iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 9 **Issue:** X **Month of publication:** October 2021

DOI: https://doi.org/10.22214/ijraset.2021.38565

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 9 Issue X Oct 2021- Available at www.ijraset.com

Prevent Electrical Accidents When Working Alone

Dr. Abhinav Sharma
Personnel Officer (O&M), JVVNL, Alwar, Rajasthan, India

Abstract: ***Electrical hazards cause more than 300 electrocutions and 4,000 injuries in the workplace each year, disrupting lives and impacting the productivity of companies. While electrical hazards are not the leading cause of on-the-job injuries, accidents and fatalities, they are disproportionately fatal and costly. Over the past 10 years, more than 46,000 workers have been injured from on-the-job electrical hazards. These injuries are not isolated to any one industry or field of work and most could be easily avoided. Awareness of electrical hazards is critical to avoiding and preventing accidents. It is always important to ensure an employee is properly trained and qualified for a job. Not understanding the circumstances about the job can lead to accidents and injuries. Even properly qualified workers are susceptible to accidents. That's why it's important to make safety an integral part of the planning process for every job.***
Keywords: Accidents, Electrical hazards, Fatal, Injuries.

I. INTRODUCTION

Electrical hazards cause more than 300 electrocutions and 4,000 injuries in the workplace each year, disrupting lives and impacting the productivity of companies. While electrical hazards are not the leading cause of on-the-job injuries, accidents and fatalities, they are disproportionately fatal and costly.

Over the past 10 years, more than 46,000 workers have been injured from on-the-job electrical hazards. These injuries are not isolated to any one industry or field of work and most could be easily avoided. Awareness of electrical hazards is critical to avoiding and preventing accidents.

Since May is National Electrical Safety Month, it is an ideal time for employers and employees to promote the importance of electrical safety by increasing awareness of these vital safety issues. Whether you are an employer, safety director, electrician or maintenance professional – safety is the most important issue for anyone who works on or around energized equipment.

II. IMPORTANCE

According to the National Institute for Occupational Safety and Health (NIOSH), there are four main types of injuries that can occur as a result of electricity-related accidents: electrocution (which refers to the stopping of a heart due to an electric shock), electric shock, burns and falls caused as a result of contact with electrical energy.

Whether employed at a large manufacturing plant or on a small installation, there are certain guidelines that should serve as a helpful reminder of basic electrical safety practices. It is always important to ensure an employee is properly trained and qualified for a job. Not understanding the circumstances about the job can lead to accidents and injuries. Even properly qualified workers are susceptible to accidents. That's why it's important to make safety an integral part of the planning process for every job.

Other important safety tips to help avoid injuries include:

1) Identify the electric shock and arc flash hazards, as well as others that may be present.
2) Use the right tools for the job.
3) Isolate equipment from energy sources.
4) Test every circuit and every conductor every time before you touch it.
5) Work on electrical equipment and conductors only when de-energized.
6) Lock out/tag out and ground before working on equipment.
7) Treat de-energized electrical equipment and conductors as energized until lockout/tagout, test, and ground procedures are implemented.
8) Wear protective clothing and equipment and use insulated tools in areas where there are possible electrical hazards.

©IJRASET: All Rights are Reserved

III. CONCLUSION & RECOMMENDATIONS

A. Proper Grounding

Grounding an electrical instrument creates a low-resistance path that connects to the earth. This helps in preventing the build-up of voltages that may cause an electrical accident.

1) Make sure that all equipment is grounded so that you are not at risk of getting an electrical shock. Proper grounding eliminates unwanted voltage and reduces the risk of electrocution.
2) You can use guarding as a secondary protective measure to further reduce the risk of electrical hazards.

B. Guard Electrical Equipment

Guarding electrical equipment means that you locate or enclose them so that people do not accidentally come in direct contact with them.

1) It is important to guard all the exposed electrical wires or components. Use electrical connectors wherever necessary. They join electrical terminators and create an electrical circuit.
2) Disconnect machines before you service or repair them.
3) Use insulators such as mica, glass, plastic or rubber over metals and conductors to reduce the flow of current.

C. Extension Cord Safety

Electrical equipment will have cords and wires. Make sure you practice cord safety in the workplace.

1) Do not plug two extension cords together. Try to minimize the use of extensive cords as much as possible.
2) Never nail the extensive cords into place. Use electrical tape for the same. Nails will damage the cords, which may lead to shocks and electrical fires.
3) Do not cover power and extension cords with rugs and mats. This may create tripping hazards or cause issues with the wires.
4) Do not pull the cords or yank them. Carefully, unplug them from the outlet by gripping the plug.
5) Do not use equipment with broken cords or plugin anything that has a missing prong.

Inspect all the electrical cords regularly. If you see any signs of cord damage, stop using the equipment immediately and call a professional.

D. Never Operate in Wet Conditions

Water greatly increases the risk of electrocution. The risk will be greater if the equipment's insulation is damaged.

1) Do not keep or use electrical equipment near wet surfaces or in wet locations.
2) Never operate electrical equipment with wet hands or when the equipment is wet.
3) Bring in a qualified electrician to inspect electrical equipment if it got wet. Do not energize it before getting it checked.

E. Circuit Protection

Use circuit protection devices as they will limit or stop the current flow automatically in the event of a ground fault, short circuit or overload in the wiring systems. Some circuit protection devices include circuit breakers, fuses, arc-fault circuit interrupters and ground-fault circuit interrupters.

1) Make sure you do not plug multi-outlets bars to other multi-outlet bars.
2) Do not overload the sockets. If there are multiple connections, use a power board. Use just one power board per wall outlet.
3) Notice if the wires are getting heated. There is a high risk of electrical fires when the wires become overheated. Ensure that the wires are suitable for their electrical load.

