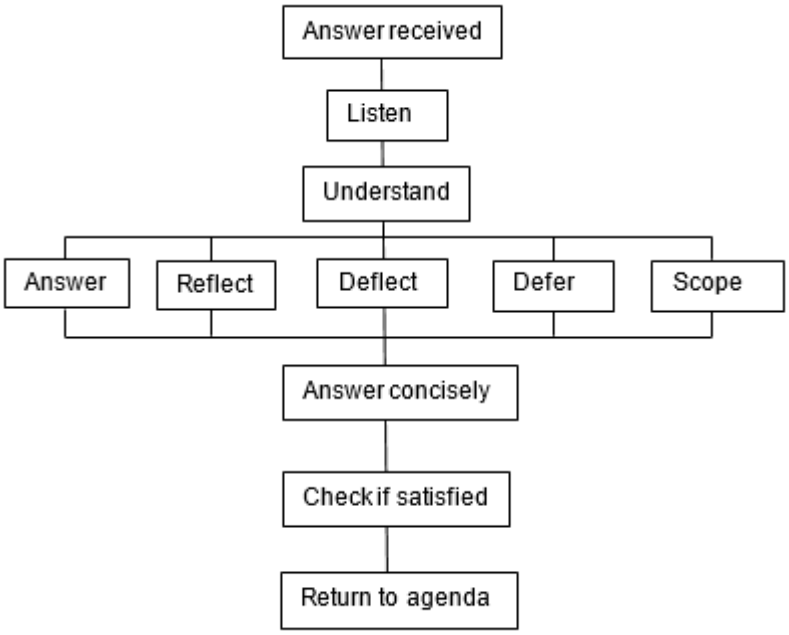
- Remember that even though a speaker is responding to a question of one person, the rest of the audience must hear and understand.
- This can be done by done by repeating or paraphrasing.

Respond concisely

- Keep responses as focused as possible but avoid too much details.
- Direct answer to both the questioner and the whole audience.
- Check back with the questioner whether the question has been answered e.g. "Did I answer your question?"

Know the options for answering questions

- There are 5 possible choices: 1) answer, 2) reflect, 3) deflect, 4) defer, and 5) scope.
- The following diagram shows how these choices are used.



1. Answer
   - If the speaker has a good answer, go ahead and answer briefly and clearly.

2. Reflect
   - Ask the question back such as "Can you clarify . . ." or "Do you mean…"
   - The speaker may opt not to answer if the question is personal or factually inaccurate.

3. Deflect
   - Ask the question back to the audience.
   - Pass to another participant who may have the best answer.

   Example: If question is about electricity and there is an electrician in the audience, the speaker may use this option.

4. Defer
   - Speaker may opt to deal with the question later.
   - Speaker may mention that the answer is in the upcoming slide.

5. Scope
   - Do not answer questions which are outside of the scope

   Example say "I am afraid that falls outside of the objective of our presentation. We may deal with it some other time."

16.9. Key Points

- Educating the workers through continuous training is important in reducing workplace injuries and illnesses. The law requires a mandatory OSH orientation for all workers in which Safety Officers are tasked to do.

- It is important to regularly communicate the OSH Program of the establishment to all levels of the organization including management, employees, contractors/sub-contractors, service providers and clients/guests.

- A well-developed and effectively-communicated OSH program can be effectively implemented.

- Training is a process of providing workers skills and knowledge to do their job efficiently, effectively and safely.

- There are 5 essential elements of effective presentations. 1) authority, 2) involvement, 3) communicativeness, 4) vocal expressiveness, and 5) physical expressiveness.

- There are 4 facilitating skills OSH trainers can use. These are 1) maintaining self-esteem, 2) responding with empathy, 3) checking for understanding and 4) making procedural suggestions.

- Preparation is one important factor the success of training events.

