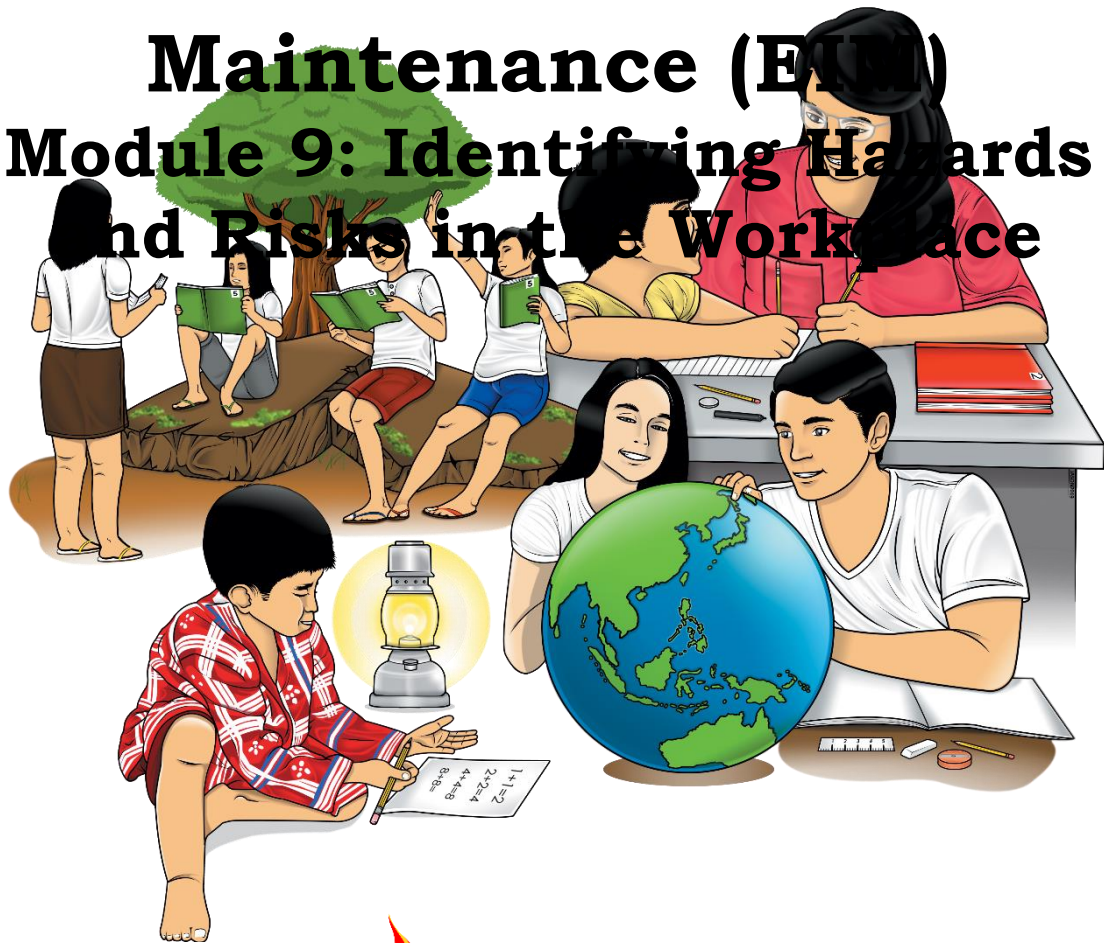


Technology and Livelihood Education

Exploratory Course

Electrical Installation and Maintenance (EIM)

Module 9: Identifying Hazards and Risks in the Workplace



TLE – EIM Grade 7/8
Alternative Delivery Mode (ADM)
Module 9: Identifying Hazards and Risks
First Edition, 2020

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7/8

**Technology and
Livelihood Education**

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**Module 9: Identifying Hazards
and Risks in the Workplace**

Introductory Message

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.



What I Need to Know

Congratulations! You are doing well until today. Your knowledge about electricity is handful. There were a lot of new things you discovered and developed as you journey in different lessons. Notably, you will be working with tools, equipment, and materials that might have an ill effect in your safety in the workplace and might affect your health condition.

After going through this module, you are expected to list down the different electrical hazards and risk found in the workplace. **(TLE_IAE17/SOS-Oh-1)**



What I Know

Activity 1. Know Disaster, No Disaster

Directions: Read and answer the questions. Choose the letter of the correct answer in each item and write it in your activity sheet.

