Construction Occupational Safety and Health (COSH) 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

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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.

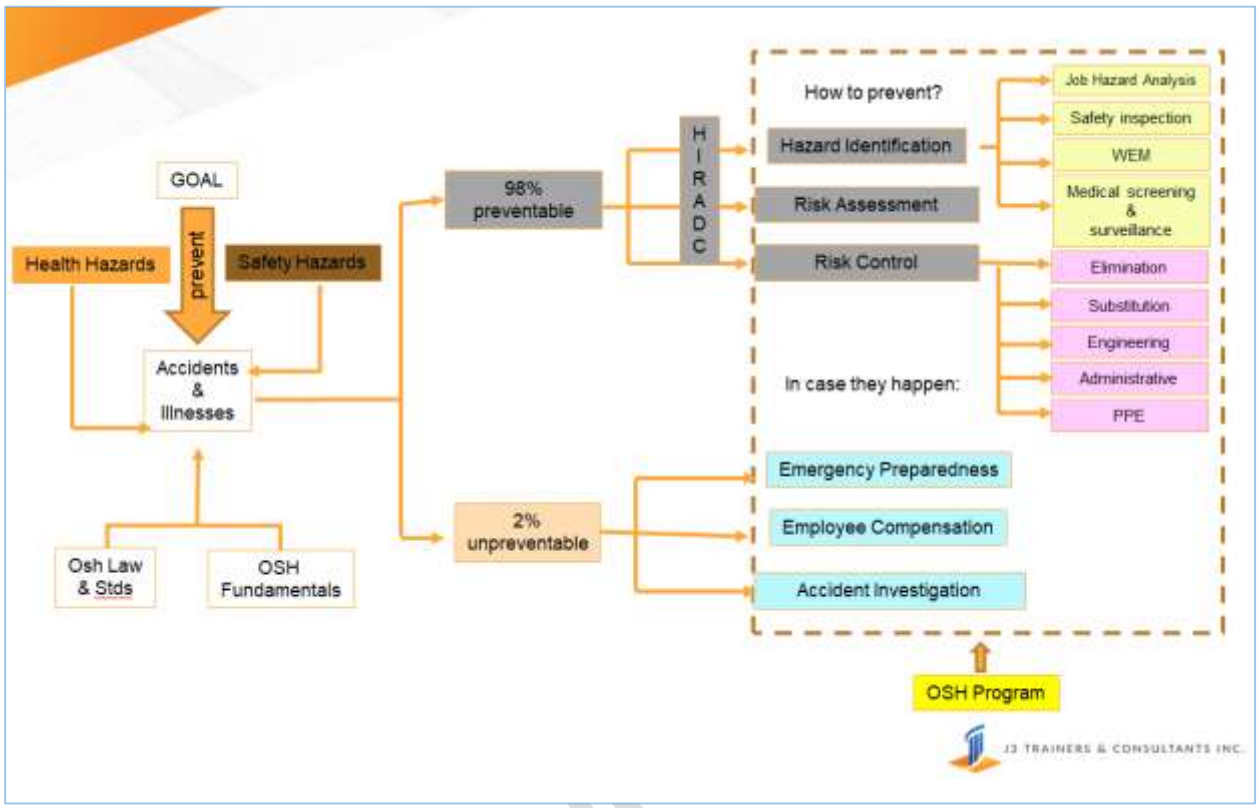


Figure 1. The OSH training Framework

Construction Occupational Safety and Health (COSH)

General Objective

The comprehensive 40-hour course on Construction Occupational Safety and Health (COSH) 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 COSH training, participants are able to:

- discuss the importance of OSH,
- explain the salient features of the OSH law,
- enumerate the causes of accidents in the construction job sites,
- identify hazards, assess risks and recommend control measures,

- conduct the mandatory OSH orientation for all construction workers, and
- perform the role of a safety officer.

Session 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 accidents.

1.2. Introduction

The possibility of accident and adverse effect to health is always present in any workplace, i.e. construction job sites. 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 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 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 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 everyday due to work-related accidents
- 160 million incidents of occupational illness every year
- 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

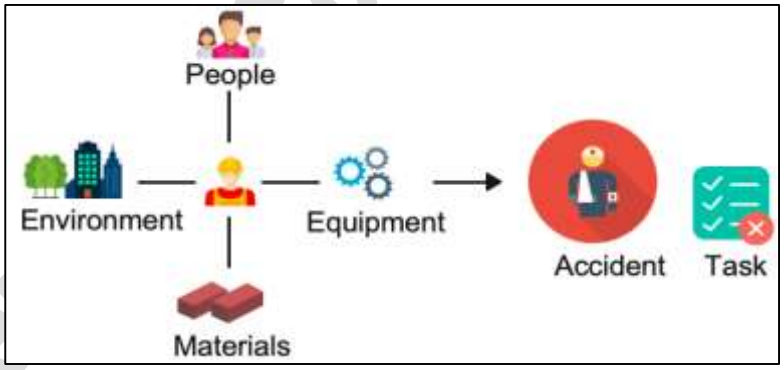
A window cleaner dropping a bucket from a height, which caused injury to a person underneath, would be classed as an accident.

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, 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

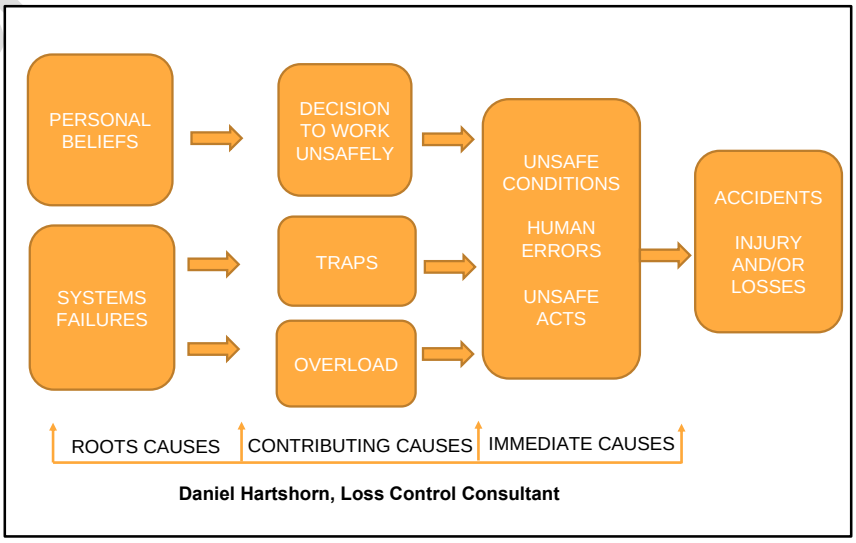
Factors Contributing to Unsafe Acts

- 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

Session 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."

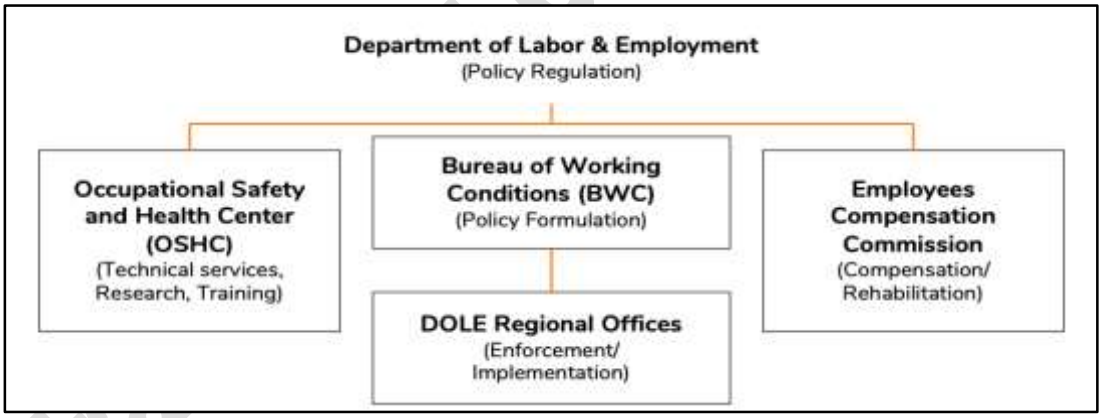
2.1. Session Objectives

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. 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

2.3.1 Coverage

All establishments where work is undertaken, including:

- Establishments located inside special economic zones and other investment promotion agencies
- Utilities engaged in air, sea, and land transportation
- Industries such as mining, fishing, construction, agriculture, and maritime
- Contractors and subcontractors including those engaged in the projects of the public sector
- Does not apply to the public sector

Classification of Establishments:

- *High Risk Establishments.* Where hazards affect the safety and/or health of the workers and the public, example: construction projects.
- *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.

2.3.2 Duties of Employers and Workers

Duties of Employers

- Keep workers from hazardous that can cause death, illness and physical harm
- Provide complete job safety instruction
- Ensure that chemical, biological and physical agents and ergonomic and psychosocial stresses under control
- Use only approved equipment and devises
- Comply with OSHS and provision of PPE
- Allow workers to participate in the planning, implementing, monitoring and evaluation of the OSH management system
- Provide for measures identifying training and drills to deal emergencies
- Comply with reportorial requirement.

Duties of Workers

- Join in OSH capacity building
- Use safeguards and safety devices
- Comply with all instructions to prevent accident
- Follow all instructions in cases of emergency
- Report hazards in the workplace

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

- 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 Personal Protective Equipment (PPE)*
  - free of charge
  - appropriate type as tested and approved based on its standards
  - appropriate size, weight, and type to specific workers exposed to hazards

2.3.4 OSH Reports

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

Administrative Documentary Requirements

Notification and Keeping of Records of Accidents and/or Occupational Illnesses	Rule 1050 (OSH Standards)
Occupational Health Services	Rule 1060 (OSH Standards)
Registration of Business	Rule 1020 (OSH Standards)
Training and Accreditation of OSH Personnel	Rule 1030 (OSH Standards)
Health and Safety Committee	Rule 1040 (OSH Standards)

Reportorial Requirements

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

2.3.5 Safety Officer

Safety Officer 1	– completed the required training – for low risk establishments with 1 to 50 employees – for medium risk establishments with 1 to 9 employees
Safety Officer 2	– completed the required training – for low risk establishments with 51 to 199 employees – for medium risk establishments with 10 to 199 employees – for high risk establishments with 1 to 9 employees
Safety Officer 3	– completed the required training – for low risk establishments with 200 and more employees – for medium risk establishments with 100 and more employees – for high risk establishments with 10 to 1,000 employees
Safety Officer 4	– completed the required training

	– for medium risk establishments with more than 1,250 employees – for high risk establishments with more than 1,000 employees

2.3.6 Health Personnel and Facilities

First Aider	– completed required training and certified – for all establishments (low, medium, risk)
OH Nurse	– completed the required training and licensed – for low risk establishment with 100 or more employees – for medium to high risk with 51 and more employees
OH Dentist	– completed the required training and licensed – for low risk establishments with 200 and more employees – for medium to high risk establishment with 100 and more employees
OH Physician	– completed the required training and licensed – for low risk establishments with 200 and more employees – for medium to high risk establishment with 100 and more employees

2.3.7 Health Facilities

- 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)*

2.3.8 Workers 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)*

2.3.9 Safety and Health Training

Training Requirement for Safety Officers

Safety Officer 1 (SO1)	– Mandatory 8-hour OSH Orientation Course applicable to the industry (not applicable to construction) – 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 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 shall undergo the mandatory workers' OSH orientation conducted by the safety officer of the contractor or any certified OSH practitioner or consultant.
- No cost on the worker and considered as 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 shall undergo specialized instruction and training conducted by DOLE or DOLE-accredited Safety Training Organization or PPE manufacturers.

2.3.10 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.

- Construction Safety and Health Programs (CHSP) containing detailed policies, processes and procedures to conform with OSH standards shall be developed and implemented as main tool to achieve the company's OSH objectives.

2.3.11 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	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	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, the imposable penalty shall be one hundred thousand pesos (₱100,000.00)
- Should there be 2 or more be 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 to the employer without prejudice to the filing of a criminal or civil case in the regular courts.

The RD shall, after due notice and hearing, impose the appropriate administrative fines taking into consideration the damage or injury caused and risk involved including the severity and frequency of the OSH violations and size of the establishment

2.4. Salient Features of Department Order 13 Series of 1998

Coverage. The Guideline shall apply to all construction activities, including demolition, whether owned by the government or private sector.

Construction Safety and Health Program (CHSP). Before start of the actual construction, the construction Project Manager shall prepare and submit to DOLE Regional Office a comprehensive CHSP and a simplified CHSP for construction of residential buildings 2 storey and below with less than 10 workers.

Safety on Construction Heavy Equipment. All operators of heavy equipment shall be certified by TESDA and all heavy equipment tested by third party testing organization accredited by DOLE.

Safety Officer. The general constructor shall assign a full time and qualified safety officer to oversee the management of the CHSP. The number of SOs shall be according to the number of workers guided by the following:

Number of Workers	High Risk Establishments
1 - 9	One SO2
10 - 50	One SO3
51 - 99	One SO2 & One SO3
100 - 199	One SO2 & One SO3
200 - 250	Two SO3
251 – 500	One SO2 & Two SO3
501 – 750	One SO2 & Two SO3
751 – 1000	One SO2 & Two SO3
Every additional 250 or fraction thereof	Additional SO3 or SO4

Every additional 500 0 fraction thereof	-

Safety Officer for Heavy Equipment. The General Constructor shall provide one (1) Safety Officer for every 10 units of heavy equipment assigned to the project site.

Safety Officer of Subcontractor. Each subcontractor must provide for a representative, who shall have the same qualifications as the Safety Officer, to oversee the management of the CHSP for the subcontractor's workforce and specific area of work operations in accordance with the requirements of Rule 1033 of the OSHS.

2.5 Other OSH-related DOLE Issuance

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.

2.6 Key Points

- Construction projects are among the high-risk workplaces.
- The law requires employment of qualified Safety Officers in every construction project for the general constructors as well as the subcontractors.
- The law requires a Construction Health and Safety program (CHSP) for every project, approved by DOLE before start of construction.
- 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.

Session 3 – Health Hazards and their Controls

The Big Idea is that "construction workers are exposed to different health hazards like dangerous dusts, bacteria and viruses, extreme heat of the sun, and awkward body positions, that, if left unrecognized and uncontrolled, can cause serious illnesses, disability or even death".

3.1 Session Objectives

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

- identify safety hazards in construction job sites,
- determine the appropriate control measures of hazards, and
- recognize the best practices for the safety of construction workers.

3.2 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.

3.2.1 Biological

Biological substances that pose threat to the health of living organisms, primarily that of Humans. They are also called biohazards.

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.

Hazardous macro-organisms can include insects, plants and animals.

Construction activities that might expose workers to biological hazards are excavation, demolition, renovation, sewer work or other construction work from contact with contaminated or disease- carrying materials, such as:

- contaminated soil during excavation and landscaping,
- molds during demolition and repair of old structures
- contaminated water from accumulation of animal wastes
- plants and other foliage during clearing

The most important biological occupational hazards are:

Bacteria	salmonella, listeria, E.coli, *M tuberculosis,* Clostridium tetani
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

Adverse Health Effects

- Skin irritation
- Allergies from molds and other fungi
- Infections (AIDS, TB, rabies)
- Tetanus (lockjaw)
- Hypersensitivity pneumonitis (an acute response to exposure to an organism)
- Cancer from respirable mycotoxins
- Infectious Respiratory Diseases – e.g. Covid-19

Control Measures

- Clean-up molds in construction sites with water and soap
- Provide good ventilation in work area
- Place mold-damaged materials in plastic bags and discard
- Prevent rodents from infesting job sites e.g. cut grasses, eliminate junks
- Limit exposure for molds and fungi
- Disinfect (for fungi, bacteria and virus) using:
    - 1⁄4 cup household bleach per 1 gallon of clean water for light contamination
    - 1 1⁄2 cups household bleach per 1 gallon of clean water for heavy contamination
- N95 respirator for molds and other fungi
- If oil is present in the air, use either R or P designed filters
- Gloves while disinfecting and disposing rodent-infested materials
- Installing physical barriers (e.g. clear plastic and sneeze guard for Covid-19)
- 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)

3.2.2 Chemical Hazards

Chemical hazards arise from excessive airborne concentration of:

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

Many of these forms of chemicals are present in construction job sites in which workers might be exposed. Most common of these are materials like asbestos, lead, silica, carbon monoxide and spray paints.