17 – Conducting Effective Toolbox Meetings

The Big Idea is "regular conduct of brief safety meetings among workers are encouraged in every workplace to heighten employee awareness about specific workplace hazards and get frequently reminded of the company safety policies and government regulations."

17.1. Session Objectives

At the end of this session, participants are able to:
- explain what is a toolbox meeting and its importance,
- plan a toolbox meeting, and
- describe how a toolbox meeting are conducted.

17.2. Requirements

There is no explicit requirement in the OSH Law and OSH Standards about the conduct of toolbox meetings or safety talks in every workplace. But toolbox meetings have been proven effective and has become a best practice in complying at least 2 requirements:

- providing workers suitable information about the hazards in the workplace; and

- involving the workers in achieving the safety and health objectives.

17.3. Toolbox Meetings or Safety Talks

A Toolbox Meeting, also called Safety Talk. It is an informal group discussion that focuses on a particular safety issue in a workplace. This can be done daily to promote strong safety culture as well as to facilitate health and safety discussions on job sites (Harvard EH&S, 2015).

Toolbox Meetings are also useful in:

- introducing new safety policies and procedures and new regulations;
- post-accident communication to learn lessons from;
- reinforcing safe work practices to shape employee behavior; and
- pre-work planning to remind employees of safe work procedures.

It does not replace or take the place of formal safety training for workers. Toolbox Meetings, however, only supplement formal training.

Toolbox Meetings are important because they give management opportunity to engage employees on a regular basis, a perfect venue to discuss safety issues among employees and reinforce management commitment to safety and health.

There is no rule that dictates on how frequent Toolbox Meetings are conducted, but as a best practice, it is desirable to do these meetings on a regular basis to:

- continually educate worker on safe work practices;
- prevent workers from getting complacent;
- avoid taking safety and health for granted.

17.4. Toolbox Meeting Agenda

Toolbox Meetings are not without agenda. It is a common practice to line-up meeting topics to take giving priority to the high-risk tasks. It is not a good idea to copy another company's Toolbox Meeting topics because hazards differ.

The HIRAC, which highlights the levels of risk in each process, is a good reference to decide which Toolbox Meeting topics to prioritize. The list of prioritized topics serves as guide only. New topics can be added when needed. Example, if Safety Officer observes an increasing incidents of workers violating the PPE policy, the topic on the importance of PPE can be prioritized in Toolbox Meetings.
Sample common Toolbox topics are:

- confined space entry procedure
- electrical safety
- computer ergonomics
- lifting safety

- lockout-tagout awareness
- machine guarding

Note: There are good sites like oshatraining.com to get ideas from in terms of finding Toolbox topics.

17.5. How to Run an Effective Toolbox Meeting

The 5-step process of conducting Toolbox Meetings as recommended by SiteSafe(NZ) are the following:

1. Schedule the meeting.
   Let the participants know of the venue and time of the meeting. Conducting the meeting at a regular venue and at the beginning of each day is recommended.

2. Set the scene of the meeting, create a safe and positive environment
   - Encourage participation and feedback
   - Acknowledge everyone
   - Avoid criticism
   - Should not be a lecture
   - Establish the importance of toolbox meetings

3. Follow an agenda. Be sure not to miss the following:
   - Inform workers of changes to company procedures;
   - Identify new hazards and review existing hazards;
   - Develop/review hazard controls;
   - Discuss/review accident and incident data.;
   - Discuss the work program for the day/week ahead;
   - Discuss any new equipment on site;
   - Provide a short training session.

4. Close the meeting.
   - Thank the participants.
   - Allow them to start work.

5. Record meeting notes.
   - Keep record of meeting dates, discussion agenda and attendance with signature of facilitator and participants.
   - Show follow-up items from previous hazards, accidents and incidents.

17.6. 6 Keys to a Successful Toolbox Talk

- Keep it short. Toolbox talks should be around 5 – 15 minutes.
- Focus on one topic relevant to the work being done that day.
- Get workers involved by asking questions or having them demonstrate safe work practices.