Do not ignore electrical hazards as they can lead to serious bodily injuries. It is of utmost importance that you take proper precautions when you deal with electrical equipment. Conduct a safety assessment test of the workplace to identify different hazards. Then, create a plan on how to address the hazards so that it does not lead to any serious accident.

F. Develop a check-in-based Safety System

When it comes to implementing a check-in-based safety system for your workers, you'll need the support of everyone in the workplace. Keeping workers safe should be everyone's business, and a coordinated effort will ensure that if someone working alone needs help, they'll be able to receive it. If you or someone in your workplace works alone all or some of the time and you don't have lone worker safety measures in place, start the conversation by asking yourself and others what needs to be done to make sure that

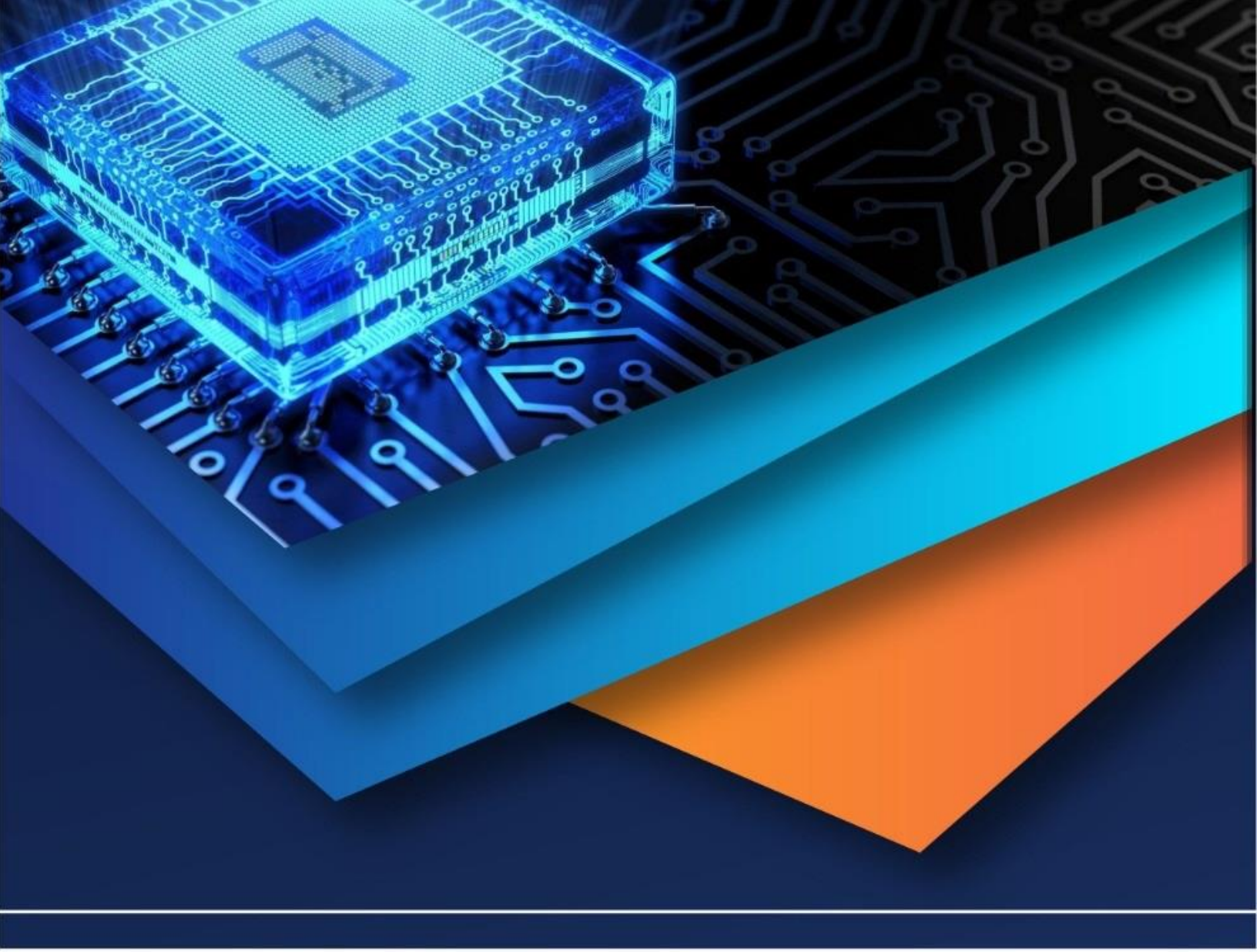
©IJRASET: All Rights are Reserved

all remote workers can come home safe. SaaS (Software-as-a-Solution) models are becoming best practices for lone worker safety monitoring, and are the ideal successor to more traditional solutions. SaaS also eliminates high upfront capital costs and costs associated with hosting, upgrading or maintenance. Additionally, an effective solution should yield a high return on investment.

REFERENCES

[1] Croft, E., Summers, W., and Hartwell, F. P. (2018), Electrical Safety in the Workplace, 7th Ed, McGrawHill, New York, pp. 51-70.
[2] Doherty, M. (2015), 'Workplace Electrical Safety Standard, CSA Z462-08', Electrical Safety Workshop (ESW), 2011 IEEE IAS, 25-28 Jan. 2011, IEEE, pp. 1 – 4.
[3] Roberts, D. T. (2014), 'Integrating OHSMS, Risk Management & Electrical Safety', Electrical Safety.
[4] Sivaprakash, P. and Elangovan, R. K. (2020), 'A Study on Safety Audit System in Indian Engineering Industries', Life Science Journal, Vol. 10 (9(s)), pp. 236-240.

©IJRASET: All Rights are Reserved



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)