Route of Exposure

OSHA and Carex Canada (2020) indicate that these toxic chemicals enter the human body in different ways either through:

- inhalation (breath-in);
- ingestion (accidental swallowing);
- absorption (contact with skin or eyes); and
- injection (through punctured skin).

Inhalation is the most important route of exposure.

Occupational Exposure

Many processes in the construction industry expose workers to chemicals such as:

- demolition and repair of old buildings expose workers to asbestos;
- welding, asphalt paving and soldering expose workers to fumes of varying degrees of toxicity
- painting and plumbing expose workers to solvent vapors
- drilling, cutting, grinding expose workers to crystalline silica (respirable dust)
- bridge repair work and lead paint removal expose workers to toxic lead
- working in manholes, sewers, tanks and boilers expose workers to deadly gases

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

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
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.

Adverse Health Effects

There are 2 types of health effects of chemical exposure: acute and chronic.

Acute effects are immediate following the exposure. Example: A workers in a manhole exposed to carbon monoxide, an odorless deadly gas, may quickly experience headache, may collapse and may even die.

Chronic effects develop over a period of time after prolonged or repeated exposure. Example: a brick layer exposed to dusts for many year contracts lung disease.

Hazard Control Measures

- Asbestos removal is only done by specially-trained asbestos workers.
- Workers using solvents should be guided by the Safety Data Sheets on the proper use, storage and disposal.
- Workers exposed to toxic chemicals should limit exposure and use appropriate PPE
- Install proper ventilation where welding and hot works and performed.
- Determine presence of toxic gas before entering a confined space
- Follow permit system in hot work and entry in confined space.

3.2.3 Physical Hazards

Physical hazards are agent, factor or circumstance that can cause harm with or without contact (IOHA).

The usual physical hazards in which construction workers are exposed to are: noise, vibration, extreme temperature and radiation.

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.

There are different tools and equipment in construction activities that have sound levels beyond the threshold limit such as:

Jackhammer	102 dB
Grader	107 dB
Nail gun	97 dB

welding	92 dB
router	90 dB

Source: University of Washington Department of Environmental & Occupation Health Service- July 2005.

Some factors that influence noise levels are the type of equipment being operated, condition and maintenance of the equipment and the condition of the place (enclosed or open space).

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.

In most construction sites, high noise levels can be sporadic. Damage to hearing is cumulative and exposure limits are based on 8-hour averages. OSHA identifies 3 factors that determine the level of hazard to noise: 1) How loud the noise is (volume), how long the noise lasts, and how close you are to the noise.

Hazard Control Measures

Some examples of effective noise 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;
- enclosure of the noise source;
- 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;
- restricting worker presence to a suitable distance away from noisy equipment; and
- Hearing protection devices such as earmuffs and plugs.

(Source: OSHA, Noise Hazards and Control Measures)

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	heavy equipment

Segmental body vibration	High frequency	Hand power tools – chainsaw, jack hammer,

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

- mechanically isolate the vibrating source
- install vibration damping seats
- purchase new tools that vibrate less
- limit the amount of time a worker to perform the task, job rotation, frequent breaks
- operator techniques (the amount of grip force and the way a tool is allowed to "do the work" can limit the amount of vibration entering the body)
- training can 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

Extreme Temperature

Too hot or too cold temperature in construction job sites affect 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 construction projects in tropical countries are exposed to radiation from the sun. With increased air temperature and humidity, workers exerting energy while performing heavy manual tasks have high chances of fatigue and heat stress.

Adverse Health Effects

Possible consequences of excessive heat are increase in the likelihood of incidents due to reduced concentration due to discomfort, skin rashes, heat cramps, heat exhaustion, heat stroke, later medical emergency and to ill health. The effects of heat combined with physical workload inherent to construction activities tend to accumulate (ILO).

Hazard Control Measures

- provide employee welfare facilities
- suitable work arrangements
- sufficient work breaks, specially for moderate to heavy work
- rest areas for workers to cool off
- adequate supply of clean and cool drinking water
- acclimatization process or cooling off
- modifying hours of work.
- appropriate clothing

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, gamma rays, alpha rays, beta rays and neutrons are types of ionizing radiation.

While lower frequency radiation, consisting of ultraviolet, infrared, microwave, Radio Frequency, and extremely low frequency are types of non-ionizing radiation (US Dept. of Health and Human Services, 2020).

Occupational Exposure

Construction workers can be exposed to radiation such as radon gas coming from soil in tunneling and road construction; industrial radiography using cobalt used in the process of finding objects in construction sites; and contractors of industrial power plants with potential exposure to beta, gamma and neutron radiation (IHSA).

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 sterility, cataracts, detectable lens opacities, skin reddening and cancer, the most common of which include leukemia, thyroid, breast, lung, and bone.

Hazard Controls Measures

- shielding and interlock systems
- signage, warning systems
- written operating procedures to prevent, reduce, or eliminate radiation exposure
- use of PPE like lead aprons or vests, lead thyroid collar, lead-lined gloves and safety googles

3.2.4 Ergonomic Hazards

Ergonomic hazards are physical factors in construction sites that can result in musculoskeletal injuries. For example, over exertion, hand-intensive work, poor manual handling, repetitive and awkward movement and poor body positioning.

Occupational Exposure/Risk Factors

- Ergonomic risk factors are most likely to cause or contribute to musculoskeletal injuries:
- awkward posture
- 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 construction workers' health and wellbeing. Example of musculoskeletal injuries are damage to muscles, tendons, bones, joints, ligaments, nerves, and blood vessels.

Hazard Control Measures

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

Some examples are:

- proper tool selection (power and pneumatic tools are recommended)
- proper body mechanics
- avoid flexion or extension of wrist to prevent carpal tunnel syndrome

- avoid bending the lower back while working
- avoid twisting while lifting, pushing, pulling, lowering and raising objects
- lift loads with legs not with back
- 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; 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.

3.3 Relevant DOLE Health-Related Issuances

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. - passive and active vaccines offer 98 to 100% protection *(Source: WHO, 2019)*	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; – 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: – Education and training; – Preventive strategies; – Non-discrimination, confidentiality and work accommodation arrangement; – Screening, treatment and referral to health care services; and – 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 DRUG-FREE WORKPLACE POLICIES AND PROGRAMS FOR THE PRIVATE SECTOR	Establishments employing ten (10) or more workers are mandated to formulate and implement drug abuse 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

3.4 Key Points

- Construction sites have different health hazards that if left unrecognized and uncontrolled can make workers sick, some acute others chronic.
- Health hazards in the workplace are grouped into biological, chemical, physical and ergonomic.
- Biological hazards coming from bacteria, viruses, protozoa and macro-organisms such as rodents, insects and plants can cause allergies, infections, respiratory illnesses and some forms of cancer if not carefully handled.
- Chemical hazards coming from gases, fumes, vapors, mists and dusts can cause immediate death and chronic illnesses such as lung problems and many forms of cancer, if not effectively controlled.
- Physical hazards coming from noise, vibration, extreme temperature and radiation that can cause immediate death and chronic illnesses like hand-arm vibration syndrome, hearing loss and some forms of cancer, if not effectively controlled.
- Ergonomic hazards coming from awkward positions, repetitive motions, over exertion can cause work-related musculoskeletal diseases, if not effectively controlled.

Session 4 – Safety Hazards and their Control

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

General Objectives:

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

- identify safety hazards in construction job sites,
- determine the appropriate control measures of hazards, and
- recognize the best practices for the safety of construction workers.

4.1. Hazards in Construction Site Premises

The Big Idea is that "a poorly-planned and untidy construction job site is associated to many accidents causing injuries 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 construction job sites;
- describe the how good housekeeping help prevent incidents; and
- identify the elements of an effective housekeeping program.

4.1.2. Requirements

Rule 1060 of the Occupational Safety and Health Standard (OSHS) that:

- Work premises shall be kept free from stumbling, slipping and fall hazards; yards including surfaces, walkways, roadways, gates and parking shall be free from hazards;
- 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.

4.1.3. Site Planning/Layout and Tidiness

The ILO (1995) identifies 2 important considerations in keeping the construction job sites safe: 1) site planning and lay-out and 2) site tidiness.

Site Planning and Lay-out. It is the responsibility of management to properly plan a construction project to prepare a budget for safe and efficient construction operation. In planning, the following shall be considered:

- Sequence how work will be done
- Access of workers on and around the site
- Routes of vehicular traffic
- Storage for materials and equipment as specified in the Bill of Quantities (BOQ) and Bill of Materials (BOM)
- Location of construction machinery
- Location of trade shops
- Location of medical and welfare facilities
- Lighting, especially for work after dark
- Site security
- Collection and removal of waste
- Supply of power for temporary lighting and portable power tools
- Training needs for workers and supervisors

Site Tidiness. Presence of clutters in job sites have been causing many accidents due to tripping, slipping or falling over materials and equipment. Workers significantly contribute to keep the jobsite clean and orderly at all times. This is where housekeeping is given importance.

4.1.4. 5S for Construction Projects

Due to the temporary nature of construction projects, materials, supplies, tools and equipment and vehicles are stored in a limited space available. It is the responsibility of the contractor to keep the place clean and orderly for the safety of workers and safekeeping of the materials and equipment.

5S is the most common and acceptable practice for housekeeping. 5S is a systematic approach for improving quality and safety by organizing a workplace. It is a methodology that advocates what should be kept, where it should be kept and how it should be kept (Rumane, 2011).

5S is a Japanese concept of housekeeping having reference to five Japanese words starting with letter S. The closest meaning in English of the five Japanese words and their related actions are the following:

5S Concept	

Japanese	English	Related Action
1 Seiri	Sort	Sort out necessary from unnecessary and discard the unnecessary: – *Determine what is to be kept in the open and what under shed* – *Allocate area for each type of construction equipment and machinery* – *Allocate area for electrical tools* – *Allocate area for hand tools* – *Allocate area for construction material/equipment to be used/ installed in the project* – *Allocate area for hazardous, inflammable material* – *Allocate area for chemicals, paints* – *Allocate area for spare part for maintenance*
2 Seiton	Set in order	Keep items in a systematic/orderly manner to enable easy traceability: – *Keep/arrange equipment in such a way that their maneuvering/movement shall be easy* – *Vehicles are to be parked in the yard in such a way that frequently used vehicles are parked near the gate* – *Frequently used equipment/machinery to be located near the workplace* – *Set boundaries for different type of equipment and machinery* – *Identify and arrange tools for easy access* – *Identify and store material/equipment per relevant division/section of contract documents* – *Identify and store material in accordance with their usage per construction schedule* – *Determine items that need special conditions* – *Mark/tag the items/material* – *Display route map and location* – *Put the material in sequence per their use* – *Frequently used consumables to be kept near workplace* – *Label drawers with list of contents* – *Keep shuttering material at one place*

		– *Determine inventory level of consumable items*
3 Seiso	Sweep	Maintain cleanliness by arranging articles in dirt-free and tidy surroundings, so that they are ready to use: Clean site on daily basis by removing – *Cut pieces of reinforced bars* – *Cut pieces of plywood* – *Left-out concrete* – *Cut pieces of pipes* – *Cut pieces of cables and wires* – *Used welding rods* – *clean equipment and vehicles* – *check electrical tools after return by the technician* – *attend to breakdown report*
4 Seiketsu	Standardize	Keep work area organized for consistent and standardized operation: – *Standardize the warehouse by allocating separate areas for material used by different divisions/sections* – *Standardize area for long lead items* – *Determine regular schedule for cleaning the work place* – *Make available standard toll kit/box for a group of technicians* – *Make every one informed of their responsibilities and related area where the things are to be placed and are available* – *Standardize the store for consumable items* – *Inform suppliers/vendors in advance the place for delivery of material*
5 Shitsuke	Sustain	Maintain what has been accomplished – *Follow the system until the end of project*

The 5S program helps:

- improve safety performance by eliminating slip, trip, fall and fire hazards,
- maximize use of limited space by eliminating the unnecessary,

- reduce time and effort for searching because stuff are organized and labelled, and
- encourage involvement of everybody in the job site.

4.1.5. Key Points

- A well-planned lay-out of construction job sites helps reduce injuries usually slips, trips, fall, fire and struck by moving equipment.

- The contractor in charge of the construction project is responsible in implementing good housekeeping practices to keep site from hazards that may cause injuries to workers and the public and damage to properties.

- 5S is a housekeeping system popularized by the Japanese to improve workplace organization that gives guidance on what should be kept, where it should be kept and how it should be kept.

4.2 Hazards with Power Tools

The Big Idea is "most of the injuries in construction sites as a result of the improper use of power tools could have been avoided if hazard control measures were effectively put in place."

4.2.1. Session Objectives

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

- identify hazards associated with power tools,
- determine the appropriate control measures of the hazards, and
- recognize the requirements of the standard in using power tools.

4.2.2. Requirements

Section 4 of DO 198-18 requires employers the use of only approved devices and equipment specific to the standard set by the industry. A P50,000/day until complied administrative fine is imposable for the violation of such requirement.

Section 16 (c) requires employers to provide workers engaged in high risk activities with specialized instruction training for the safety of operation. Non-compliance for providing job safety instruction and training means an administrative fine of P20,000/day until complied.

4.2.3. Type of Power Tools, their Hazards and Controls

Tools that are mechanically-driven are called “power tools”. These are powered by either gasoline, electricity, compressed air (pneumatic), hydraulic pressure or explosive powder. Most of these are used in construction activities and workers need to be reminded of the hazards.

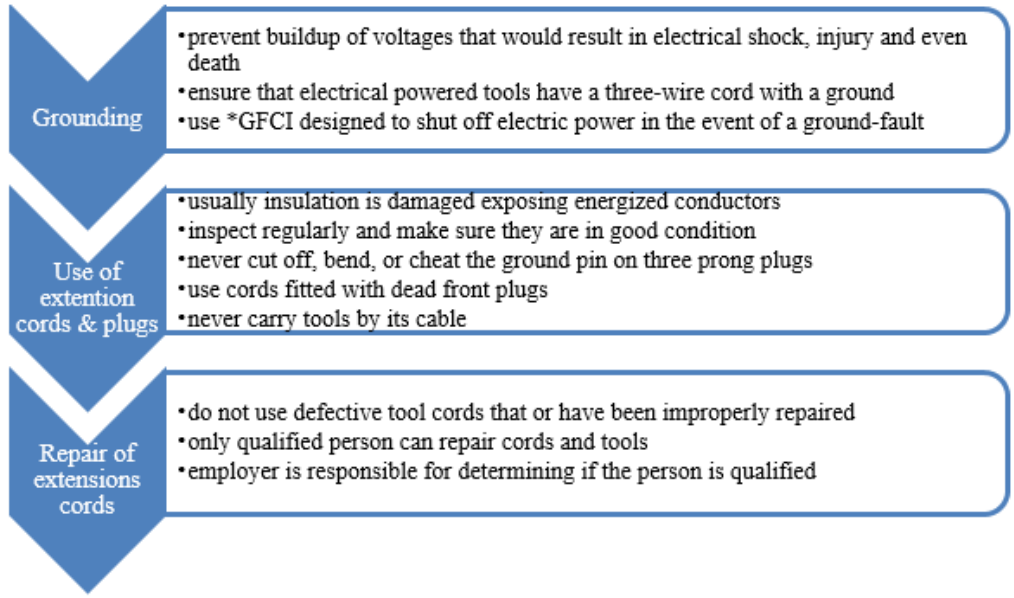
Commonly-recorded injuries related to power tools and their causes are:

Injuries	Causes
– physical injuries include electric shock, flying particles and dust in the eye, falls, explosive atmospheres, cuts, burns, and falling tools; and – health injuries include musculoskeletal conditions.	– using the wrong tool for the job – tools falling from overhead – sharp tools carried in pockets – using cheaters on tool handles – excessive vibration – using tools with mushroomed heads – failure to support or clamp work in position – carrying tools by hand up or down ladders

4.2.4. Electric Powered Tools

Electric power tools can injure a worker in 3 different ways: 1) electric shock which can be fatal, 2) electric flush burns, and 3) minor shocks which can result to falls and injury from tool itself.