- Be sure to cover changes to the site or working conditions.
- Have employees inspect tools, equipment, and PPE.
- Allow for questions and answers at the end of the toolbox talk.

Effective Toolbox Talks can:

1. Grow a positive safety culture within an organization.
2. Keep all workers alert.
3. Improve team communication and productivity.
4. Serve as a reminder of workers' duties and responsibilities.
5. Function as an updated record of hazards and action plan

Toolbox Talks are about enhancing employee safety, not just being present long enough to sign an attendance sheet. Employers ensure that whoever is providing the training is qualified, so that the workforce is benefitting from it. One good toolbox talk could be the difference between life and death.

17.7. Key Points

- Toolbox Meetings are commonly-accepted best practice in work sites to sustain safety awareness among workers and strengthen safety culture.

- These are usually done through regular and quick meetings of small groups of workers conducted in the work premises where a short training of a scheduled safety topic is included.

- Toolbox Meeting topics are usually selected and prioritized according to the level of risks of the tasks in the workplace.

- There are 5 suggested to steps to run effective Toolbox Meetings. These are: 1) have a regular schedule, 2) set a safe meeting environment, 3) follow the agenda, 4) close the meeting, and 5) keep records such as the agenda, safety topic, attendance and dates.

18 – Overview of the Mandatory Eight-Hour Safety & Health Orientation (MESH)

The Big Idea is "all workers are required to undergo mandatory OSH seminar to be able to recognize hazards in the workplace and how to protect themselves from the adverse effects of the hazards".

18.1. Session Objectives

At the end of this short session, participants are able to:

- identify the coverage of the OSH training for all workers, and
- conduct the mandatory training.

18.2. Requirements

All workers shall undergo the mandatory OSH workers' seminar as prescribed by DOLE. The mandatory OSH seminar may be conducted by the Safety Officer of the establishment or any certified OSH practitioner or consultant.

The workers' OSH seminar and other training/orientation as required by the employer or by law shall be at no cost to the worker or considered compensable time (Section 16b, DO 198-18).

Willful failure of the employer to conduct the mandatory seminar results in administrative fine of P25,000 per day until complied (Section 29, Do 198-18).

18.3. Prescribed Content of the OSH Orientation

The mandatory orientation is composed of 6 modules with their corresponding objectives and minimum topics, namely:

18.2.1. Module 1: Overview of OSH

Objective: Participants to be able to express appreciation and recognize the OSH legislation.

Topics:

- Importance of OSH
- OSH Situationer (global, national, company statistics)
- Salient Features of the OSH Law
- Applicable OSH Standards
- Company OSH policies and program

18.2.2. Module 2: Understanding OSH

Objective: Participants are able to discuss the basic concepts of occupational safety and health.

Topics:

- Accident Causation and Prevention
- Definition of:
  - ✓ Safety Hazards
  - ✓ Health Hazards
  - ✓ Risk (low, medium, high)

18.2.3. Module 3: Recognizing Safety and Health Hazards and their Control Measures

Objective: Participants are able to recognize safety hazards and appropriate measures.

Topics:

- Safety in the premises - Housekeeping
- Materials Handling and Storage
- Machine safety
- Electrical safety
- Fire safety
- Chemical safety
- Biological Safety
- Physical safety
- Ergonomic safety
- Workshop on the application of learning

18.2.4. Module 4: Application of Hazard Identification, Risk Assessment and Control (HIRAC)

Objective: Participants are able to perform hazard identification, risk assessment and control (HIRAC).

Topics:

- steps in recognizing hazards
- risk assessment and prioritization
- application of controls (engineering, administrative, PPE)
- Workshop – accomplishing HIRAC matrix

18.2.5. Module 5: Workplace Emergency Preparedness

Objective: Participants are able to respond in workplace emergencies.

Topics:

- Roles of OSH personnel
- Responses during emergency
- Emergency drills

18.2.6. Module 6: Compliance to OSH Administrative Requirement

Objective: Participants are able to identify the required administrative requirements and express commitment to OSH.

