**Safety Data Sheet - OSHA Electric Safety Standards**

**OSHA Electrical Safety Standard 1926.431**

This standard relates to equipment upkeep and maintenance. If employers don't inspect, repair, and upgrade their machinery, that can lead to failure and electrical injury or death. This specific standard refers to the construction industry, but the recommendations work well for all job sites. Some elements of standard 1926.431 include:

* Explosion-Proofing- Employers must maintain equipment so that there is little to no risk of an explosion due to electrical malfunction.
* Dust Proofing-Dust can get into machinery and cause various problems, both mechanical and electrical. Employers must protect all gear from dust-related incidents that could lead to an explosion or electrical arc.
* General Maintenance and Upkeep- Employers and employees must monitor equipment and machinery to watch out for loose screws, gaskets, and other pieces that may interfere with dust and explosion prevention.
* Reporting and Repair- If a worker spots any issues with machinery, they have to report to a supervisor immediately. Once a report is filed, the employer must stop using the circuit until the problem is fixed.

**General Electric Safety Measures**

* **Make a Plan**
  + Planning beforehand is the best way to avoid risks and harm.
  + What can go wrong?
    - Fixing eletricity without planning and the right equiptment for the job can cause serious harm.
  + How to prevent?
    - Use personal protective equiptment (PPE) and insulating protective equiptment (IPE) necessary for the task at hand to prevent getting shocked or injured.
* **Use the buddy system**
  + Having someone qualified to assist you, makes the job less of a risk incase anything happens
  + What can go wrong?
    - Experiencing a painful shock and lose mascular control, with no one to assist you, most likely to serious injury or death.
  + How to prevent?
    - Both individuals should be trained in electrical safety and CPR before starting work.
* **Avoid working in wet areas**
  + Working in wet areas is extremely dangerous when working with electricity, since water is a potent electric conductor, avoid it at all cost.
  + What can go wrong?
    - When in contact with both water and eletricity, since eletricity is a conductor, it can amplify the current making it much risky to survive from this incident.
  + How to prevent?
    - If there is water on the ground, dry it off or cover it with non-conductive material like wooden board. Stay away from wet areas at all cost.
* **Use Circuit Protection Devices**
  + Circuit protection devices makes sure that there is no current flowing through the circuit or minimises the flow in a circuit.These devices include Ground Fault Circuit Interrupter (GFCI), fuses and circuit breakers.
  + What can go wrong?
    - Working with eletricity without these devices can lead to high voltage shock which may leads to severe injuries or possible death.
  + How to prevent?
    - Use these devices everytime you work with eletricity to minimise and even cut off the eletricity flowing through the circuits especially the GFCI. This makes it much safer incase anything happens.
* **Stay Away from Overhead Power Lines**
  + Many injuries and accidentally happen because of overhead power lines, people need to be hyper-aware of them
  + What can go wrong?
    - Power lines may accidentally disconnect or cause an explosions, putting people near it in great risk of injury or even death. Power lines have very high voltage compared to our home circuits.
  + How to prevent?
    - OSHA recommends to keep a safe distance of 10 feets minimum, from any overhead electrical wires.
* **Only qualified electrical technicians!**
  + Attempting electric repairs without being qualified and trained on electric safety is a huge risk. Only personnel who are qualified should work with electricity.
  + What can go wrong?
    - Operating electricity without being qualified or trained on electric safety means you won't follow the rules and probably get electrocution.
  + How to prevent?
    - Only operate electricity if qualified to do so. Make sure you follow all the safety measures provided to minimise the risk of accidents.
* **Remove all jewelleries**
  + Current in a circuit can pass through jewelleries making it dangerous to wear while working with eletricity.
  + What can go wrong?
    - Jewellery can get in contact with the circuit, resulting in electrocution.
  + How to prevent?
    - Make sure to remove all jewelleries before touching eletricity. This includes watches, rings, bracelets and necklaces.
* **Do not work on energized circuit**
  + Energized circuits have high voltage and low resistance making them the most dangerous circuits to work with.
  + What can go wrong?
    - Making this mistake can lead to electrocution as the body receives a huge amount of current leading to severe injury or death, depending on the current flowing through the body.
  + How to prevent?
    - Make sure the current is turned off at the switch box and locked out of service to show which circuits are being worked on. Follow lock-out/tag-tag out procedure.
* **Avoid using extension cords**
  + Extension cords are made to be used temporarily, meaning they can not be installed as a permanent solution.
  + What can go wrong?
    - Extension cords can disturb the flow of current.
    - Extension cords cannot handle huge amounth of current, they end up burning or getting frayed.
  + How to prevent?
    - Have additional outlets installed for additional power supply.
    - Only use extension cords and power strips temporarily. Make sure to have a circuit breaker to maximise their effeciency.
    - Replace frayed electrical cords as soon as possible, contact your Building Coordinator for assistance
* **Never store flammable liquids near electrical equiptment**
  + Flammable liquid or any other flammable items should not be placed near electrical equiptment.
  + What can go wrong?
    - Flammable liquids can accidentally spill and cause flames and explosions.
  + How to prevent?
    - Create a safe container for these items and labell them unsafe near eletrical equiptment for people to be cautious.
* **Avoid using 2-prong eletrical devices**
  + These devices have ungrounded eletrical current flowing, meaning they can hold on to the current (static electricity)
  + What can go wrong?
    - One might assume they have switched off the power or disconnected the device from power, meaning eletricity is no longer flowing. They end up getting shocked by static eletricity these devices hold.
  + How to prevent?
    - Use the 3-prong grounded devices instead as they create a path for leaking current and static electricity to dispense.
* **Do not use aluminum ladders while working with eletricity**
  + Aluminum ladders are not safe to use near eletricity due to their ability to conduct electricity, increasing the risk of electrocution. There are altenatives you can use.
  + What can go wrong?
    - If electrical wires accidentally get in contact with the aluminum ladder that can get you shocked and falling which can cause injury or even death from both electrocution and falling from high distance.
  + How to prevent?
    - Choose either wood of fiberglass ladders as they are more safe and works well with electricity.
* **Keep the Area Clean**
  + Keeping the place clean is always advisable before you start working. Clean means safe.
  + What can go wrong?
    - Sparks of eletricity can easily cause fire in an untidy environment.
    - Can be distracting to work around and most likely to make mistakes
  + How to prevent?
    - Keep the working area clean at all times. This allows you to work safely and organised, keeping track of your equiptment and surroundings.

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| **EFFECTS OF ELECTRIC CURRENT IN THE BODY** | |
| **CURRENT** | **EFFECT** |
| 1 Milliampere | Perception level, just a faint tingle |
| 5 Milliampere | Slight schock felt, average individual can let go. However strong involuntary reactrion can lead to injuries. |
| 6-30 Milliampere | Painful shock. Mascular control lost |
| 50-150 Milliampere | Extreme pain, respiratory arrest, severe mascular contractions. individual cannot let go. Death is possible. |
| 1000-4300 Milliampere | Ventricular fibrillation. Mascular contraction and nerve damage occur. Death most likely |
| 10000 Milliampere | Cardiac arrest, severe burns and probable death |

**In Cases Of Emergency**

In the event of an accident involving electricity, if the individual is down or unconscious, or not breathing: CALL 911 immediately. If an individual must be physically removed from an electrical source, it is always best to eliminate the power source first (i.e., switch off the circuit breaker). However, if time or circumstance do not allow this option, be sure to use a nonconductive item such as a dry board. Failure to think and react properly could make you an additional victim. If the individual is not breathing and you have been trained in CPR, have someone call 911 and begin CPR IMMEDIATELY!