Preventing injuries from electric power tools



4.2.5. Air Powered Tools

Many tools powered by compressed air called “pneumatic tools” are used in a variety of tasks in construction. They are fast and powerful and pose no electric shock hazards and have reduced fire or explosion hazards.

Possible injuries from compressed air are:

- air embolism caused by air entering to the bloodstream;
- injuries of the eyes and eardrums;
- injuries from flying particles which may be blown by compressed air; and
- respiratory illnesses from airborne contaminants like silica.

Preventing injuries from air-powered tools

Air Compressor

- Inspect before use, check hoses and fittings
- never use a damaged unit
- keep the belt guard in place
- provide adequate ventilation and avoid inhaling exhaust gases

Air Hoses

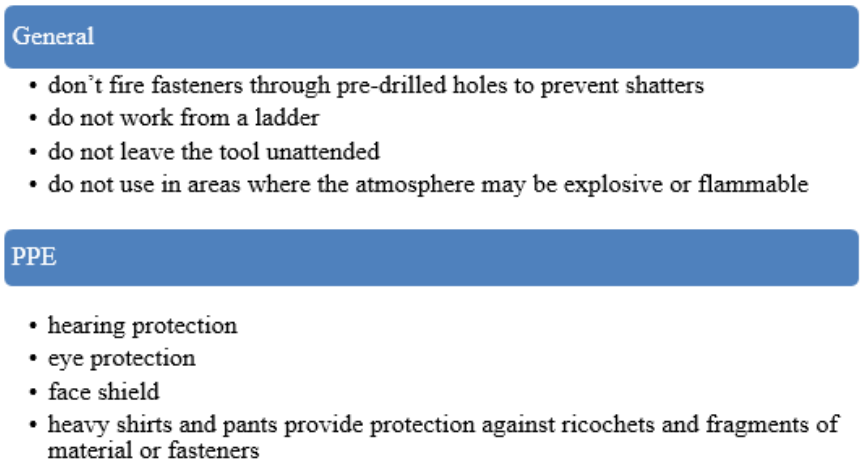
- kept clear of traffic and not present tripping hazards
- clean away dust using brush or vacuum
- secure hose connections with wire, safety clips, or chain to prevent whipping
- turn off the pressure to hoses when the system is not in use

4.2.6. Powder-Actuated Tools

These tools use a powder charge to fire a fastener into hard materials such as concrete, mild steel, and masonry. They provide a fast, efficient means of fastening.

Improper use may cause injuries such as: 1) flying particles/objects, 2) extreme noise, 3) explosion and fire when used in flammable environment, 4) blow through materials which might injure workers on the other side of the wall.

Preventing injuries from powder-actuated tools



4.2.7. Key Points

- Employers have the responsibility to provide the right tools and equipment to workers, conduct job hazard analysis and provide them with proper training/orientation.

- Power tools are associated with certain hazards that workers need to know and how to keep themselves safe while using power tools.

- There are 3 types of power tools – 1) electrical power tools, 2) air powered tools (pneumatic), and 3) powder actuated tools.

4.3 Excavation Hazards

The Big Idea is "excavation is associated with a number of hazards and considered highly dangerous because of unexpected collapse requiring competence and strict compliance to standards."

4.3.1 Session Objectives

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

- identify hazards associated with excavation ,
- determine the appropriate control measures of excavation hazards, and
- recognize the requirement of the standards with excavation.

4.3.2 Requirements

Rule 1413 of the OSH Standards provides the guidelines for workers in excavation to prevent the following hazards:

- *Soil Collapse.* Workers trapped and buried in an excavation owing to the collapse of the sides
- *Falls.* Workers struck and injured by material falling into the excavation, or workers falling into the excavation;
- *Vehicular Traffic.* Vehicles driven into or too close to the edge of an excavation, particularly while reversing, causing the sides to collapse;
- Working Surface. Unsafe means of access and insufficient means of escape in case of flooding;
- *Confined Space Conditions.* Asphyxiation or poisoning caused by fumes heavier than air entering the excavation, e.g. exhaust fumes from diesel and petrol engines.

Section 3.2.6 of the National Building Code requires that:

- excavation should not be so close and deep as to undermine any adjacent building or structure. Precautions should be taken by shoring to prevent collapse or fall.
- proper protection shall be done when excavating below grade immediately adjoining another property to prevent cave-in.
- notify in writing the owners of adjoining buildings not later than 10 days before excavation work starts.

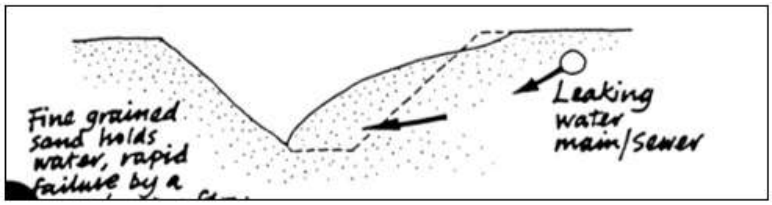
4.3.3 Excavation and Trench

Excavation is almost an inherent activity in construction e.g. foundations, sewers and underground services. Excavation or trenching work can be highly dangerous due to sudden and unexpected collapse of the unsupported sides of a trench.

OSHA defines excavation as any man-made cut, cavity, trench, or depression in an earth surface formed by earth removal. On the other hand, trench means a narrow underground excavation that is deeper than its width, and no wider than 15 feet.

4.3.4 Hazards Associated with Excavation and Trenching

Soil collapse. Principal causes are: steep cutting angle, super imposed load, shock and vibration, water pressure and drying.



Sample image of Soil collapse/cave-in

Buried or underground services. Electrical cables, water services, sewers and gas pipes might be hit during excavation.

Edges. Tools, equipment and excavated materials might be knocked down into the excavation.

Access and Egress. During entry and exit from a trench or excavation, workers might fall.

4.3.5 Preventing hazards from Soil Collapse

Benching. Method that protects workers from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels. Cannot be done in Type C soil.

Sloping. Method done by cutting back the trench wall at an angle inclined away from the excavation not steeper than a height/depth ratio of 1.5 :1, according to the sloping requirements for the type of soil.

- Always provide way to exit a trench using either ladder, stairway or ramp.
- Keep soils at least two feet back from the edge of a trench.
- Have trenches inspected by a competent person prior to entry and after any hazard-increasing event such as a rainstorm, vibrations or excessive surcharge loads.

Maximum allowable slopes for excavations less than 6m based on soil type and angle to the horizontal are as follows:

Soil Type	Height/Depth Ratio	Slope Angle
Stable Rock	Vertical	90º
Type A (Clay)	¾ : 1	53º
Type B (Gravel, Silt)	1 : 1	45º

Type C (Sand)	1 ½ : 1	34^{o}
Type A (Short term)	½ : 1	63^{o}

Source: OSHA Technical Manual, Sec V. Chap. 2, Excavations: Hazard Recognition in Trenching and Shoring (Jan 1999).

Shoring. Used to prevent movement of soil, underground utilities, roadways, and foundations using a system consisting of posts, wales, struts, and sheeting. Together with shielding, shoring is used when sloping is not practical.

Shielding. Method that uses trench boxes or other types of support to prevent soil cave-ins.

4.3.6 Preventing Hazards from Buried or Underground Services

Before starting digging work, always assume that there are underground installations like electrical cables, gas and water pipes, sewers that might injure workers, that might explode or might cause flooding.

4.3.7 Preventing Hazards from Edges

Keep tools or materials at least 1 m. (3 ft.) away from the edge of the excavation to prevent them from falling down into the excavation.

Prevent entry/operation of vehicles/machineries near the edge of an excavation. Keep them at least a distance one-third (1/3) of its depth in accordance with Rule 1413.03 (1) and (2).

4.3.8 Preventing Hazards from Access and Egress

- Provide stairways, ladders, ramps, or other safe means of egress in all trenches that are 4 feet deep or more.
- Structural ramps that are used solely for access or egress from excavations must be designed by a competent person.
- When two or more components form a ramp or runway, they must be connected to prevent displacement, and be of uniform thickness.
- Cleats or other means of connecting runway components must be attached in a way that would not cause tripping.
- Structural ramps used in place of steps must have a non-slip surface.
- Use earthen ramps as a means of egress only if a worker can walk them in an upright position, and only if they have been evaluated and approved by a competent person.

4.3.9 Rule 1413 of the OSHS

Excavations:

- over 1 m. (3 ft.) deep shall be provided with means of access and escape in case of flooding or collapse of the excavation work;
- shall have at least one (1) ladder in every 16.6 m. (50 ft.) of length or fraction thereof, of a length, which shall extend at least 0.83 m. (2'6") above the top of the excavation to provide a firm handhold when stepping on or off the ladder;
- shall be inspected by a competent person before work begins and at least once a day where work is in progress; and
- shall be carefully examined by a competent person once a week and a record kept of such inspections.

Guideline:

- daily and before the start of each shift;
- as required by the work being done in the trench;
- after every rainstorm;
- after other events that could increase hazards, e.g. earthquake;
- when fissures, tension cracks, sloughing, undercutting, water seepage, bulging at the bottom, or other similar conditions occur;
- when there is a change in the size, location, or placement of the spoil pile; and
- when there is any indication of change or movement in adjacent structures.

4.3.10 Key Points

- Excavation and trenching can be highly dangerous and even some of the most experienced workers have been caught by the sudden and unexpected collapse of the unsupported sides of an excavation and trench.

- There are 4 hazards associated with excavation: 1) soil collapse, 2) buried or underground services, 3) edges, and 4) access and egress.

- To prevent soil collapse, there are 4 methods: 1) benching, 2) sloping, 3) shoring, and 4) shielding.

- Excavations should be inspected by a competent person every day while work is in progress and examined weekly with inspection records to check for indications of hazards.

4.4 Demolition

The Big Idea is “demolition is among the highly dangerous process in construction that exposes workers and the public to serious injuries and can cause enormous damage to properties, therefore, needs to be carefully planned and properly executed.”

4.4.1 Session Objectives

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

- identify hazards associated with demolition,
- determine the appropriate control measures of demolition hazards, and
- recognize the requirements of the standard with demolition.

4.4.2 Requirements

Rule 1417 of the OSH Standards provides that demolition works to be supervised by competent persons whether the method used is mechanical, manual or explosives.

All demolition operations of building or other structure over six (6) meters high shall be under supervision of a competent person. No person except the workers who are directly engaged in the demolition shall enter a demolition area to within a distance equal to 1 1/2 times the height of the structure being demolished, where this distance is not possible the structure shall be fenced around and no unauthorized person shall be allowed within the fenced area.

Section 1108 (a) (b) of the National Building Code also provides that the work of demolishing any building shall not be commended until all the necessary pedestrian protective structures are in place.

The Building Official may require the permittee to submit plans, specifications and complete schedule of demolition. When so required, no work shall be done until such plans, specifications and schedule are approved by the Building Official.

4.4.3 Demolition Methods and Techniques

Demolition is a complete or partial dismantling of a building or structure by pre-planned and controlled methods or procedures.

Mechanical demolition, which involves the use of specialized equipment such as excavators equipped with tools for crushing concrete and shearing steel is the most widely used method.

There are 3 different methods: 1) manual using hand-held tools, 2) mechanical using heavy equipment, and 3) use of explosives and 2 techniques: 1) sequential in reverse

order to construction; and 2) induced by removing key structural members causing the whole structure to collapse.

Demolition is an inherently dangerous process that requires careful planning and placing all precautions in place before the work starts.

Most common types of accidents associated with demolition are:

- falls from elevated work surfaces;
- exposure to hazardous air contaminants;
- being struck by falling or collapsing structures; and
- electrical shock.

The principal causes of accidents during demolition are:

- the choice of an incorrect method of demolition;
- an unsafe place of work; and
- the unintentional collapse of the building being demolished, or of an adjoining structure because of lack of temporary support.

4.4.4 Hazards Associated with Building Demolition (ILO, 1995)

- *Hazardous Materials.* Materials hidden within structural members, such as lead, asbestos, silica, asphalt (from roofing shingles), gypsum (from drywall) and other chemicals or heavy metals are among the primary hazards of demolition.

- *Structural Instabilities.* Refers to weakened or deteriorated floors, walls, framings or loosened material that might be unstable. Falling debris, stored materials and heavy equipment beyond the carrying capacity of the floor also pose important hazard.

- *Unsecured Hazards in the Area.* Unsecured objects like glass and structural members may fall while workers are working under them.

- *Utilities.* Utilities lines that are not properly located, secured and locked-off.

- *Hazardous Substances.* Exposure to hazardous substances from tanks and equipment that might contain hazardous chemicals, gases, or flammable materials is likely.

- *Walkways and Access.* Walkways not properly installed and not compliant with the standards can cause slips, trips and falls.

- *Illumination.* Not properly lighted stairwells, passageways and access to floors where work is in progress expose workers to danger.

4.4.5 Controls to prevent hazards associated with demolition (ILO, 1995)

Generally, the most effective control is PREPARATION.

Preparatry operations involve the overall planning, including the:

- methods to be used to bring the structure down;
- equipment necessary to do the work;
- manpower requirement;
- protection of the public; and
- measures to be taken to perform the work safely.

The safety of all workers on the job site should be a prime consideration. Specifically, the following are the hazard controls:

Hazardous Materials and Substances

- Worksite inspections prior to the start of operations to assess for the presence of hazardous materials and substances.
- Avoid disturbing tanks and containments until after the assessment is done and a plan of action is developed to reduce exposure or eliminate the hazardous substances.

Structural Instabilities

- Conduct engineering survey to locate unstable structures.
- Shore/brace walls and floors as needed to maintain safe work.
- Competent person continually inspect to detect hazards resulting from weakened or deteriorated floors, walls, or loosened materials.
- Always ensure that the total weight of debris, materials and heavy equipment do not exceed the carrying capacity of the certain floor.

Unsecured Hazards

- Use debris netting, sidewalk sheds, canopies, or catch platforms to reduce hazards from falling objects.
- Make sure employee entrances to multi-storey structures are completely protected by sidewalk sheds or canopies, or both, providing protection from the face of the building for a minimum of 8 feet.
- Canopies should be at least 2 feet wider than the building entrances or openings capable of sustaining a load of 150 pounds per square foot.

Utilities

- Verify the location of all utility lines.
- Ensure lines have been shut-off, capped, or otherwise controlled outside the building before beginning work.
- Coordinate with utility companies before controlling their utility lines

Walkways and Access

- Walkways should be at least 18 inches wide and formed by using 2-inch thick wood, with stringers installed.
- Use only inspected and designated stairways, passageways, and ladders.
- Other access ways must be entirely closed at all times.

Illumination

- Access or egress in multi-storey buildings must be properly illuminated and completely and substantially covered over at a point not less than two floors below the floor on which work is being performed.