Topics:

- Rule 1020 – Registration of Business Establishment
- Accident/Illness Exposure Data Report (AEDR)
- Work Accident/Illness Report (WAIR)

- Annual Medical Report (AMR)
- Report of Safety Organization (RSO)
- Minutes of OSH Committee Meetings
- Mandatory OSH program
- Penalties of violations

18.2.7. Workers Commitment Setting

Objective: Participants are able to commit, in writing, to perform work the safest way by complying with all safety policies and procedures of the company.

18.4. Important Notes

- Keep records related to Mandatory OSH seminars conducted like attendance sheets (most acceptable) and copies of Employee Commitment to OSH, who trainer is, etc. for reference and inspection purposes.

- Develop and have the OSH Program approved by management first before conducting the OSH orientation, as this is part of the required topic (Overview of OSH).

- Conduct this orientation to all existing workers, incoming workers, returning workers and transferred workers.

18.5. Key Points

- All workers are required to undergo mandatory OSH orientation for them to be able to recognize hazards in the workplace and know what to do to keep themselves safe while doing work.

- The conduct of the mandatory OSH orientation is the responsibility of the Safety Officer of the establishment. However, if the management so desires, the establishment may hire the services of an accredited OSH practitioner or consultant to do the orientation.

- The employee training time is compensable.

19. Guidelines on Workplace Prevention and Control of Covid-19

The Big Idea is “in the light of the Covid-19 pandemic, all establishments allowed to operate shall develop and implement the minimum health protocols and standard”.

19.1. Session Objectives

At the end of this special session, participants are able to:

- enumerate the requirements according to the interim guidelines, and
- develop and implement the protocols and standard.

19.2. Basic Information about COVID-19

Covid-19 caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a contagious and fatal respiratory illness. In March 2020, World Health Organization declared COVID-19 outbreak a pandemic. Symptoms may appear 2 to 14 days. Common signs and symptoms can include fever, dry cough, shortness of breath

Other symptoms can include muscles aches, chills, sore throat, runny nose, headache and chest pain *(Source: CDC).*

Like other respiratory illnesses, COVID-19 spreads through droplets that enter the air when someone with the disease coughs, sneezes or talks. COVID-19 spreads mainly through face to face contact (within about 6 feet or 2 meters), but the virus also may be spread on contaminated objects – such as doorknobs, telephones and elevator buttons.

Generally, people at greatest risk are those who have direct, closed contact with someone who is infected, such as family members and health care workers and recent travel history from in an area with ongoing community spread of COVID-19 *(Source: CDC/WHO.)*

WHO and CDC recommend following theses precautions for avoiding COVID-19:

- Avoid crowded places (large events and mass gatherings)
- Avoid close contact (within about 6 feet or 2 meters) especially those who are sick or has symptoms
- Stay home as much as possible and keep distance between yourself and others.
- Wash your hands often with soap and water for at least 20 seconds or use an alcohol-based hand sanitizer that contains at least 60% alcohol.
- Cover your face with a face mask in public spaces, such as the grocery store.
- Cover your mouth and nose with your elbow or a tissue when you cough or sneeze. Throw away the used tissue. Wash your hands right away.
- Avoid touching your eyes, nose and mouth.
- Clean and disinfect high-touch surface, such as doorknobs, light switches, electronics and counters, daily.

19.3. Requirements

A joint DTI and DOLE Interim Guideline issued April 30, 2020 requires all workplaces, employers and workers in the private sector to implement safety and health standards aligned with the following objectives:

- Increasing mental and physical resilience
- Reducing transmission
- Minimizing contact rate
- Reducing the risk of infection

19.4. Background of the Interim Guideline

The national government on March 8, 2020 issued Proclamation Number 922 declaring a "State of Public Health Emergency" recognizing the threat of Covid-19 to national security and address its effects.