- Which of the following does NOT produce hazards?
 - Messy workplace
 - Fumes
 - Noisy workshop
 - Good ambiance working environment
- Which of these situations cause defect in wiring connections?
 - Wire splices
 - series circuit
 - faulty wiring
 - parallel circuit
- Which of these situations is mostly in consideration when, grinding and cutting metals using disc cutting machine?
 - extreme heat
 - wet condition
 - constantly loud noise
 - conducive workplace
- Which of the following may happen when accidents like falling or sliding in the workplace?
 - extreme heat
 - wet floor
 - loud noise
 - traffic Signs
- Which kind of a workplace would you prefer?
 - hazard free
 - organized work place
 - electric shock and burns
 - messy place
- Which situation is hazard free?
 - Risk
 - Harm
 - Hazard
 - safe work practice
- Which of the following teams assess relevant issues in hazards and risks at the workplace?
 - bureau of fire team
 - risk assessment team
 - electricians' team
 - employees' team

8. Which is a result when a damage in a wire insulation occurs?
 - A. electric shock and burns
 - B. chemical hazard
 - C. radiation
 - D. high voltage
9. Which of the following does NOT relate to hazards?
 - A. Survey the workplace to identify hazard.
 - B. Observe the working condition.
 - C. Determine whether any hazard requires PPE.
 - D. Check the condition of tools and sometimes the machine.
10. Identified hazardous condition in workplace must be written and must be available to everyone _____.
 - A. sometimes
 - B. schedule time
 - C. all the time
 - D. from time to time
11. Which among the requirements should be considered in conducting or identifying hazards and risks in an electrical shop?
 - A. injury
 - B. overheard power line
 - C. chemical
 - D. safety
12. Which among of the requirements below is needed in conducting or identifying hazards in the workplace?
 - A. survey checklist to everyone
 - B. survey checklist to office
 - C. survey checklist to teacher
 - D. survey checklist to workplace
13. In Occupational Health Safety (OHS), common ways to classify hazards by category, EXCEPT:
 - A. ergonomic
 - B. safety
 - C. physical
 - D. toxic materials
14. Which of the following is possible effect or harm caused by potential hazard in the workplace?
 - A. condition of workplace
 - B. behavior
 - C. source of energy
 - D. conducive workplace
15. Which classification of hazard categories has the ability to cause radiation, magnetic fields?
 - A. Physical hazard
 - B. Biological hazard
 - C. Chemical hazard
 - D. Ergonomic hazard

Did you answer all the test items? Very Good! You are now ready to proceed to Lesson 1 of this module.

Lesson

1

Hazards and Risks in the Workplace

Danger is everywhere. It can happen anytime. You might not be safe while standing on the roadside, on your way going home or while cooking your family's dish and other activities you may undertake. While doing your errands in the workplace or shop, or performing electrical works, hazards and risks are possible.

In avoiding them, you have to identify such hazards and risks. Learn more because on top of every endeavor, your safety is a priority.



What's In

Your journey is on! Every day, you meet new friends. As days pass you know each other better. Just as being in a workshop, you are much aware of the place, the tools and equipment, the electric sources and other concerns because these things matter when we talk about your safety. You may be exposed to hazards and risks!

Now, let us have a review.

Activity 2: DO I KNOW YOU?

Directions: Match the items in Column A with the functions/ issues in Column B. Write the letter of the correct answer on your activity sheet.

- | | |
|--------------------------------|---|
| _____1. Gasoline | a. materials used to wash dust in the floor, wall, etc. |
| _____2. detergent soap & water | b. cleans work place by using brooms, feather dust |
| _____3. Water | c. washes greasy tools/equipment |
| _____4. Kerosene | d. eliminates unnecessary items |
| _____5. Sorting | e. removes dust, grease, oil, etc. |
| _____6. Sanitizing | f. washes/cleans table, chairs, etc. |
| _____7. Sweeping | g. high standard of cleaning |



Notes to the Teacher

Remind the learners of the hazards and risks they will encounter when dealing with electricity while in the workshop. Emphasize to them the importance of following the safety practices before dealing in any electrical work. Make them understand that hazards and risks pose harm and may inflict adverse health and physical damage to themselves or others. It is imperative to remind them to learn this lesson by heart.



What's New

You are excited when you meet somebody for the first time. Aren't you? Now, you will learn new lessons in life as a protégée in electricity.