- Access to the floor where the work is in progress must be through a properly lighted, protected, and separate passageway.

4.4.6 Key Points

- Demolition is an inherently dangerous process in construction that requires careful planning and placing all precautions in place before the work starts. The safety of all workers on the job site should be a prime consideration.

- Most common types of accidents associated with demolition are falls from elevated work surfaces, exposure to hazardous air contaminants, being struck by falling or collapsing structures and electrical shock.

- The principal causes of accidents during demolition are the choice of an incorrect method of demolition, an unsafe place of work and the unintentional collapse of the building being demolished, or of an adjoining structure because of lack of temporary support.

- Most effective control is preparation. Preparation involves the overall planning, including the, methods to be used to bring the structure down, equipment necessary to do the work, manpower requirement; protection of the public and measures to be taken to perform the work safely.

4.5 Hazards Working Around Heavy Equipment

The Big Idea is "heavy equipment is essential in construction but considered dangerous and if not effectively controlled will remain to be among the leading causes of fatalities and serious injuries among workers and even the public."

4.5.1 Session Objectives

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

- identify hazards associated with heavy equipment in construction,
- determine appropriate control measures of heavy equipment hazards, and
- recognize the requirements of the standard involving heavy equipment.

4.5.2 Requirements

- Rule 1415.10 of the Occupational Safety and Health Standards requires testing and inspection of lifting appliance providing that "no appliance shall be used unless it has been tested and examined thoroughly initially and every year thereafter.

- Section 10 of DO 13: Guidelines Governing Safety and Health in the Construction Industry requires that:

- All heavy equipment shall be required Testing and Certification by DOLE Accredited Organizations before use; and

- All operators of heavy equipment shall be certified by TESDA.

4.5.3 Heavy Equipment defined by DO13

- any machine with engine or electric motor as prime mover used either for lifting, excavating, leveling, drilling, compacting, transporting and breaking works in the construction site, such as but not limited to crane, bulldozer, backhoe, grader, road compactor, prime mover and trailer; and

- with minimum operating weight and horsepower rating 1,000 kg and 10 HP, respectively.

4.5.4 Classification of Heavy Equipment

Lifting Equipment

- Mobile Lifting Equipment. Wheel Mounted Telescopic Boom, Crawler Lattice Boom, Rough Terrain Crane, Boom Truck
- Stationary. Tower Crane, Hammerhead Crane, Luffing Crane, Barge Crane, Quay Crane, Overhead Traveling Crane, Gantry Crane

Earth Moving Equipment

- Dozer, Grader, Excavator/Backhoe, Payloader, Dump Trucks, Roller/Compactor

Personnel Lifting or Carrying Equipment

- Personnel Hoist
- Gondola or suspended scaffold

4.5.5 Hazards Associated with Construction Heavy Equipment Operation

- Moving parts of the equipment
- Uneven terrain
- Energized electrical lines
- Fall
- Dust
- Overloaded equipment
- Noise
- Vibration
- Unsecured loads
- Improvised attachments
- Blind spot.

4.5.6 Common Causes of HE-related Accidents

- Poorly maintained equipment
- Operator error
- Unqualified operator
- Improper selection and use of equipment
- Unsafe work practices
- Inclement weather

4.5.7 Hazards Control for Safe Operation of Heavy Equipment

Operators.
Only authorized personnel are allowed to operate mobile equipment. Assign operators only to equipment they are qualified and licensed to operate. Provide operators with the instructions and training and ensure that operators:

- meet the physical requirements of the job;
- do not operate mobile equipment for over 12 hours in any 24-hour period; and
- comply with applicable operating instructions, limitations, regulations, and written safety programs.

Do not allow the operation if the operator is not physically, mentally, and emotionally capable of operating the vehicle or equipment safely.

Parking, Stopping, Standing.

- Do not leave equipment unattended unless the motor has been shut off, brakes securely set, transmission gears engaged, and all hydraulic components lowered to a supporting surface or otherwise protected against accidental movement.
- Chock or turn the wheels toward the curb on any equipment parked on a grade.

Transmix concrete trucks, lubrication trucks, fuel trucks, and those using primary engine-powered auxiliary, also known as power take off (PTO) are not considered unattended when:

- the operator is outside the cab but within arm's length of the unit or is in contact with auxiliary equipment or controls;
- the primary unit's brakes and gearing arrangements are designed for safe use of auxiliary attachments and/or exterior controls are in the proper position; and
- the primary unit is equipped with an automatic lockout device that prohibits operating exterior controls until the brake and gear arrangements are in the proper position.

Signal Person.
Provide a trained signal person where there is danger from blind spots, moving equipment, swinging loads, buckets, booms, etc.

Speed.
Do not operate equipment at speeds greater than those that are reasonable and safe considering weather conditions, traffic, road conditions, type and condition of equipment, and manufacturer's recommendations.

The operator must have the equipment under control at all times and be able to stop within the clear-sight distance.

Towing.
Do not permit employees between a towed vehicle and the towing vehicle, except when hooking or unhooking it.

Seats and Seatbelts.
Do not allow operators or passengers to ride on or in equipment unless they are seated with installed seatbelts fastened, except for stand-up operation.

Emergency Equipment.
Equip all trucks and combination vehicles operated on public roads including all buses, and vehicles carrying flammables, explosives, or hazardous materials with emergency equipment. Equip all mobile machines with appropriate fire extinguishers.

- Early Warning Device. Use Early Warning Device (EWD) with reflective markers when parked along public roadways.
- Wheel chocks. Use two-wheel chocks for each vehicle or trailer where there is a possibility that the vehicle will move or shift because of roadway conditions or loading or unloading of the vehicle or trailer.
- Fire extinguishers. Install one dry chemical extinguisher. When transporting flammable or explosive cargo, install at least two dry chemical fire extinguishers.

Braking System.
Equip all on-highway equipment with braking systems.

Equip a bus, truck, tractor-trailer, combination of vehicles, or similar type equipment with the following braking systems:

- service brake system
- parking brake system
- secondary brake system

Equip mobile cranes and excavators, mounted on rubber-tired chassis or frames, with a service brake system, secondary stopping (brake) system, and a parking brake system.

Other Hazard Controls

Gears Engaged.
- Do not operate any vehicle on a downgrade with gears in neutral or clutch disengaged.

Unattended at Night.
- Make sure equipment left unattended after hours on or near roadways or in areas where work is in progress has lights, reflectors, or lighted or reflective barricades to identify the location of the equipment.

Unauthorized Riding.

- Do not allow personnel to ride in or on mobile equipment unless they are sitting in a seat designed and installed for the purpose.

4.5.8 Inspection Requirements

Initial Inspection

- Qualified person must inspect mobile equipment before conducting required onsite brake performance tests. The inspection ensures that the equipment is in safe condition and that it meets the original design specifications and standards. Be sure to keep inspection records.

- Repair unsafe equipment and re-inspect before use. Also inspect equipment exempted from brake tests before using onsite. If found to be unsafe, repair and re-inspect. Keep record of the inspection for review.

Periodic Inspection

Inspect equipment in service at the beginning of each shift. Do not place the inspected unit into service unless applicable equipment and accessories are in safe operating condition, including:

- Service brake
- Secondary brake
- Parking brake
- Windows
- Tires
- Warning devices
- Steering mechanism
- Operating controls
- Wipers
- Coupling devices
- Fire extinguisher

Keep daily inspection logs with the vehicle.

4.5.9 Maintenance Requirements

Removal from Service.

- Remove equipment from service whenever an unsafe condition is detected. Do not place back in service until repaired.

Repair Shutdown.

- Shut down and secure equipment during repairs or adjustments unless operation is essential to making the adjustments or repairs.

Refueling.

- Refueling is subject to the requirements of "Standards for Material Handling, Storage, and Disposal."

Tire Repair.

- Provide a safety tire cage when inflating, mounting, or dismounting tires installed on "split rims". Do not weld on rims unless tire is removed.

Blocking.

- Block/crib equipment or parts suspended or held aloft by cables, hydraulic cylinders, slings, ropes, hoists, or jacks, or lower to a supporting surface before permitting employees to work in, under, or between pieces of equipment or parts.

Brake Repair.

- Use a vacuum with a high efficiency particulate air (HEPA) filter to clean asbestos-lined brake assemblies. Do not use compressed air for this purpose.

4.5.10 Key Points

- The law requires that all heavy equipment shall be tested for safety before starting operation, operators need skills certification and assign 1 safety officer for every 10 heavy equipment assigned in a construction site.

- Heavy equipment are classified into lifting, earth-moving and personnel lifting or carrying. All are necessary in construction industry but are considered dangerous to lives of workers and the affected public.

- Most common causes of accidents involving heavy equipment are: 1) poorly maintained equipment, 2) operator error, 3) unqualified operator, 4) improper selection and use of equipment, 5) unsafe work practices, and 6) inclement weather.

- Among the most important hazards controls are regular inspection, appropriate training, competence and certification of operators and good maintenance of equipment.

4.6 Hazards in Crane Operation

The Big Idea is “moving large and heavy loads is crucial in construction operation considering the safety issues affecting the operators of the "lifting" devices, and the workers in proximity to them.”

4.6.1 Session Objectives

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

- identify hazards associated with crane operation,
- determine the appropriate control measures crane-related hazards, and
- recognize the standard requirements for safe crane operation.

4.6.2 Requirements

Rule 1415 of the OSH Standards provides guidelines in safe operation, inspection and maintenance of lifting equipment and other working gears like hoist and rigging accessories to prevent accidents:

- Every lifting appliance including working gear and all other plant equipment used for anchoring or fixing shall:

    a. be of good mechanical construction, of sound material and adequate strength for the load it will carry;
    b. be properly maintained and inspected at least once a week and the result of such inspection shall be recorded in a log book maintained by the employer or user of the equipment, open to enforcing authority

- After erection or alteration, every hoist shall be tested and examined every six (6) months by a competent person and the result of such tests and examination shall be recorded in a logbook maintained for the purpose. The logbook shall be made available for inspection by the enforcing authority.

- No chain, rope or lifting gear shall be used unless:

    a. it is of good construction, sound material, of adequate strength, suitable quality and free from potent defects.
    b. it has been tested and examined by a competent person specifying the safe working load.

- A lifting appliance shall not be operated other than by a person trained, competent, physically fit, and authorized to operate the appliance.

- When the operator of a lifting appliance has no clear and unrestricted view of the load for safe working, there shall be appointed one or more signal men to give the necessary signals to the operator.

4.6.3 Hazards in Crane Operations

A crane is a mechanical lifting device equipped with a boom, winder, wire ropes, and sheaves primarily designed to lift and lower heavy materials and to move them horizontally.

Cranes are generally classified into stationary and mobile. Stationary are overhead, gantry and tower cranes. Mobile are truck-mounted, crawler-mounted and mobile tower cranes.

Fatal and serious injuries may occur with crane operation. Hazards are classified into at least 5 groups:

- structural failure and overloading;
- instability failure;
- materials falling or slipping;
- electrical hazards when crane or its load line contacts an overhead power line; and
- other hazards:

    a. being struck by the crane or an overhead load,
    b. caught in between the cranes,
    c. caught in the crane's swing radius, and
    d. falls.

Crane safety refers to:

- structural soundness of the equipment and its components;
- proper crane operation;
- proper rigging operation; and
- proper assembly and dismantling procedure.

4.6.4 Common Causes of Fatal and Serious Accidents

Boom contact with power lines.
Contact with overhead power lines is the most common cause of deaths involving cranes. Contact with energized power lines can result in fatal electrocutions, if not serious burns or damaged equipment (Spear, 2016).

Overloading.

According to OSHA, 80 percent of all crane upsets and structural failures can be attributed to exceeding the crane's operational capacity (Hoist Crane Safety, 2015).

Failure of outrigger.
If the outrigger is not set at the designated reinforced location with corresponding load chart and rating, moving the load can result in structural failure of the outrigger beam (CraneTech).

Soft ground.
Inadequate crane support, especially on soil causes the crane to quickly get out of level, which could lead to a tipping accident. This base failure is often caused by soft soil (Davis, 2011).

Pinch Point.
While fixing the crane's load or untying the materials lifted or moved, the worker's body part or whole body can be crushed between 2 moving objects or between a moving and a stationary object.

Unsafe Hooks.
Substandard, defective and improperly used hooks may cause the load to fall which can severely injure workers and other people in the vicinity.

Obstruction of vision or blind spots.
Struck by accidents related to crane operations are often caused by inability of the operator to clearly see the surroundings.

Wire rope failure.
Wire ropes nearing end-of-life or have been damaged due to corrosion or wear and tear can be disastrous, especially when used for lifting heavy materials in construction activities.

Side pull.
Using the crane to "tow" a load that is not lined up properly to get it into position is extremely dangerous unless the crane is stable and load is small.

Boom buckling.
When a boom strikes against a structure during slewing with suspended load, it cannot sustain side forces and can easily buckle. People below can be fatally hit by the load or the bucking boom.

4.6.5 Safety Precautions and Best Practices

Recommended safety precautions and best practices to protect employees from the hazards associated with operating cranes and derricks include before and during operations.

Before operation	
1	Check all crane controls to insure proper operation before use.
2	Inspect wire rope, chains and hook for any damage.
3	Know the weight of the load to ensure that load does not exceed the crane's rated capacity.
4	Fully extend outriggers.
5	Barricade accessible areas within the crane's swing radius.
6	Check all rigging prior to use.
7	Do not wrap hoist ropes or chains around the load.
8	A competent person must inspect slings and all fastenings and attachments for damage or defects.
9	Verify cranes and derricks will not be operating within 10 feet of any electrical power line.
10	Post illustrations of hand signals to crane and derrick operators on the job site.
11	Test and correctly set overload limits.
12	Perform and maintain initial and annual inspections of all hoisting and rigging equipment.
During operation	
1	Raise the load few inches to verify balance and effectiveness of the brake system.
2	Do not move a load over workers.
3	Watch for overhead electrical distribution and transmission lines and maintain a safe working clearance of at least 10 feet from energized electrical lines.
4	Provide an electrical ground to the upper rotating structure supporting the boom and materials being handled while working near energized transmitter towers.
5	Use tag lines to prevent dangerous swing or spin of materials when raised or lowered by a crane or derrick.
6	Make load testing reports/certifications available.

4.6.6 Operators and Signal Persons

Only properly trained and qualified operators and signal persons can work with hoisting and rigging equipment. Operators and signal persons should:

- Understand and use appropriate load charts.

- Follow manufacturer's procedures for operating cranes.
- Correctly determine the angle and length of the crane boom at all times.
- Use and follow correct signals.
- Keep the operator's manual and all procedures for operating the crane in the cab.
- Not do anything distracting, like texting/talking on mobile phone while operating.
- Not leave the controls while the load is suspended.
- Verify proper position of all controls and area clear of workers.
- Inform, in writing, the person responsible for receiving the information and the operator on the next shift.
- Not operate a crane beyond its rated capacity.
- Not drag or pull loads sideways using cranes.
- Avoid the boom and any parts of a crane from contact to any obstructions.
- Not lift loads over the front area of wheel-mounted cranes unless designed for it.
- Not lower the load or the boom below the point where fewer than two full wraps of rope remain on their respective drums.
- Control the crane's rotational speed to keep the load from swinging out beyond the radius.

Refusing to handle loads.

- A crane operator concerned about hazards involving a crane can refuse to handle loads until a qualified person determines there is no hazard or the hazard has been corrected.

Stopping multiple-crane lifts.

- The crane operator and the lifting supervisor have the authority to stop a multiple-crane lift if either determines the lift cannot be done according to the lift plan.