The Interim Guideline jointly issued by the Department of Trade and Industry (DTI) and the Department of Labor and Employment (DOLE) is a response to the recommendation of the Inter-Agency Task Force (IATF) to provide policy direction to the private business establishments.

19.2.1. Increasing Mental Health and Physical Resilience

Promote healthy lifestyle among workers including good nutrition, enough sleep, regular exercise and taking vitamins to build body resistance.

19.2.2. Reducing Transmission

Prior to entrance
- Wear face masks at all time
- Accomplish daily health symptom questionnaire
- Check temperature by non-contact means
- Disinfect entering vehicles and equipment
- Physical distancing of 1 meter in long queues

Inside the workplace
- Disinfect frequently-handled objects at least every 2 hours
- Frequent washing of hands; avoid touching eyes, nose and mouth
- Make available sanitizers in common areas
- Maintain at least 1 meter radius space between workers
- Discourage eating in communal areas
- Regular disinfection of canteens and kitchen

19.2.3. Minimizing Contact Rate
- Use alternative work arrangements e.g work from home, telecommuting
- Discourage prolonged face-to-face interaction with clients
- Re-arrange work tables to maintain physical distancing requirement
- Use barriers in between work stations

- Limit people in meeting rooms and elevators
- If possible, use separate stairways in going up and going down
- Maximize use of online system
- Assign an officer to ensure protocols are followed at all times

19.2.4. Reducing the Risk of Infection

- Suspects shall immediately proceed to designated isolation area
- Clinic personnel must wear appropriate PPE
- If needed, take person to hospital following the health protocol
- Decontaminate workplace with appropriate disinfectant

19.5. Duties of Employers and Employees

Employers

- Establish company policy for the prevention and control of Covid-19
- Provide resources e.g. sanitizers, disinfectants, PPEs
- Designate safety officer to monitor compliance of policies and protocols
- Enhance health insurance provision for workers
- Provide shuttle bus, where feasible, and accommodation to limit movement of people
- Hire from local community, if possible
- Install a Covid-19 hotline

Workers

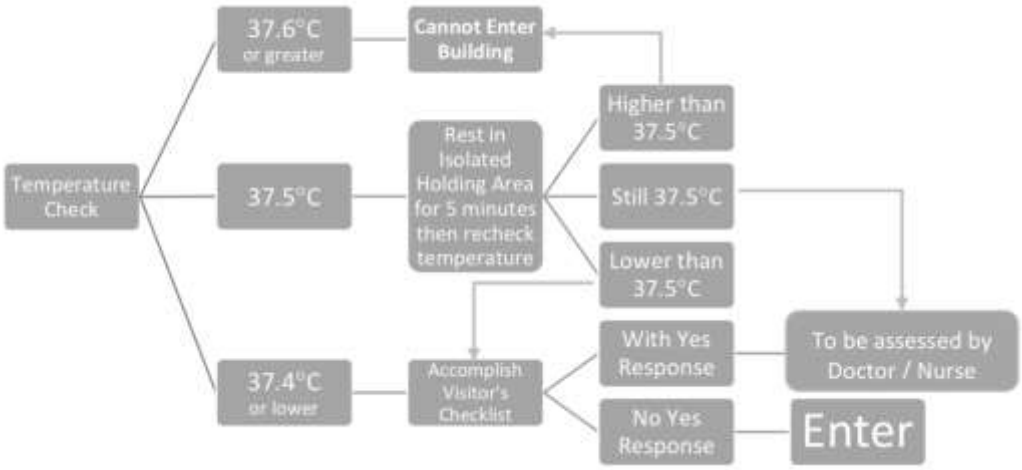
- Comply with all workplace measures
- Observe proper respiratory etiquette (coughing and sneezing)
- Dispose used tissues properly
- Disclose health conditions to employers

Other requirements

- In high risk workplaces (health care and other frontline services) workers take extra precautionary measures and comply the Interim Guideline on Health Care Provider Networks issued by the Department of Health (DOH).

