

Department of Education
SPTVE
SHIELDED METAL ARC
WELDING (SMAW)10
Safety and Health of Welders
Quarter 2: Week 7 Module



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EXPECTATIONS

At the end of the lesson, the learner is expected to:

1. identify different hazards related to welding,
2. explain welding hazards and its causes, and
3. enumerate the safety precautions in welding



PRE-TEST

Directions: A. Encircle the letter of the correct answer.

1. These are precautionary measures related to welding, except.
A. Do not touch live electrical parts
B. Insufficient PPE during welding
C. Use enough ventilation, exhaust at the arc.
B. Wear correct eye, ear, and body protection
2. These are hazards related to welding, except
A. Arc radiation
C. Fire and explosion
B. Electric shock
D. Water contamination
3. To prevent arc rays from skin contact, welders should wear clothes without.
A. Buttons
C. Collar
B. Opening gap
D. Sleeves
4. Here are safety devices that welding workplace must have except.
A. Circuit breaker
C. Fire extinguisher
B. First aid
D. Life saving support
5. The type of clothing that will not disintegrate from arc radiation or will not catch fire quickly is.
A. Cotton
C. Leather
B. Linen
D. Woolen

B. Enumerate five best safety precautions that must be posted inside welding workplace.

1. _____
2. _____
3. _____
4. _____
5. _____



LOOKING BACK

Before you start with the new lesson, let us find out if you still remember the past lesson on visual inspection by identifying the events of visual inspection below.

Directions: Label these events of visual inspection, if it is done **BEFORE, DURING** or **AFTER** welding.

- _____ 1) All welds are inspected for weld defect.
- _____ 2) Determine that pre heat requirements are adhered at the time of welding.
- _____ 3) Determine designated electrode for the base metal.
- _____ 4) Check all applicable drawings, specifications, procedures, and welder's qualifications.
- _____ 5) Materials specification of parts comprising the weldment to determine if it follows required specifications.
- _____ 6) Size of all welds are checked using appropriate weld gauges.
- _____ 7) Compare weld preparation of each joint with the drawings.
- _____ 8) Check assembly dimension and fit up.
- _____ 9) Determine that correct welding current and proper polarity are being used.
- _____ 10) Determine that interpass cleaning by chipping, grinding, and gouging are being done in accordance with procedures.



BRIEF INTRODUCTION

Welder's safety and health is extremely important. All workers engaged in production and construction are continually exposed to potential hazards. There are a number of safety and health problems associated with welding. When correct precautionary measures are followed, welding is a safe occupation. Health officials state that welding, as an occupation, is no more hazardous or injurious to health than other metalworking operations.

The government has become increasingly active concerning the safety and health of workers. Laws prescribing safety regulations and the publication of safety warnings to ensure the safety of workers, have been implemented.

DIFFERENT HAZARDS RELATED TO WELDING

- Electrical shock
- Arc radiation
- Air contamination
- Fire and explosion
- Compressed gases
- Other hazards related to specific processes
 - * Accident from falling
 - * Hit by falling objects/debris
 - * Exposure to hot metal

WELDING WORKPLACE SAFETY

The welding shop management and its supervisors are responsible for providing training for workers in the safe conduct of their day to day activities. Employees must be informed and trained to detect hazards as well as protect themselves.

The welders and other employees have an obligation to learn and observe safe practices by obeying safety rules and regulations. They are responsible for the use of safe equipment and materials. It is the responsibility of supervisors to enforce the implementation of safety rules and regulations. Good housekeeping practices should always be employed inside the welding shop. Adequate safety devices should be provided, such as fire extinguishers, life saving and support equipment, first aid kit plus training of personnel to utilize the appropriate equipment properly.

PROTECTIVE CLOTHING

Welders should wear appropriate work clothes without openings or gaps to prevent the arc rays from contacting skin. If the arc rays contact the skin for a period of time, it will result to painful "sunburn" or "arc burns". Wool fabric is much more satisfactory than cotton since it will not disintegrate from arc radiation



ACTIVITIES

Activity 1

Directions: Identify the causes of hazards in the workplace. Write your answer in the column of Hard Caused

Example of Hazards and Their Effects		
Types of Hazards	Example of Hazards	Harm Caused
1. Electric shock	touch two metal objects that have a voltage. Cable damage	
2. Fire and explosion	danger is not from the arc itself, but rather the intense heat near the arc and the heat, sparks and spatter created by the arc.	
3. Fumes and gases	head in of the fumes and not enough ventilation and/or exhaust to control your exposure to substances in the fume.	
4. Burns	No arm protection, Insufficient PPE during welding operation.	
Arc radiation	No face protection, bystander exposed to arc.	

Activity 2. List down atleast 10 safety precautions for welding.

1.
2.
3.
3.
5.
6.
7.
8.
9.
10.



REMEMBER

Directions: Read the statements carefully. Write TRUE if the statement is correct and FALSE if it is incorrect. Write it on your answer sheet.

1. You have to check if the welding machine and its cable are in good working condition.
2. Do not use the oxy-acetylene equipment unless you know the safety procedures in operating it.
3. Hazards may be encountered when using portable grinder.
4. Biological hazards are related to a mental health and behavioral disorder.
5. Poor workplace design and awkward body posture are examples of ergonomic hazard.
6. Working near an electrical hazard is not dangerous and cannot be fatal.
7. Welding fumes can result to major health hazards.
8. Arc welding is a safe occupation when proper precautions are taken.
9. The most common welding injury are burns and exposure to arc rays.
10. Chip off the slag away from your body.



CHECK YOUR UNDERSTANDING

Directions: There are **5** possible welding hazards in the illustration below. Identify them and briefly explain the reason why it is considered as an example of hazard. Write your answers on a separate sheet on your answer sheet.





1. To prevent arc rays from skin contact, welders should wear clothes without.
 - A. Buttons
 - B. Opening gap
 - C. Collar
 - D. Sleeves
2. Here are safety devices that welding workplace must have except.
 - A. Circuit breaker
 - B. First aid
 - C. Fire extinguisher
 - D. Life saving support
3. The type of clothing that will not disintegrate from arc radiation or will not catch fire quickly is.
 - A. Cotton
 - B. Linen
 - C. Leather
 - D. Woolen
4. These are precautionary measures related to welding, except.
 - A. Do not touch live electrical parts
 - B. Insufficient PPE during welding
 - C. Use enough ventilation, exhaust at the arc.
 - B. Wear correct eye, ear, and body protection
5. These are hazards related to welding, except
 - A. Arc radiation
 - B. Electric shock
 - C. Fire and explosion
 - D. Water contamination

1. _____
2. _____
3. _____
4. _____
5. _____

<p>Pre-Test</p> <p>1.A 2.B 3.D 4.D 5.D 6. 7. 8. 9. 10.</p> <p>Looking Back</p> <p>1.after 2.before 3.during 4.before 5.before 6.during 7.before 8.before 9.during 10.during</p>	<p>Remember</p> <p>1. 2. 3. 4. 5. 6. 7. 8. 9. 10.</p>	<p>Post Test</p> <p>1.D 2.D 3.A 4.C 5.A 6. 7. 8. 9. 10.</p>
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References

- [twi-global.com](https://www.twi-global.com/technical-knowledge/job-knowledge/health-safety-and-accident-prevention-arc-welding-029), The contrast between good and bad practice in arc welding,9537 gif.170x262, September 21, 2020
- <https://www.welding.org/wp-content/uploads/2014/08/363.pdf>
- [SMAW final check and verified](#)