4.6.7 Equipment

- Make sure cranes are equipped with a load chart.
- Inspect crane machinery and other rigging equipment daily prior to use.
- Ensure crane platforms and walkways have anti-skid surfaces.
- Remove all broken, worn or damaged wire rope from service.
- Provide guardrails, hand holds and steps for safe and easy access to the crane.
- Properly torque tower crane mast bolts according to manufacturer specifications.
- Post the maximum acceptable load and the last test results on the crane.
- Remove defective rigging equipment from service.
- Do not load rigging equipment in excess of its recommended safe working load.
- Remove rigging equipment from working area when not in use.
- Mark custom-designed grabs, hooks, clamps or other lifting accessories to indicate the safe working loads.

- Proof-test grabs, hooks, clamps, or other lifting accessories prior to use to 125 percent of their rated load.

4.6.8 Key Points

- Cranes are equipment that have become part of every construction activity designed to mechanically lift heavy and move heavy materials. It is considered one of the most dangerous source of hazards because of its design and complex operation.

- Crane Safety refers to structural soundness of the equipment and its components, proper operation, proper rigging operation; and proper assembly and dismantling procedure.

- Hazards associated with crane operation are structural failure and overloading, instability failure, materials falling or slipping, electrical hazards when crane or its load line contacts an overhead power line, being struck by the crane or an overhead load, caught in between the cranes, caught in the crane's swing radius, and falls.

- Recommended safety precautions in crane operations can be grouped into compliance to testing, training and certification and inspection requirements, follow safe operation according to manufacturer specifications and best practices.

4.7 Hazards in Scaffolding and Temporary Structures

The Big Idea is "an estimated 2.3 million construction workers or 65% of the construction industry work on scaffolds and are exposed to hazards that if not controlled can cause serious injuries or fatalities".

4.7.1 Session Objectives

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

- identify hazards associated with scaffolds or temporary structures,
- determine the appropriate control measures of scaffolding hazards, and
- recognize the standard requirements for scaffolding.

4.7.2 Requirements

All site fabricated/conventional supported scaffolds exceeding 6 meters in height or a working load of 150 kg/m2, structural steel should be used, shall be designed and

inspected by the structural engineer and approved by the appropriate authority *(Rule 1414.02.2.4 of DO 128-13 Series of 2013).*

All scaffolds competent person must undergo the standard scaffold training and assessment prescribe by DOLE and TESDA *(Rule 1414.14 of DO 128-13 Series of 2013).*

The competent person shall have the following certification:

- COSH Training Certificate from DOLE or its accredited safety training organizations.
- TESDA-issued Scaffold Erection Certificate.
- At least 2 years experience in scaffold erection.

4.7.3 Scaffolding defined

A Scaffold is defined as any temporary elevated work platform and its supporting structure (including points of anchorage) used for supporting employees or materials or both.

Note: There are three main points to the definition: it is elevated, it is temporary, and it supports either personnel or materials or both.

4.7.4 Types of Scaffolds

Supported Scaffolds. Consist of one or more platforms supported by outrigger beams, brackets, poles, legs, uprights, posts, frames, or similar rigid support.

- Framed: Platform(s) supported on fabricated end frames with integral posts, horizontal bearers, and intermediate members.
- Tube and Coupler: Platform supported by tubing, erected with coupling devices connecting uprights, braces, bearers, and runners.
- Manually Propelled/Mobile: Unpowered, portable, caster- or wheel-mounted supported scaffold.
- Pump Jack: Platform supported by vertical poles and movable support brackets.
- Ladder Jack: Platform resting on brackets attached to ladders.

Suspended. Platforms suspended by ropes or other non-rigid means from an overhead structure.

- Two-point (swing stage): Platform supported by hangers (stirrups) suspended by two ropes from overhead supports and equipped with a means to permit the platform to be raised and lowered.
- Single-point Adjustable: Platform suspended by one rope from an overhead support and equipped with a means to permit the platform to be moved to desired working levels.

- Catenary: Platform supported by two essentially horizontal and parallel ropes attached to structural members of a building.
- Multi-point Adjustable: Platform(s) suspended by more than two ropes from overhead supports and equipped with a means to permit the platform to be raised and lowered. Includes chimney hoists.
- Interior Hung: Platform suspended from the ceiling or roof structure by fixed-length supports.

- Needle Beam: A platform suspended from needle beams.
- Multi-level: Two-point or multi-point adjustable suspension scaffold with a series of platforms at various levels resting on common stirrups.
- Float (ship): Braced platform resting on two parallel bearers and hung from overhead supports by ropes of fixed length.

4.7.5 Hazards and Accidents Associated with Scaffolds

Hazards

23%	result of construction deficiencies
18%	result of electrocutions
14%	while climbing
10%	from falling objects
10%	structural failure
10%	falls while working on the platform
8%	while assembling/disassembling the scaffolding

Accidents

- Falls from elevation. Unguarded or improperly guarded scaffolds may cause workers to fall from height.

- Struck by falling tools and debris. Absence of appropriate guardrails and toe boards can allow tools and materials to fall and can hurt workers in the lower level.

- Scaffold collapse. Improperly installed and wrong procedure of dismantling can cause scaffold collapse that can seriously injure or even kill workers.

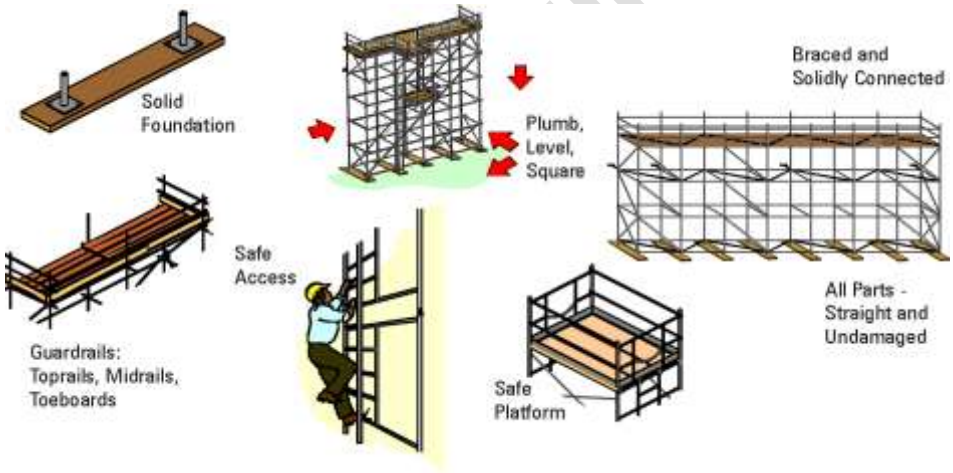
- Electrocution. Working close to energized electrical power lines can cause electrocution of the scaffolders.

4.7.6 Recommended precautions to take while working with scaffolds

On Inspection and Tagging

- Ensure scaffolds are erected, moved, dismantled or altered under the supervision of a competent person.

- Make sure a competent person inspects the scaffolding and, at designated intervals, repeat the inspection.
- Ensure a competent person inspects rigging on suspension scaffolds before each shift and after any occurrence that could affect structural integrity.
- Check that synthetic and natural rope used in suspension scaffolding is protected from heat-producing sources.
- Always check to make sure scaffolds are at least 10 feet from electric power lines at all times.
- Equip scaffolds with guardrails, midrails and toeboards, as required.
- Ensure damaged parts that affect the strength of the scaffold are taken out of service.
- Make sure scaffolds are not moved horizontally while workers are on them unless they are designed to be mobile and workers have been trained in the proper procedures.



On Use

- Make sure employees are taking protection while working near overhead power lines.
- Scaffolds should be accessed by using ladders and stairwells. Cross bracing should not be used.
- Scaffolds should not be loaded with more weight than they were designed to support.
- Employees should be provided with a full body harness when working at a height of more than 6 meters.

On Stability

- Make sure scaffolds are sound, rigid and sufficient to carry its own weight plus four times the maximum intended load.
- Ensure scaffolds are erected on solid footing.
- Do not support scaffolds or planks with unstable objects, such as barrels, boxes, loose bricks or concrete blocks.
- Never use scaffold accessories such as braces, brackets, trusses, screw legs or ladders that are damaged or weakened from any cause.
- Tightly plank scaffold platforms with scaffold plank grade material or equivalent. All scaffolds should be fully planked.
- Do not allow employees to work on scaffolds when covered with slippery materials. Work is not permitted in bad weather or strong winds.

Aerial Lifts

Aerial lifts are vehicle-mounted, boom-supported aerial platforms used to access utility lines and other aboveground job sites usually replacing ladders and scaffolding due to their mobility and flexibility.

They may be made of metal, fiberglass-reinforced plastic, or other materials. They may be powered or manually operated.

The major causes of fatalities with aerial lifts are falls, electrocutions, and collapses or tip overs.

Training

Only trained and authorized persons are allowed to operate an aerial lift. Training should include the following:

- explanations of electrical, fall and falling object hazards;
- procedures for dealing with hazards;
- recognizing and avoiding unsafe conditions in the work setting;
- instructions for correct operation of the lift (including maximum intended load and load capacity);
- demonstrations of the skills and knowledge needed to operate an aerial lift;
- when and how to perform inspections; and manufacturer's requirements.

Safe Work Practices

- Make sure that workers are properly trained.
- Operate elevating work platforms according to the manufacturer's instructions.
- Never override hydraulic, mechanical, or electrical safety devices.
- Never move the equipment with workers in an elevated platform unless this is permitted by the manufacturer.
- Do not allow workers to position themselves between overhead hazards, such as joists and beams, and the rails of the basket. Movement of the lift could crush the worker(s).
- Maintain a minimum clearance of at least 10 feet, or 3 meters, away from the nearest energized overhead lines.
- Always treat power lines, wires and other conductors as energized, even if they are down or appear to be insulated.
- Use a body harness or restraining belt with a lanyard attached to the boom or basket to prevent the worker(s) from being ejected or pulled from the basket.
- Set the brakes and use wheel chocks when on an incline.
- Use outriggers, if provided.
- Do not exceed the load limits of the equipment. Allow for the combined weight of the worker, tools and materials.

4.7.7 Key Points

- Scaffoldings are any temporary elevated work platform used for supporting employees or materials or both which is inherent in construction industry. Because scaffoldings are elevated and temporary, it is associated with hazards such as falls, electrocution and collapse.

- To ensure safety, the law requires that scaffolds exceeding 6 meters in height shall be designed and inspected by a structural engineer and approved by the appropriate authority.

– All scaffolders and supervisors shall comply with the training requirement, certifications and experienced required by law.

– Scaffolds and accessories shall be regularly inspected, properly tagged and maintained to remove unsafe materials/parts and prevent from use.

4.8 Hazards with Hot Works

The Big Idea is "hazards with hot works are something not to be taken lightly as it can cause fire and explosion if not managed appropriately. There are both mandatory requirements and best practices that employers can learn from to control the hot works hazards."

4.8.1 Session Objectives

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

– identify hazards associated with hot works,
– determine the appropriate control measures to prevent hazards with hot works, and
– recognize the requirement of the standard related to hot works.

4.8.2 Requirements

Welding or cutting operations shall not be permitted in rooms or areas containing combustible materials or in proximity to explosives or flammable liquids, dusts, gases or vapors, until all fire and explosion hazards are eliminated. Rule 1100.01 (1)

A portable fire extinguisher shall be provided at the place where welding and cutting operations are being undertaken. Rule 1100.01 (4)

The safety man shall inspect the areas and issue a written permit or authorization for welding and cutting, indicating therein the precautions to be followed to avoid fire or accidents. Rule 1100.01 (5)

4.8.3 Hot Work Defined

Hot work is any temporary construction activity that uses gas or electrically powered equipment, which produces flames, sparks, or heat that can start a fire or ignite flammable/combustible materials. Includes but not limited to brazing, cutting, grinding, soldering, and torch-applied welding.

4.8.4 Hazards and Accidents Associated with Hot Works

Confined spaces. Small and enclosed places are specially dangerous for hot work. Dangerous and flammable gases can accumulate and can cause explosion or can cause death if inhaled.

Electrical machines/equipment. Poorly maintained hot work machines and equipment may injure workers like electric shock and electrocution.

Sparks. Sparks igniting flammable gases and objects cause most of workplace fires and explosion.

Gas cylinders. If not properly handled and stored, gas cylinders can cause fire and expose workers to toxic gas and fall injuries.

Fumes. Dangerous fumes released in the hot work process can contaminate the breathing zone of the workers and can cause damage to eyes and respiratory system.

General best practices for safety while performing hot work

- Do not perform hot work where flammable vapors or combustible materials exist.
- Move work and equipment away from hazardous environment, when possible.
- Provide suitable fire-extinguishing equipment ready in case of fire.
- Assign a fire watch every time hot work is performed.

4.8.5 Specific Hazard Controls

Fire Watch

This is required whenever welding or cutting is performed in locations where other than a minor fire might develop, or any of the following conditions exist:

- combustible material, in building construction or contents, closer than 35 feet (10.7 m) to the point of operation;
- combustibles are more than 35 feet (10.7 m) away but are easily ignited by sparks;
- wall or floor openings within a 35-foot (10.7 m) radius expose combustible material in adjacent areas including concealed spaces in walls or floors; and
- combustible materials are adjacent to the opposite side of metal partitions, walls, ceilings, or roofs and are likely to be ignited by conduction or radiation.

Duties and responsibilities of the operator and fire watch

Operator	Fire watch

Remove all flammable or combustible materials within 11 meters radius of the hot work area.	Have fire-extinguishing equipment readily available.
Remove all combustible debris (paper clippings, wood shaving, or textile fibers) from hot work area.	Keep fire-extinguishing skills updated.
Shield combustibles that cannot be removed with non-combustible blankets.	Familiar with facilities for sounding an alarm in the event of fire.
Seal with fire resistant shield all cracks and openings through which hot sparks or slag may enter.	Watch for fires in all exposed areas, try to extinguish them only when obviously within the capacity of the equipment available, otherwise sound the alarm.
Use flame resistant screens to protect personnel in adjacent work areas from heat, flames, UV, radiant energy and weld splatter.	Remain in area for at least 30 minutes or 60 minutes (to meet NFPA requirements) after completion of welding or cutting operations to detect and extinguish possible smoldering fires
Ensure all cutting and welding equipment is in satisfactory condition and good repair.	

Welding or Cutting Containers and Hollow Spaces

Do not weld, cut, or perform other hot work on used drums, barrels, tanks or other containers until you clean them.

- Clean them thoroughly to make certain there are no flammable materials present or any substances such as greases, tars, acids, or other materials which when subjected to heat, might produce flammable or toxic vapors.
- Disconnect or blanket any pipelines or connections to the drum or vessel.
- Vent all hollow spaces, cavities or containers to permit air or gases to escape before preheating, cutting or welding.
- Purge with inert gas.

Cutting Hazards and Precautions

Observe the following safety precautions when performing oxyacetylene cutting and plasma arc cutting:

- Never place hands or fingers between the metal plate and the bed.
- Never place hands under the hold-downs or knife.

- Ensure all personnel is clear from the piece being cut.
- Support the plate to avoid cut end of the metal to fall away.
- Ensure that the work area is gas-free when using oxyacetylene (high-pressure oxygen stream used in cutting with an oxyacetylene torch can throw molten metal for a distance of 50 to 60 feet).
- Always post a fire watch to protect the surrounding areas and personnel.
- Install all covers, insulators, and handles before attempting to operate the plasma arc cutting equipment.
- Open all primary disconnect switches before charging any electrical connections when using plasma arc cutting equipment.

Preventing Wounds and Burns

A *wound* could be a result of an electrical shock. Welders could accidentally suffer an electrical shock, which could cause a loss of balance resulting to minor to serious injuries.