Activity 3 – Reading is Fun!

Directions: Read the article below and answer the questions in your activity sheet.

One Dead, Six hurt in Valenzuela Construction Site Accident

One worker died and six others were hurt after a metallic round bar they were trying to attach to a wooden structure in a construction site hit a high-voltage transmission wire late Monday afternoon in Valenzuela City.

Police named the victim as Larry Ortega, 23, of Quezon province. Those injured were identified as Jonathan Valenzuela, Jimmy Monares , Charlito Mepieza , Marlon Asidillo, Basilio Sedorio and Noli Patag.

The six are now confined at Valenzuela Medical Center, said Police Officer 3 Dalton Rodriguez, case investigator. The accident happened at Cowloon Compound in Tatalon, Barangay Ugong.

According to the police report, the contact between the high-voltage wire and the metallic bar sent electric shocks to six workers who were holding the bar.

Upon seeing this, Ortega rushed to help Valenzuela, the person nearest him, but he was electrocuted in the process.

Fellow construction workers managed to take the victims to the hospital, but Ortega was declared dead on arrival, Rodriguez said.

“Of the victims, only Ortega’s body did not release the electric currents trapped inside. That’s why he died, when you got electrocuted. Your body has to

release the currents,” he explained. Work in the area resumed after what the police official called was an “unfortunate industrial accident.”

Senior Police Officer 3 Jess Sagisi, senior investigator, said that the other six who remain confined in the hospital were already in stable condition.

Source: Kristine Felisse Mangunay, “1 dead, 6 hurt in Valenzuela construction site accident,” *Philippine Daily Inquirer*, December 7, 2011.

Questions:

1. What caused the accident? Why did it happen?

2. Why was Ortega the only fatality?

3. In your opinion, how could these workers probably avoid the accident?

Lesson

2

Hazards and Risks in Workplace



What is It

Safety is always our priority. It is imperative that we take cautions in everything we do because it involves your well-being and life, you have to focus on this lesson well and learn it by heart. Let's bring it on.

Hazard and Risk

According to Occupational Health and Safety (OHS), a regulating body concerned in the program that leads to welfare of people engaged in the workplace. There are many definitions of hazard but the most common definition when talking about workplace health and safety is concern.

Terminologies:

Hazard- any source of potential damage or harm.

Risk- the chance or probability that a person will be harmed or experience adverse health effect if exposed to hazard.

Harm – physical injury or damage to health or wellbeing.

Working Conditions That Can Produce Hazards and Risks

There are working conditions that can produce hazards and risks which are inevitable when tools, and equipment are used. Some of these hazards and risks include the following:

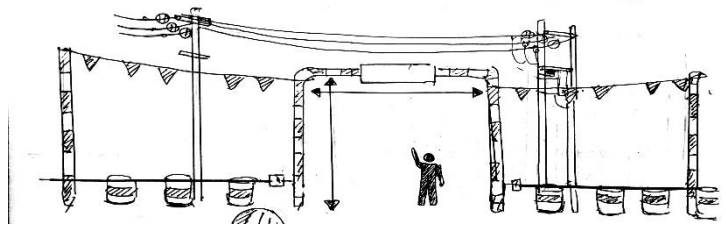
1. Contact with flammable or explosive materials;
2. Toxic chemical hazard;
3. Constantly exposed to loud noise;
4. Extreme heat and radiation;
5. Electric shock and burns due to faulty wiring;
6. Wet conditions;
7. Damage wire insulation which exposes live wires;
8. Inadequate wiring connection and wire frayed;
9. Messy workplace; and
10. Physical stress.

There are requirements to consider in conducting or identifying hazards. You should know the following requirements.

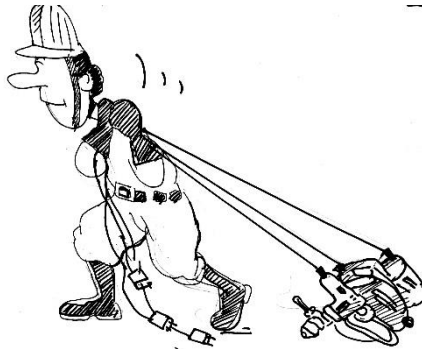
1. Survey the workplace to identify hazards. The survey must be written and must be available to all workers.
2. Determine whether any hazard requires Personal Protective Equipment.
3. Observe the working conditions or working area that can produce hazards
4. Check the condition of tools and equipment before and after use.
6. Read service manual and data of power tools, equipment, and machines before using especially new one.
7. Write the identified hazardous condition in workplace which should be available to everyone all the time.