- Company together with the employees formulate a policy on Covid-19 testing guided by the DOH protocols.

- The employer shall provide the DOLE and copy to DOH a monthly report on illness, injuries and diseases using the Work Accident/Illness Report Form (WAIR).



Sample protocol for temperature screening of workers and visitors

2. All visitors shall accomplish the visitor's checklist

Health Checklist **Temperature:**

Name: _____ Sex: _____ Age: ___

Residence: _____

Nature of Visit: *Please check one* Official: ☐ Personal: ☐ **If official, fill-in company details below**

Company Name: _____

Company Address: _____

		Yes	No
1. Are you experiencing: (*nakakaranas ka ba ng:*)	a. Sore throat (*pananakit ng lalamunan / masakit lumunok*)	☐	☐
	b. Body pains (*pananakit ng katawan*)	☐	☐
	c. Headache (*pananakit ng ulo*)	☐	☐
	d. Fever for the past few days (*Lagnat sa nakalipas na mga araw*)	☐	☐
2. Have you worked together or stayed in the same close environment of a confirmed COVID-19 case? (*May nakasama ka ba o nakatrabahong tao na kumpirmadong may COVID-19 / may impeksyon ng coronavirus?*)		☐	☐
3. Have you had any contact with anyone with fever, cough, colds, and sore throat in the past 2 weeks? (*Mayroon ka bang nakasama na may lagnat, ubo, sipon o sakit ng lalamunan sa nakalipas ng dalawang (2) linggo?*)		☐	☐
4. Have you travelled outside of the Philippines in the last 14 days? (*Ikaw ba ay nagbyahe sa labas ng Pilipinas sa nakalipas na 14 na araw?*)		☐	☐
5. Have you travelled to any area in NCR aside from your home? (*Ikaw ba ay nagpunta sa iba pang parte ng NCR o Metro Manila bukod sa iyong bahay?*) Specify/*Sabihin kung saan*) _____		☐	☐

I hereby authorize [name of establishment], to collect and process the data indicated herein for the purpose of effecting control of the COVID-19 infection. I understand that my personal information is protected by RA 10173, Data Privacy Act of 2012, and that I am required by RA 11469, Bayanihan to Heal as One Act, to provide truthful information.

Signature: _____ Date: _____

19.6. Key Points

- The DTI and DOLE jointly issued an Interim Guideline for private establishments to prevent and control Covid-19 in the workplace, consistent with the health protocol and standards.

- Employers and workers have duties and responsibilities to fulfill to keep the workplace safe.

- Employers provide the policies and resources, the workers comply and practice proper hygiene and respiratory etiquette.

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Profile of Engr. Joel B. Ortiz

Joel B. Ortiz, CE
Accredited CPES Evaluator
Accredited CMDF Scaffold Inspector
Accredited OSH Consultant
Accreditation No. 1030-021519-OSHC-180

Engr. Joel B. Ortiz is the President of J3 Trainers and Consultants, Inc. He is a top notch Civil Engineer having garnered the First Place in the 1982 licensure examination after graduating Magna Cum Laude and Deans Medalist for Academic Excellence from the University of the Visayas.

He has extensive experience in construction both in the Philippines and abroad, a member of the Project Management Institute – Philippine Chapter and the Philippine Institute of Civil Engineers (PICE). He is passionate about Quality Management and Safety in Construction with proven expertise in design/planning, and construction of building and road projects.

He is a CMDF-accredited scaffolding inspector, CMDF Accredited Trainer and Assessor, certified CPES evaluator (CPES- Constructors Performance Evaluation System), TESDA-NC 2 certified scaffold erector and an accredited Occupational Safety and Health Consultant by DOLE. He used to be a college instructor and lecturer of Civil Engineering Board Exam Review.