The causes of burns are generally classified as thermal, electrical, chemical, or radiation. Whatever the cause, shock always results if the burns are extensive. The four types of common burns experienced by welders include:

- Thermal burns: caused by exposure to intense heat, such as fire, bomb flash, sunlight, hot liquids, hot solids, and hot gases. Care depends upon the severity of the burn and the percentage of the body area involved.
- Electrical burns: electric current passing through tissues or the superficial wound caused by electrical flash causes electrical burns. The entrance wound may be small; but as electricity penetrates the skin, it burns a large area below the surface. Usually, there are two external burn areas: one where the current enters the body and another where it leaves.
- Chemical burns: generally not caused by heat, but by the direct chemical destruction. When acids, alkalis come in contact with skin, they cause "chemical burns" usually affecting mouth, eyes and extremities. Alkali burns are usually more serious than acid burns because they penetrate longer.
- Radiation burns: result of prolonged exposure to ultraviolet rays. First- and second-degree burns may develop.

Preventing Fall

Fall protection is required for a welding operator to work on platforms, scaffolds, or runways at an elevation of more than 4 feet. Fall protection can be use of railings, safety belts, lifelines, or some other equally effective safeguards.

4.8.6 Personal Protective Equipment (PPEs)

Helmets and Face Shields.

Use helmets or face shields during all arc welding or arc cutting operations, excluding submerged arc welding. Provide proper eye protection to all helpers or attendants.

Goggles and Spectacles.

Use goggles or other suitable eye protection during all gas welding or oxygen cutting operations. It is okay to use spectacles without side shields, with suitable filter lenses, during gas welding operations on light work, for torch brazing or for inspection.

4.8.7 Key Points

- Hot works such as welding and cutting are among the construction activities that can cause fire and explosion because of the use of gas or electrically powered equipment, which produces flames, sparks, or heat.

- Because of the level of hazard, hot work requires inspection of the area and a written permit or authorization before work is allowed. This indicates the precautions to be followed to avoid fire or accidents.

- A fire watch is required whenever welding or cutting is performed in locations where other than a minor fire might develop, combustibles are present within 35 feet of operation.

- A suitable fire extinguishing equipment to be used by the qualified fire watch in cases where fire might develop. Fire watch must remain in the area 30 to 60 minutes after a hot work is performed.

4.9 Hazards in Road/Bridge Construction (DPWH Standards)

The Big Idea is "many accidents happen where road construction works are done. To help ensure safety of workers, motorists and the public guidelines, policies and procedures were issued for the contractors to comply."

4.9.1 Session Objectives

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

- identify hazards associated with road works,
- determine safe traffic management practices at roadwork sites, and
- recognize the appropriate use of various signs and devices used at roadwork sites.

4.9.2 Requirements

To improve the safety along the national road network of the country, the Department of Public Works and Highways (DPWH) issued orders related to construction safety and health:

DO No. 10, Series of 1978	"Safety of Personnel and Third Parties, Prevention of Accident Responsibilities"
DO No. 56, Series of 2005	"Guidelines for the Implementation of DOLE D. O. No. 13, Series of 1998, On Occupational Safety and Health in the Construction Industry"
DO No. 13, Series of 2008	"Guidelines in The Procurement and Installation of Road Safety Devices And Facilities"
DO No. 135, Series of 2015	"Strict Compliance to Road Works Safety & Traffic Management and Construction Safety & Health Requirements During Construction and Maintenance of Roads and Bridges"

DO No. 10, Series of 1978 - "Safety of Personnel and Third Parties, Prevention of Accident Responsibilities."

Contractor shall:

- be answerable for the safety, protection and security of personnel, third parties, public at large, persons or occupants of adjacent buildings/structures affected;
- provide, erect and maintain all necessary barricades, suitable and sufficient warning lights, effective danger signals and other signs;
- shall take all the precautions necessary for the protection of the works and the safety of personnel and the public;
- provide protection to roads closed to traffic and lighting to obstructions at night;
- provide appropriate signs to detours made conspicuous to motorists and public; and
- cover and provide all excavations and diggings with pedestrian footpaths made of precast concrete planks and/or bailey bridges.

DO No. 56, Series of 2005 - "Guidelines for the Implementation of DOLE D. O. No. 13, Series of 1998, On Occupational Safety and Health in the Construction Industry."

Issued by DPWH to set guidelines, rules and procedures to implement DO 13 of DOLE providing that:

- construction safety shall be considered in all stages of project procurement;
- cost of safety shall be integrated to the project cost under Pay Item "SPL-Construction Safety and Health" as a lump sum amount, to be quantified in the detailed estimate;

- every construction project shall have a suitable Construction Safety and Health Program (CSHP);
- general contractors provide a full time Officer, who shall be assigned as the General Construction Safety and Health Officer;
- a Safety Engineer shall be designated as part of project;
- provide medical and dental health service and personnel to every construction site;
- employers provide workers with PPEs for free;
- provide road construction signages and barricades, according to the Road Works Safety Manual;
- continuing construction safety and health training is provided to all technical personnel;
- constructors, consultants, and official found violating safety rules and regulations shall be meted sanctions depending on the gravity of offense and contractors constantly caught violating shall be recommended for blacklisting; and
- the amount corresponding to non- compliance sanctions is deducted from the contractor's billing.

Officials and staff of the implementing office found not implementing the requirements of the Construction Safety and Health Program and this Department Order shall be meted sanctions as follows:

Official	1st Offense	2nd Offense	3rd Offense	Succeding Offense
Head Implementing Office	Warning	1 week suspension	2 week suspension	1 mo. suspension
Project Manager, IO	Warning	2 week suspension	1 mo. suspension	2 mo. suspension
Project Engineer, IO	Warning	2 week suspension	1 mo. suspension	2 mo. suspension
Team Leader, Consultant	Warning	1 week suspension	2 week suspension	1 mo. suspension
Chief RE, Consultant	Warning	2 week suspension	1 mo. suspension	2 mo. suspension
RE, Consultant	Warning	2 week suspension	1 mo. suspension	2 mo. suspension
RE, Contractor	Warning	2 week suspension	1 mo. suspension	2 mo. suspension
Safety Man, Contractor	Warning	1 mo. suspension	2 mo. suspension	Termination
Contractor	Warning	1st warning	2nd warning	Blacklisting

DO No. 13, Series of 2008 - "Guidelines in The Procurement and Installation of Road Safety Devices and Facilities".

Issued to supplement Department Circular No. 09 Series of 2004 which prescribed the guidelines on the adoption and use of the road safety manuals.

The four (4) new manuals on road infrastructure safety are:

- Road Safety Audit Manual
- Road Works Safety Manual
- Highway Safety Design Standards Manual - Part 1: Road Safety Design Manual
- Highway Safety Design Standards Manual - Part 2: Road Signs and Pavement Markings Manual

4.9.3 Roadworks Safety Manual

A manual issued as official reference for defining temporary signing, traffic devices and traffic management for maintenance and construction works on roads and bridges - DO No. 135, Series of 2015 "Strict Compliance to Road Works Safety & Traffic Management and Construction Safety & Health Requirements During Construction and Maintenance of Roads and Bridges".

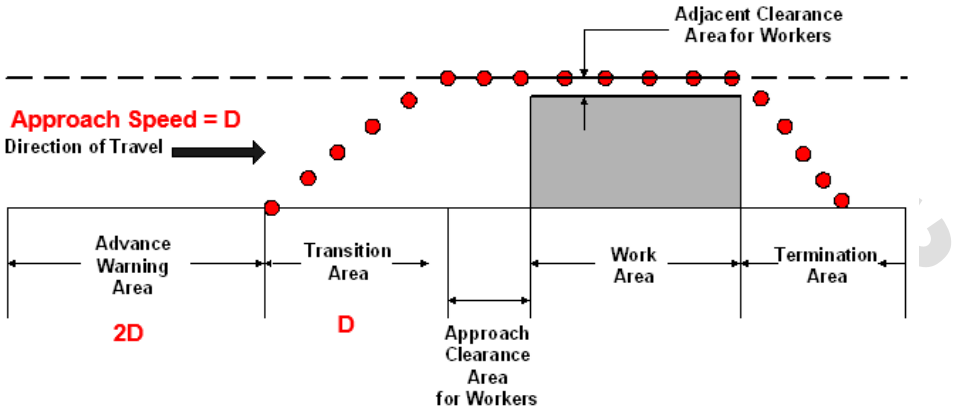
Responsibility of Supervisors and Workers in Road Works Safety

Supervisors	Workers
– Provide safe and convenient traveling conditions for road users – Provide safe working conditions for Personnel and Machinery – Ensure site personnel are aware of their responsibilities	– take care of their own safety. – keep a proper look out for danger – use the equipment provided – follow method of work – obey all lawful instructions – give proper attention to their work – wear protective clothing provided

4.9.4 Components of a Typical Road Works Site

- Advance Warning Area
- Transition Area
- Work Area
- Termination Area

The following illustration shows these components:

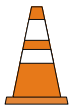


Advance Warning Area

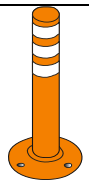
- The first advanced warning sign seen by drivers is generally 'ROADWORKS AHEAD.'
- First sign is located 2D meters before the work or start of taper - e.g. for 60 kph approach speed, the distance is 120 meters prior to the taper or works area.
- Spacing of other warning signs in the advance warning area is D meters. e.g. WORKMAN signs (Note: where visibility is good and there are more than two advance signs the spacing of signs may be reduced to a minimum of 0.5D)

Transition Area (Taper)

Devices used for forming the taper may be:

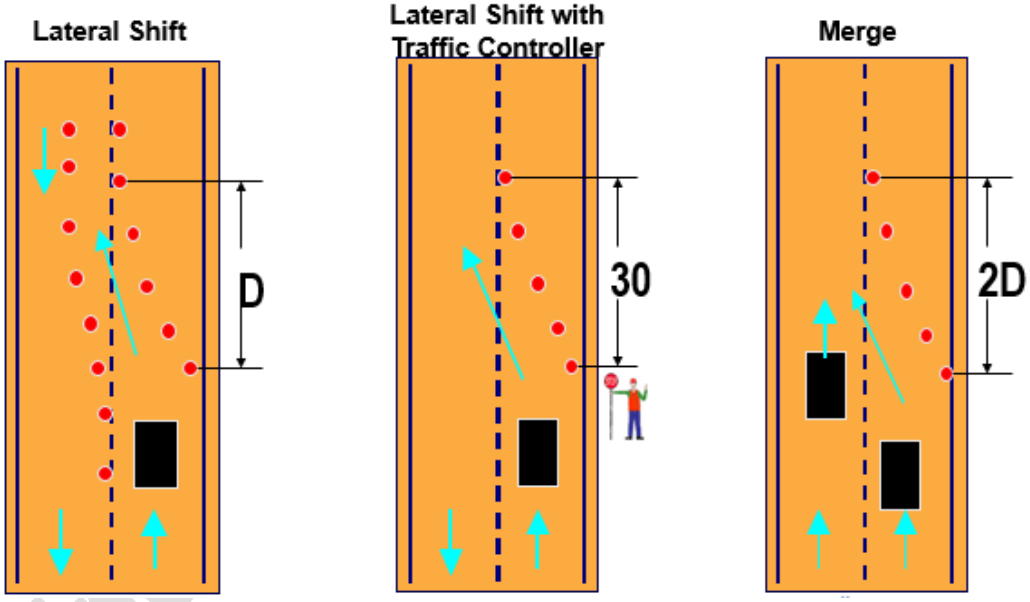
Temporary hazard markers	
Traffic cones	

The spacing for Traffic Cones or Bollards to create a taper should be 5 to 10 meters.

Temporary bollards	

Approach Clearance Area for Workers - generally 20 to 30 meters long. Longer if works are hidden from approaching traffic eg. by a crest or curve.

Adjacent Clearance Area for Workers - generally 1.2 meters wide.



Work Area

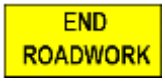
Signs and devices to prohibit access to the Work Area

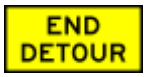
- Traffic Cones
- Temporary Bollards
- Concrete Barriers
- Water Filled Plastic Barriers
- Plastic Mesh or Tape

Termination Area

Signs and Devices used in the Termination Area

- Taper to allow normal flow of traffic
- END ROADWORK signs
- END DETOUR sign
- End Speed limit sign





4.9.5 Key Points

- Road works have unique hazards brought about by the nature of work being temporary, mobile, involves motorists and the public and use of different heavy equipment.

- The Department of Public Works and Highways (DPWH) aware of these hazards, issued a number of policies, guidelines and procedures to guide contractors and workers for the safety and health of workers, motorist and the exposed public.

- There are 4 manuals issued by DPWH to road infrastructure safety: 1) Road Safety Audit Manual, 2) Road Works Safety Manual, 3) Highway Safety Design Standards Manual - Part 1: Road Safety Design Manual; 4)Highway Safety Design Standards Manual - Part 2: Road Signs and Pavement Markings Manual.

- Understanding hazards in road projects and controlling them requires a good understanding of the 4 components of a Typical Road Work Site: 1) advance warning area, transition area, work area and termination area.

Session 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 Job Hazard Analysis (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.

5.3.1 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 in then 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.

5.3.2 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.

5.4.1 Step 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

5.4.2 Step 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 as to how many steps. The general guideline is not too broad to miss the basic steps and not too detailed to become unnecessarily long.
Example:

Task : Loading stocks to trailer	
Steps:	Hazard
4. Position trailer in loading dock	
5. Open trailer door	
6. Hygiene-check inside trailer	
7. So on and so forth	

5.4.3 Step 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

Example:

Task : Loading stocks to trailer	
Steps:	Hazard
1. Position trailer in loading dock	Spotter may be hit by the trailer; driver might fall during disembarking
2. Open trailer door	Door might bang head of the person opening the trailer door
3. Hygiene-check inside trailer	Person checking might fall
4. So on and so forth	So on and so forth

5.4.4 Step 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.

Example:

Task : Loading stocks to trailer		
Steps:	Hazard	Control
1. Position trailer in loading dock	Spotter may be hit by the trailer; driver might fall during disembarking	Spotter stay clear of the rear of the trailer. Use high visibility vest
2. Open trailer door	Door might bang head of the person opening the trailer door	Orient person in-charge before work. Use bump cap.
3. Hygiene-check inside trailer	Person checking might fall	Check for possible slip and trip hazards.
4. So on and so forth	So on and so forth	So on and so forth

5.4.5 Step 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.

5.4.6 Step 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. Position trailer in loading dock	Spotter may be hit by the trailer; driver might fall during disembarking	Spotter stay clear of the rear of the trailer. Use high visibility vest
2. Open trailer door	Door might bang head of the person opening the trailer door	Orient person in-charge before work. Use bump cap.
3. Hygiene-check inside trailer	Person checking might fall	Check for possible slip and trip hazards.
4. So on and so forth	So on and so forth	So on and so forth
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. So on and so forth . . .		
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.

Session 6 – Medical Screening and Surveillance

The Big Idea is "occupational and work-related illnesses have remained a major 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.

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

6.4 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.

6.5. 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 frontline 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.

Session 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 Stage 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.

Session 8 – 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.

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.

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

Safety inspections focus on compliance 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)

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 in areas being inspected is needed. Inspectors, therefore, need to conduct inspections in a manner that would not threaten workers. Good communication skill is the key.

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 of the area inspected 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.

8.6. 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.

8.7. 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.