These are the requirements to consider in conducting or identifying hazards and risks in electrical shop:

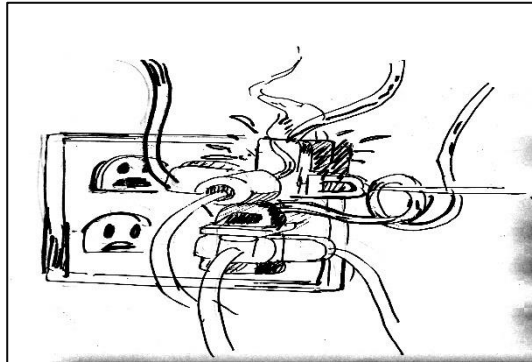
1. Overhead power lines



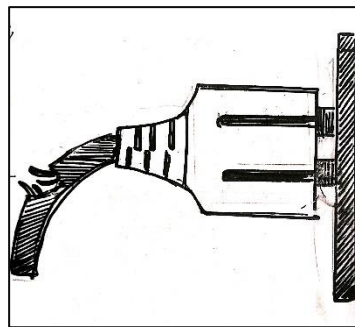
2. Damage tools and equipment



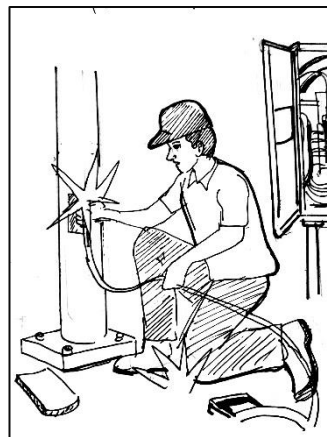
3. Inadequate wiring and overloaded circuits



4. Exposed electrical parts



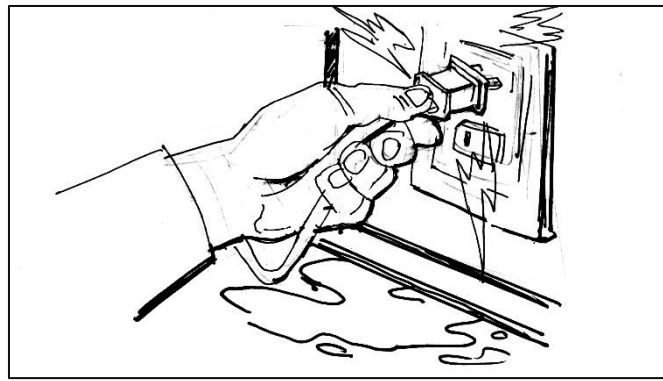
5. Improper grounding



6. Damaged insulation



7. Wet condition



Preventing and removing hazards are not only necessary for everyone's safety. It's also the legal responsibility under the guidelines set by the Occupational Safety Health Administration (OSHA). In general, it is a requirement to the employer in providing a workplace that is free from hazard that causes serious physical injury resulting to death or damage to properties

According to Occupational Health and Safety (OHS), the common ways to classify hazards by category are:

1. Biological - bacteria, viruses, insects, plants, birds, animals, human & etc.



2. Chemical – depends on the physical, chemical & toxic properties of chemicals



3. Ergonomic – repetitive movements, improper set up of workstation, etc.



4. Physical – radiation, magnetic fields, pressure extremes, noise, etc.



5. Psychological – stress, violence, bullying, etc.



6. Safety- slipping/tripping hazards, inappropriate machine, malfunction equipment, etc.



Effects of Health Hazards and Occupational Risks

Hazards and risks if not identified and controlled may result to the following effects:

1. Injuries;



2. Disability;



3. Breathing problems;



4. Skin irritation;



5. Burn;



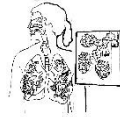
6. Hearing problems or damages;



7. Stress;



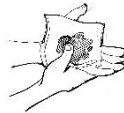
8. Respiratory system irritation;



9. Bone fractures;



10. Wound, etc.



What's More

Activity 4 – IN or OUT

Let us do some applications in your new learnings. You will be asked to decide on situations and circumstances in your workplace. BE SAFE!