Profile of Josephine T. Ortiz

Josephine T. Ortiz, AFPM
Accredited Safety Practitioner, ASP
Accreditation No. 1033-180419-K-198

An advocate of occupational safety, quality, productivity and entrepreneurial development being an accredited safety practitioner, product and system auditor for the Bureau of Product Standards and Productivity and Entrepreneurial trainer of the Department of Trade and Industry for more than 15 years. Certificated ISO 9001:2015 and ISO 45001:2018 lead auditor, trainer and consultant.

General Manager and resident trainer/consultant at J3 Trainers and Consultants, Inc. and HR consultant for SMEs. Associate Fellow in People Management (AFPM), Past President of People Management Association of the Philippines (PMAP) - Cagayan de Oro Chapter, member of the Philippine Society for Training and Development (PSTD), Go Negosyo mentor at the Philippine Center for Entrepreneurship (PCE), member of the Regional Tripartite Industrial Peace Council (RTIPC) -Region 10 and Deputized Labor Inspector (social partner) of DOLE.

Holds a double master degree in Human Resource Management and Industrial Relations from the University of New Castle, New South Wales, Australia and Technology Communication Management from the University of Science and Technology of Southern Philippines (USTP).

List of J3TCI Pool of Resource Persons

Name	Accreditation No.	Validity	Accreditation
Mary Jean B. Barrios	1033-190227-P-138	27 – Feb-22	OSH Practitioner
Darwin A. Linao, CE	1033-180211-P-023	11-Feb-21	OSH Practitioner
Matias M. Migraso	1033-190227-P-130	27-Feb-22	OSH Practitioner
Albert L. Azarcon	1033-10100-P-004	30-May-20	OSH Practitioner
Karly Oin A. Sinco	1033-190621-P-145	21-Jun-22	OSH Practitioner
Dexter E. Agustin	1033-171110-K-114	10-Nov-20	OSH Practitioner
Jenito M. Aseqiua, CE	1033-171009-K-0040	09-Oct-20	OSH Practitioner
Michaelle S. Bugo	1033-171013-K-189	13-Oct-20	OSH Practitioner
Jomar S. Gorogolon, ChE	1030-073119-OSHC-210	31-Jul-22	OSH Consultant
Jero D. Herrera	1033-180731-K-226	31-Jul-21	OSH Practitioner
Aldy James V. Ilogon	1033-190312-K-273	12-Mar-22	OSH Practitioner
Eugenio C. Olandria, ME	1033-180912-K-0037	12-Sep-21	OSH Practitioner
Espiritu Q. Magpatoc, EE	1030-072919-OSHC-043	29-Jul-22	OSH Consultant
Joel B. Ortiz, CE	1030-021519-OSHC-180	15-Feb-22	OSH Consultant
Josephine T. Ortiz, AFPM	1033-180419-K-198	19-Apr-21	OSH Practitioner
Lionel D. Pulido	1033-180202-K-125	13-Oct-20	OSH Practitioner
Edwin Sator, EE	1033-170503-K-0161	3-May-20	OSH Practitioner
Siegfredo Kalinawan Jr., ME	1033-42100-P-006	14-Aug-20	OSH Practitioner
Reny M. Almohallas	1033-180425-H-0088	25-Apr-21	OSH Practitioner
Marvelou M. Batoon	1033-150311-L-0105	01-Jul-22	OSH Practitioner
Felipe P. Pacabis	1033-191023-H-0211	23-Oct-22	OSH Practitioner
Lorifel P. Go, MD	1030-101719-OSHC-241	17-Oct-22	Health Consultant
Donna Bella Davis, MD	1033-180223-K-128	23-Feb-21	Health Practitioner
Luningning P. Cubero, MD	1033-150311-L-0039	PCOM	Health Practitioner
La Verne M. Abrio, MD	1033-140526-K-0095	PCOM	Health Practitioner
Sonnielene Jorgie L. Orgil	1033-180619-P-104	19-Jun-21	Health Practitioner