Session 9 – Hazard Controls

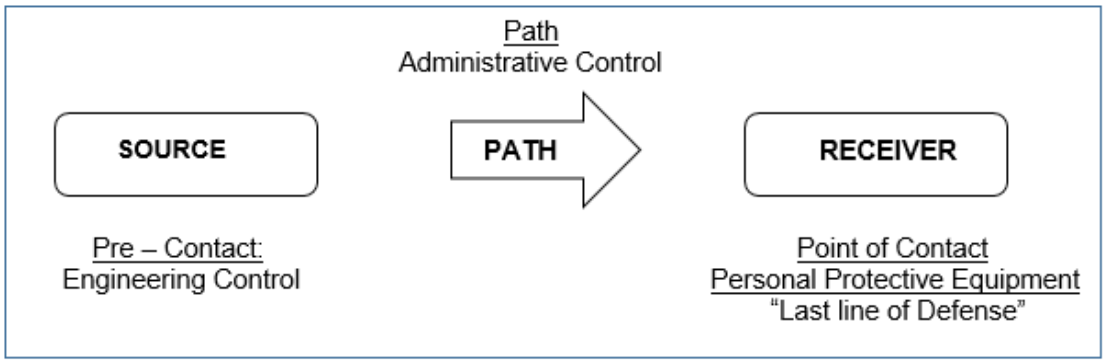
The Big Idea is "hazard exists in every workplace. After they are identified and assessed for risk, effective controls must be in place to help prevent accidents and illnesses."

9.1. Session Objectives

At the end of the session, participants are able to:
- explain the levels of controls to prevent injury and illness,
- 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).

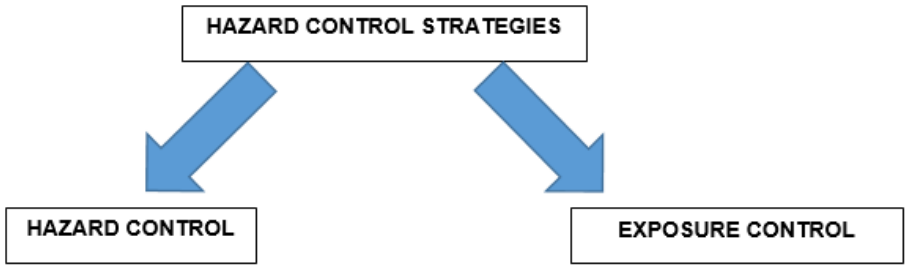
9.3. The Hierarchy of Controls

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).



9.4.1 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

9.4.2 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.

9.5.1 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.

9.5.2 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

9.6 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.

9.6.1 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.

9.6.2 When are PPEs 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.

9.6.3 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.

9.6.4 The Philippine Standard Requirement 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_Equipment.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

9.7. 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.

Session 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."

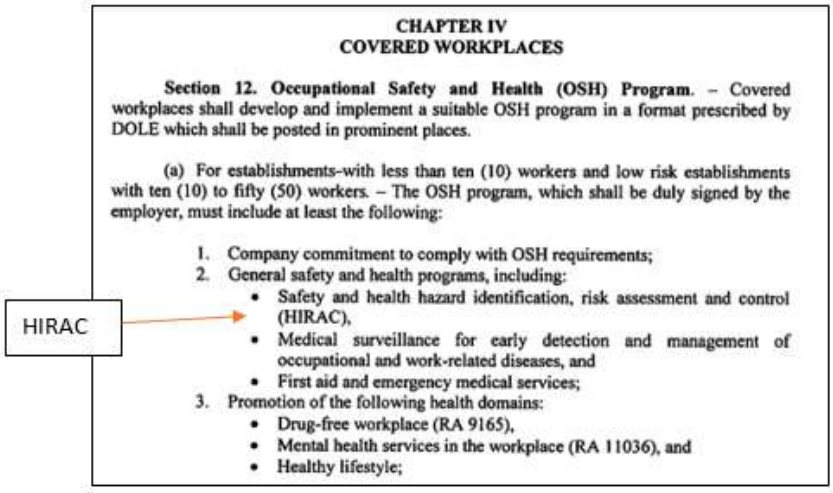
10.1. Session Objectives

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).



CHAPTER IV
COVERED WORKPLACES

Section 12. Occupational Safety and Health (OSH) Program. – Covered workplaces shall develop and implement a suitable OSH program in a format prescribed by DOLE which shall be posted in prominent places.

(a) For establishments with less than ten (10) workers and low risk establishments with ten (10) to fifty (50) workers. – The OSH program, which shall be duly signed by the employer, must include at least the following:

1. Company commitment to comply with OSH requirements;
2. General safety and health programs, including:
   - Safety and health hazard identification, risk assessment and control (HIRAC),
   - Medical surveillance for early detection and management of occupational and work-related diseases, and
   - First aid and emergency medical services;
3. Promotion of the following health domains:
   - Drug-free workplace (RA 9165),
   - Mental health services in the workplace (RA 11036), and
   - Healthy lifestyle;

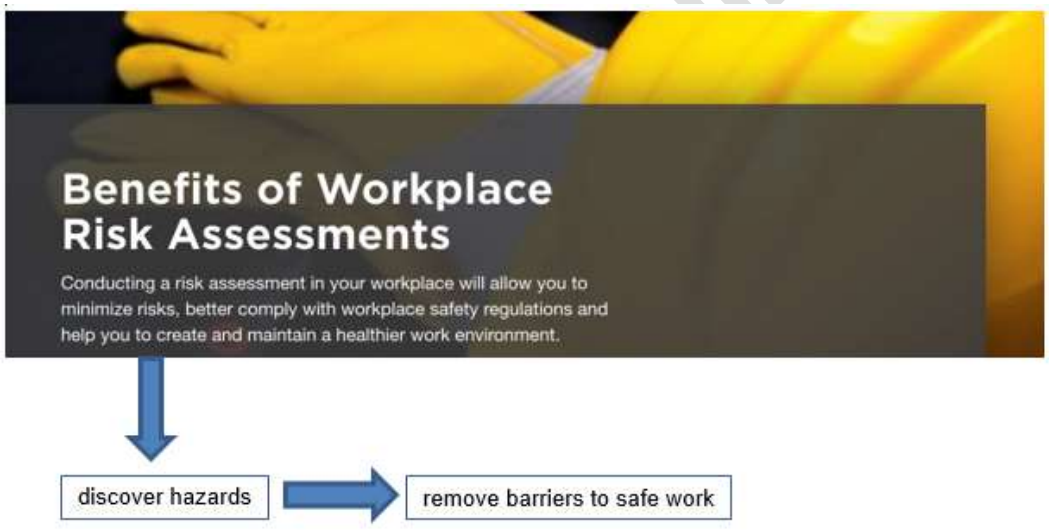
Labor Advisory 04-19 (Guide for Compliance of Establishments to DO 198-18 requires establishments to determine its own level of risk (whether low, medium or high) based on the Hazard Identification, Risk Assessment and Determination of Control (HIRADC) conducted by the company.

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:

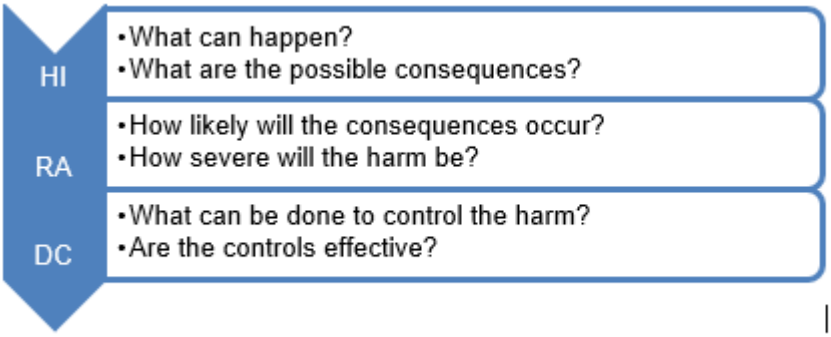
- help create awareness of hazards and risks;
- identify who may be at risk (e.g., employees, visitors, contractors, the public, etc.);
- determine whether a control program is required for a particular hazard;
- determine if existing control measures are adequate or if more should be done;
- determine 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?

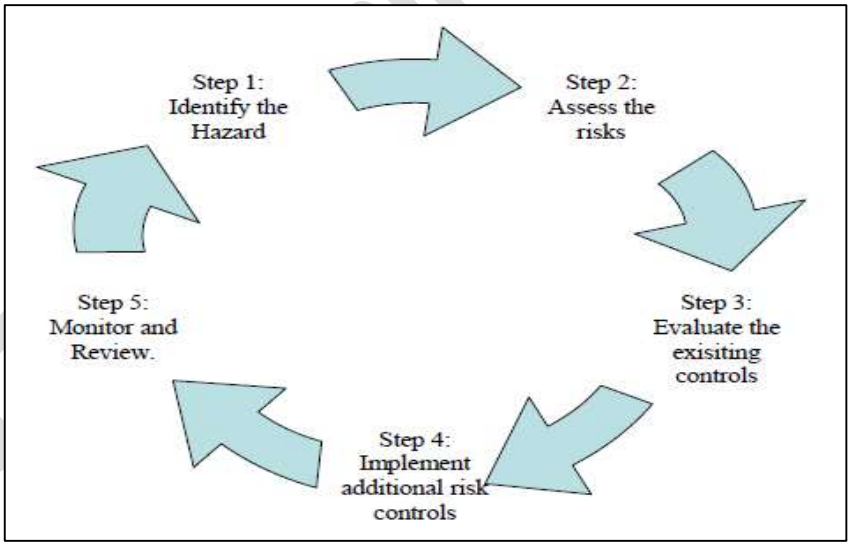
It is a tool used to identify hazards in the work area or in work activities, perform risk assessment, determine and implement controls and to monitor and review effectiveness of such controls. It is the heart of the occupational safety and health management system.

The goal is to seek answers to the following:



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

10.5. The HIRAC Process



10.5.1 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 bldg.

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

10.5.2 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 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. 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.

10.5.3 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.

10.5.4 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.

10.5.5 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.

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									

10.5. 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.

Session 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, and
- 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 – Earthquakes	– Chemical spills – Radiological accidents

– Hurricanes and tornadoes – Disease outbreaks – Fire – Toxic gas release	– Explosions – Civil disturbances – 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.*

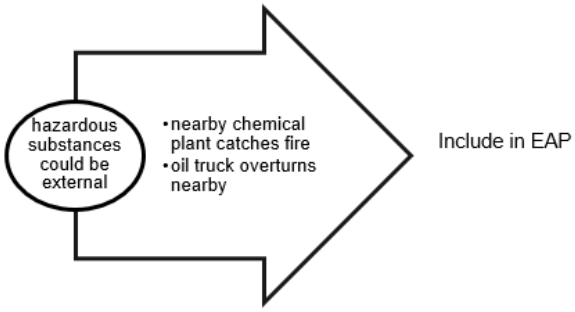
9. Emergency Medical Services
   - provide employees with written medical procedure to minimize confusion during medical emergency
   - if infirmary, clinic/hospital is far, ensure qualified first aider is available
   - first aid supplies must be available
   - transportation available for emergencies

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



11.7. 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.

Session 12 – Developing a Construction Safety and Health Program

The Big Idea is "it is necessary to effectively manage OSH issues and concerns in every construction project to achieve safety and health goals. OSH issues in the workplace cannot be managed without a well-written Safety and Health Program."

12.1. Session Objectives

At the end of the session, participants are able to:
- enumerate the requirements of the law regarding CSHP,
- articulate the value of CSHP, and
- explain the core elements of an CSHP.

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).

DO 13 Series of 1998, "the Guidelines Governing Occupational Safety and Health in the Construction Industry" requires that every construction project shall have a suitable Construction Safety and Health Program (CSHP) which must be:

- approved by the DOLE-Regional Office before the project starts, and
- complied by the Construction Manager or Project Engineer

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 construction 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 or as prescribed in the company's OSH program.

12.3.6. OSH Program Inclusions

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

**Red – applicable to medium to high risk establishments with 10 to 50 workers and low to high risk establishments with 51 workers and above.*

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	Composition and duties of OSH Committee
6	OSH personnel and facilities
7	Safety and Health Promotion, Training and Education - Orientation for all workers - Conduct of risk assessment, evaluation and control - Continuing training on OSH for OSH personnel - Work permit system
8	Toolbox/Safety Meetings, Job Safety Analysis
9	Accident/Incident/Illness Investigation, Recording and Reporting
10	Personal Protective Equipment (PPE)
11	Safety Signages
12	Dust control and management, regulation on activities such as building of temporary structures and lifting and operation of electrical, mechanical, communication systems and other requirements
13	Welfare facilities
14	Emergency and disaster preparedness and response plan to include the organization and creation of disaster control groups, business continuity plan and updating the hazard, risk and vulnerability assessment (as required)
15	Solid waste management system
16	Compliance with reportorial government requirement (refer to item 9.0)

17	Control and management of hazards (refer to item 2 – HIRAC)
18	Prohibited acts and penalties of violations
19	Cost of implementing OSH program

12.3.7. 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 of the OSH program. Once weaknesses are identified and corrective actions are implemented continuous improvement of the OSH Program is assured.

12.5. Key Points

- CSHP shall be developed and implemented at every construction project to reduce incidence of injuries and illnesses, improve employee morale and productivity and reduce workers' compensation costs.
- A written CSHP program containing the minimum core elements is a requirement of the law to all covered establishments. Non-compliance of this requirement carries a penalty of P40,000 per day until complied.
- Compliance for CSHP is the responsibility of the Construction Manager or the Project Engineer.
- Minimum core elements of CSHP 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.
- CSHP should be approved by the DOLE-Regional Office where the project is located before start of any construction project.

Session 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. Requirement: Rule 1050 Notification and Keeping of Records of Accidents/Illnesses

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/BWC/HSD-IP-6.

- 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.

13.6.1 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.

13.6.2 Analyze

Incidents/accidents are usually analysed 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.

13.6.3 Make Recommendation

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 behaviour or unsafe conditions.

Correcting unsafe behaviour 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.

13.6.4 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.

Session 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)	DOLE-BFQ-WAIR (newly revised with reference coding list) WAIR COVID-19 WAIR A WAIR B
Annual Exposure Data Report (AEDR)	January 30
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	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
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.

Session 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
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 Carer'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. 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 worker was absent for work	Remarks
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

- Efforts to prevent accidents and illness in the workplace is not a hundred percent guarantee that accidents and illnesses would not happen.
- 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.
- 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.
- 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.
- Prevention is still the priority option over compensation.

Session 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
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.

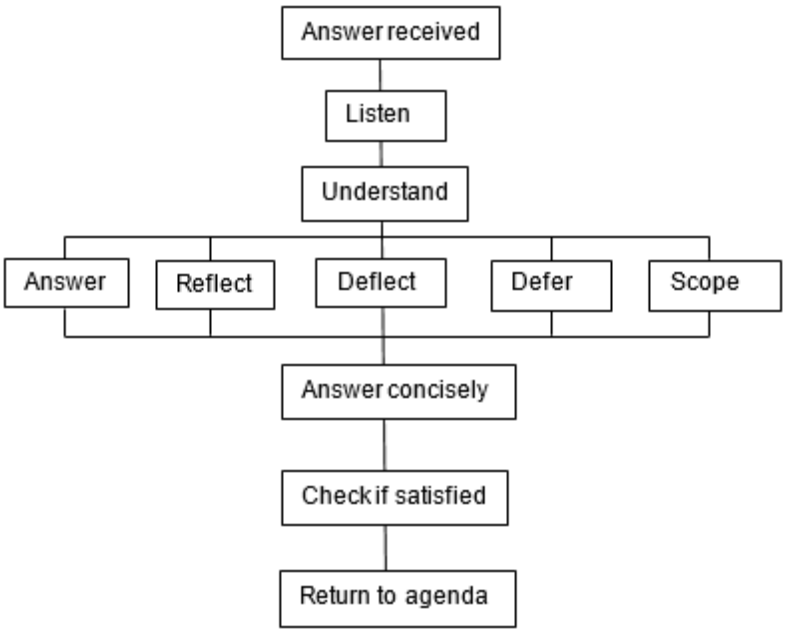
Involve the audience
- Remember that even though a speaker is responding to a question of one person, the rest of the audience must hear and understand.
- This can be done by done by repeating or paraphrasing.