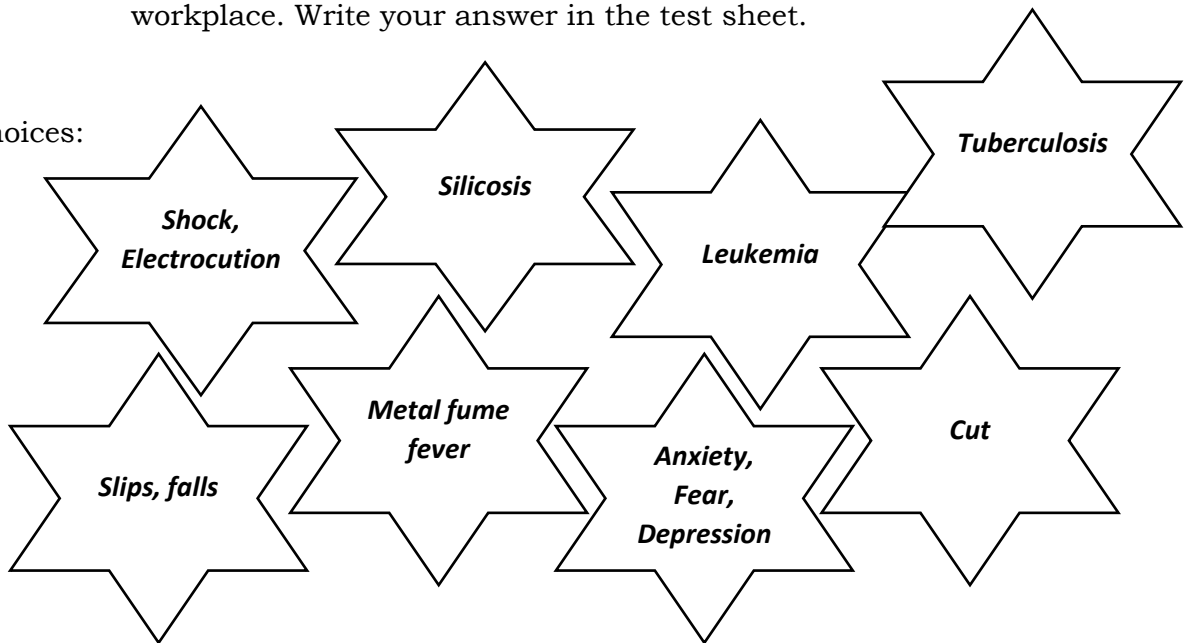
Direction: Check (✓) if it belongs to hazards and risks and cross-out (X) if it does NOT. Write your answer on your activity sheet.

- _____ 1. Conducive workplace
- _____ 2. Bacteria
- _____ 3. Bullying/stress
- _____ 4. Organized workplace
- _____ 5. Non-toxic properties
- _____ 6. Constant noise
- _____ 7. Extreme heat
- _____ 8. Repetitive routine
- _____ 9. Defective tools and equipment
- _____ 10. Messy workplace

Activity 5 – Filling up the table:

Direction: Choose the possible effects or harm caused by potential hazards in the workplace. Write your answer in the test sheet.

Choices:



Workplace Hazard	Hazard	Harm Caused
Thing	Electrician Knife	1. _____
Substance	Benzene	2. _____
Material	Mycobacterium tuberculosis	3. _____
Source of energy	Electricity	4. _____
Condition	Wet workplace	5. _____
Process	Welding/Acetylene	6. _____
Practice	Hard rock mining	7. _____
Behavior	Bullying	8. _____



What I Have Learned

Cheers! You enjoy life today because you are safe. You learned things that you truly deserved while you progress to learn this by heart; you also become responsible to the life of the person near you.

Let's review things you cover on this lesson

Activity 6. A, B, C...

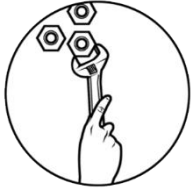
Direction: Complete the sentences below to show your understanding about the topic in this module. Answer this on your activity sheet.

1. I have learned possible hazards and risks in the electrical workplace, these are:

2. Hazards and risks if not controlled may result to:

3. There are common ways to classify hazards according to OHS. These are categorized as:

Nice job! This time, let us see if you are ready to apply what you have learned. Enjoy the activities store for you.