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.

Session 17 – Conducting Effective Toolbox Meetings

The Big Idea is "regular conduct of brief safety meetings among workers are encouraged in every construction site 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

DOLE Department Order No. 13 – Section 12.5 requires supervisors or any designated persons (e.g. foreman, leadman, gangboss, etc.) to conduct daily tool box or similar meetings prior to starting the tasks for the day to discuss with the workers and anticipate safety and health problems related to every task and the potential solutions to those problems.

The supervisor shall remind the workers on the necessary safety precautions that need to be undertaken.

17.3. Toolbox Meetings or Safety Talks

"Tool box meeting or gang meeting" refers to daily meeting among workers and their respective supervisors for the purpose of instruction, discussion and proper briefing on the planned work, the assessment of past work, the possibility or actual occurrence of accidents at the site, tips and suggestions on how to prevent possible accidents and other related matters (DO13, Section 1 (y)).

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;
- pre-work planning to remind employees of safe work procedures;
- reminding workers of their duties and responsibilities; and
- updated record of hazards and action plan

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.

DO 13 requires the daily conduct of Toolbox Meetings in the construction site premises before the start of the daily work to inform workers about changes to the jobsite and working conditions that may have occurred since their last shift (Jones, 2018).The regular and frequent conduct of these meeting helps 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:

- dos and don'ts in accessing scaffolding
- avoiding overhead electrical hazards
- avoiding falling hazards when working in excavations
- lifting safety
- lockout-tagout awareness
- construction site safety

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 Talk 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 sure 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

- While Toolbox Meetings are commonly-accepted best practice in construction job sites to sustain safety awareness among workers and strengthen safety culture, it is also a requirement of the law.
- 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 an 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.

Session 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.

Session 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

DPWH, on the other hand, on May 4, 2020 issued DO#35 "Construction Safety Guidelines for the Implementation of Infrastructure Projects during the COVID-19 Public Health Crisis" for the guidance of all construction projects.

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.

19.4.1 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.

19.4.2 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

19.4.3 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

19.4.4 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

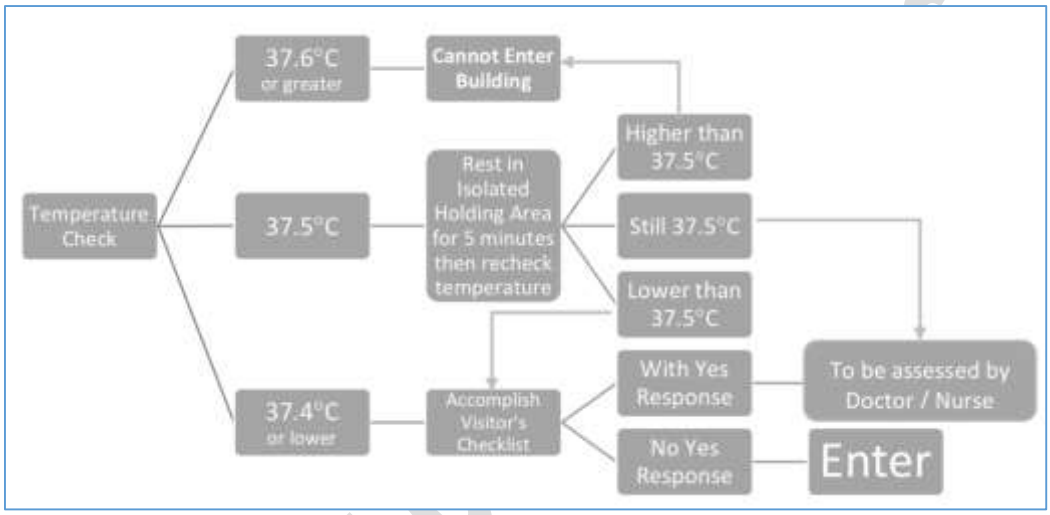
- Comply with all workplace measures
- Observe proper respiratory etiquette (coughing and sneezing)
- Dispose used tissues properly
- Disclose health conditions to employers

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: (*nakakaramdam ka ba ng:*)	a. Sore throat (*pananakit ng lalamunan / masakit lamunan*)	☐	☐
	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 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 naglyahe 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 naggiwera 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: _____

Sample visitor checklist.

19.6. Covid - 19 Construction Guidelines by DPWH

Construction Safety Guidelines for the Implementation of Infrastructure Projects During the Covid-19 Public Health Crisis

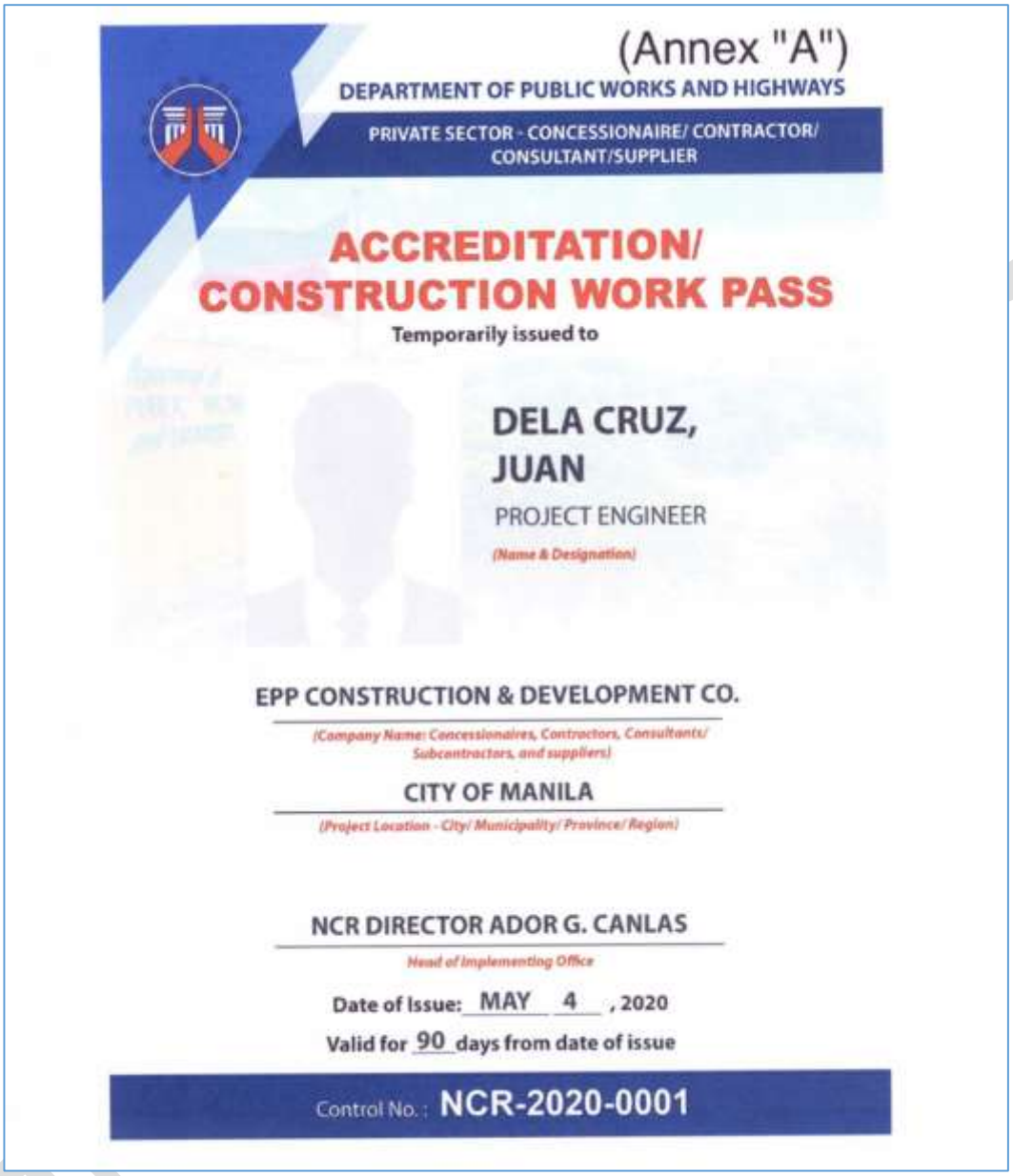
Prior to Deployment	
1	Only persons from 21 to 59 years of age, without pre-existing health conditions, such as, but not limited to, immunodeficiency comorbidities, or other health risks, including any person who resides with the aforementioned; and who did not come into contact with someone with COVID-19 shall be allowed to be included in the workforce.
2	Construction personnel shall be required to undergo COVID-19 test, as may be prescribed by the Department of Health, and retested as the need arises. In this regard, consultation with medical doctors prior to the conduct of the COVID-19 test shall be made.
3	The head of the concerned implementing office shall issue construction quarantine pass to the individual qualified personnel of the concessionaires, contractors, subcontractors, and suppliers, clearly stating the identification,

	designation, nature of work, validity, and destination. It is understood that the quarantine pass shall cover the transit of personnel.
4	The concessionaires, contractors, subcontractors, and suppliers shall provide for their personnel/workers the necessary welfare facilities and amenities, such as employees' quarters for board and lodging, ensuring compliance to social distancing, proper hygiene, etc.
5	Contractors shall ensure that their projects are in compliance with DOLE D.O. No. 13 series of 1998. Contractors shall provide their personnel and workers continuous supply of vitamins, particularly vitamin C, other over-the-counter medicines, quarantine facilities, and oxygen tanks for emergency purposes.
6	Proper information dissemination regarding COVID-19 construction protocols on top of existing construction safety practices shall be conducted by safety officers to all personnel.
7	For government construction projects, personal records of all personnel necessary for contact tracing shall be submitted by the concessionaires, contractors, subcontractors, and suppliers to the DPWH IO and shall be resubmitted and updated monthly, or as the need arises

During Deployment	
1	Conduct an inventory of works for construction sequencing to be followed and undertaken to maintain social distancing.
2	Break time shall be conducted on a staggered manner.
3	Employees should be in their respective quarters for the entire duration of the project covered by the ECQ and GCQ. Otherwise, "prior to deployment procedures shall be conducted at every instance of re-entry.
4	Errands outside the construction premises shall be kept at the minimum. Number of personnel running errands shall be limited, properly disinfected and closely monitored for symptoms within 14 days upon entry.
5	Field offices, employees' quarters and other common areas shall be regularly disinfected.
6	Concessionaires, contractors, subcontractors, and suppliers shall provide in-house personnel with adequate food, safe/potable drinking water, disinfectants and hand soaps.

Daily Monitoring	
1	Personnel with symptoms relative to Covid-19 shall be quarantined for 14 days, and brought to the nearest DOH Covid-19 treatment facility, if necessary.
2	Work activities shall be strictly monitored by the Safety Officer to ensure compliance to safety standards and quarantine protocols.

3	For government construction projects, DPWH Engineers on site shall ensure strict compliance to wearing of additional Personal Protective Equipment (PPEs).
4	Contractors of essential private construction projects under GCQ shall assign a **Safety Officer** to ensure the implementation of social distancing measures.
5	For off-site employees: quarters and transport service will be provided and disinfected regularly, before and after use.
6	Sharing of construction and office equipment is discouraged. However, if necessary, the shared equipment must be disinfected in between transfer among personnel.
7	All material and equipment delivery and disposal shall be conducted by a specific team of personnel on an isolated loading/unloading zone, and shall be duly disinfected, as possible.
8	Non-essential personnel will not be allowed to enter the construction site, employees' quarters, and field offices.
9	All personnel entering the site premises on a temporary basis shall be properly logged and checked for symptoms. (provide telephone number)
10	Gatherings, liquors, and/or merry-making are strictly prohibited within the construction site premises.
11	Clustered and staggered deployment of employees within the construction site will be observed.
12	Proper waste disposal shall be provided for infectious waste such as PPEs and other waste products coming from outside the construction premises.



(Annex "A")

DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

PRIVATE SECTOR - CONCESSIONAIRE/ CONTRACTOR/ CONSULTANT/SUPPLIER

ACCREDITATION/ CONSTRUCTION WORK PASS

Temporarily issued to

DELA CRUZ, JUAN

PROJECT ENGINEER

(Name & Designation)

EPP CONSTRUCTION & DEVELOPMENT CO.

(Company Name: Concessionaires, Contractors, Consultants/ Subcontractors, and suppliers)

CITY OF MANILA

(Project Location - City/ Municipality/ Province/ Region)

NCR DIRECTOR ADOR G. CANLAS

Head of Implementing Office

Date of Issue: MAY 4 , 2020

Valid for 90 days from date of issue

Control No. : NCR-2020-0001

DPWH ACCREDITATION

PRIVATE SECTOR - CONCESSIONAIRE/ CONTRACTOR/
CONSULTANT/SUPPLIER

_____

(Name of Project)

On the basis of the present situation, bearer must observe physical distancing in the workplace and follow existing Construction Safety Guidelines for the Implementation of Infrastructure Projects During the COVID-19 Public Health Crisis for workers of DPWH and private entities.

This work pass is deemed revoked or cancelled if not used according to its purpose.

IMPORTANT:

Upon inspection at workplace, present this ACCREDITATION I.D. together with your valid company I.D.

For further verification, please contact :

_____

(# of Issuing Office)

(ANNEX "B")

DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
<IMPLEMENTING OFFICE>
<ADDRESS>

Name of Project : ______________________________

Location: ______________________________
General Contractor: ______________________________
Sub-Contractor : ______________________________

WORKER'S RECORD LOG

No.	Name	Age	Sex	Address	Location of Origin Prior to Site Deployment	Mode of Transportation	Contact No.	Had any COVID-19 SYMPTOMS (Y / N)	Signature

(Annex "C")

DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
<IMPLEMENTING OFFICE>
<Address>

DAILY COVID-19 SURVEILLANCE FILL-UP/CHECKLIST FORM

Pangalan:	Petsa:
Edad: Kasarian:	Telepono:
Lugar ng Tirahan:	Trabaho:
Lugar ng Trabaho:	
Kontraktor:	

FEVER	RESPIRATORY INFECTION
≥38°C ____ Oo *(Yes)* ____ Hindi *(No)*	Presensya ng mga sumusunod *(Presence of the following)*: ____ Ubo *(Cough)* (productive or non-productive cough ____ Igsi ng paghinga *(Shortness of breath)* ____ Sipon *(Colds)* ____ Namamagang lalamunan *(Sore throat)* ____ Tumutulong sipon *(Runny Nose)* ____ Naninikip na ilong *(Nasal Congestion)* ____ Nananakit na kalamnan *(Muscle Pains)* ____ Sakit ng ulo *(Headache)* ____ Hirap sa paghinga *(Difficulty of Breathing)* ____ Pagtatae *(Diarrhea)* ____ Pagkawala ng pang-amoy *(Loss of Sense of Smell)* ____ Pagkawala ng panlasa *(Loss of Sense of Taste)* ____ WALA *(NONE)* Kung mayroong presenya ng mga nasa taas, simula kailan. *(If identified with presence of the above, since when)?* _____

Pagpapahayag: Ang mga impormasyon na aking ibinigay dito ay totoo, tama at kumpleto. Aking na-iintindihan na ang hindi pagsagot sa mga katanungan o ang maling sagot ay maaaring may seryosong kinahihinatnan. (Article 171, & 172 of the Revised Penal Code of the Philippines and Republic Act No. 11332.)

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PIRMA SA TAAS NG NAKALIMBAG NA PANGALAN

20. 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.

- DPWH, on the other hand, also issued additional guideline to ensure COVID-19 protection and control in construction project sites.

- Employers provide the policies and resources, the workers comply with social distancing, practice proper hygiene and respiratory etiquette and other public health protocols.

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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).