What I Can Do

Your life is precious, as much as others with you. Keeping in mind these values, you will continue doing electrical jobs with good health and being productive at the same time. When you are successful in a task you enjoy the product of your labor. Hence, take instances in real life situations and transfer your knowledge by making right decisions. Go ahead.

Activity 7 -Write and Tell

Directions: Identify at least five possible hazards at home. Write your answers on a Manila paper or Cartolina provided to you by your teacher.

<i>Workplace Hazard (Home)</i>	<i>Hazards</i>	<i>Risks / Harm Caused</i>
1.		
2.		
3.		
4.		
5.		



Assessment

Congratulations! You are doing well. At this point of your module, take this test to master your learning.

Activity 8. REFRESH!

Directions: Multiple Choice: Select the best answer. Write the letter only on your activity sheet.

- Which of the following working conditions below serves as one of the possible occurrence of hazards that harm anyone in the electrical shop?
 - constant loud noise
 - organized work place
 - dry and cool environment
 - good ambiance
- Which of the following working conditions below does NOT produce hazards?
 - messy workplace
 - fumes
 - noisy workshop
 - good ambiance
- Which of the hazard and risks may cause serious physical injury and damage?
 - good tool condition
 - proper insulation
 - partially damaged machine
 - new wire stripper
- Which of the hazard and risks in an electrical shop may cause shocks, burns or serious physical damage?
 - toxic chemicals
 - exposed live wire
 - wet condition
 - proper insulation
- Which common type of hazards is caused by bacteria, viruses, insects, plants, bird, animals or human?
 - Chemical
 - Physical
 - Biological
 - Ergonomic
- Which of the requirements are to be considered in conducting or identifying hazards and risks in electrical shops?
 - Overhead power lines
 - adequate wiring
 - proper insulation
 - covered electrical part
- Which is considered as one of common ways to classify hazard by category according to Occupational Health Safety (OHS)?
 - bacteria
 - repetitive movement
 - bullying
 - Physical
- Which of the following described by ergonomic as one of the common hazards that harm workers?
 - stress
 - repetitive movement
 - bullying
 - Physical
- Which effect in the body may happen if hazards and risks in the workplace is not identified?
 - relief injuries
 - skin protection
 - hearing aid
 - disability
- Which is the probable effects of harm that causes psychological potential hazard in workplace?
 - violence
 - stress
 - bullying
 - all of the above

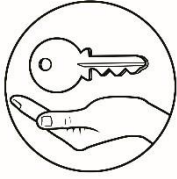
11. Which of the working conditions below can produce hazards?
 A. fume
 B. heat
 C. harmful dust
 D. all of the above
12. Which hazards and risks below describe that poor ventilation in the workplace can produce hazard and risks which may harm the workers?
 A. slipping or tripping
 B. heat
 C. radiation
 D. toxic chemical
13. Which situations below is the result when hazards and risks are identified and checked?
 A. You become unproductive.
 B. There is discomfort while working.
 C. You work efficiently and effectively.
 D. Safety is uncertain.
14. Which is NOT a requirement to consider in conducting and identifying hazards?
 A. Survey the workplace to identify hazards
 B. Always check the condition of tools and equipment
 C. Sometimes observe the working conditions
 D. Determine whether any hazard requires PPE.
15. Identified hazardous condition in workplace must be written and must be available to _____ all the times?
 A. teacher
 B. students
 C. workplace
 D. everyone



Additional Activities

Activity 9 – Gather, Organize, and Compile

Directions: Search a ***news article*** about hazards and risk in the workplace. Study, analyze and adapt. Post your reflections about it. Put your write up in a portfolio.



Answer Key

What's More

Activity 4

1. Not Belong
2. Belong
3. Belong
4. Not Belong
5. Not Belong
6. Belong
7. Belong
8. Belong
9. Belong
10. Belong

Activity 5

1. Cut
2. Leukemia
3. Tuberculosis
4. Shock,
- electroncution
5. Slips, falls
6. Metal fume
7. Silirosis
8. Anxiety, fear, depression

What's In

Activity 2.

1. c
2. a
3. f
4. e
5. d
6. g
7. b

What I Know

Activity 1.

1. d
2. c
3. c
4. b
5. a
6. d
7. b
8. a
9. d
10. c
11. b
12. a
13. d
14. b
15. a

Assessment

Activity 8.

1. a
2. d
3. c
4. b
5. c
6. a
7. b
8. a
9. d
10. d
11. d
12. b
13. c
14. c
15. d

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