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Common Electrical Hazards in the Utility Industry

When it comes to electrical hazards, prevention depends on safe equipment, safe environment and safe work practices.

Today's employee's work with or uses electricity directly or indirectly throughout the workday. Since it has become such a familiar part of our daily lives, we tend to overlook the hazards electricity poses.

The Occupational Safety and Health Administration (OSHA) standards cover many electrical hazards in a variety of industries. OSHA's General Industry standards found in Title 29 CFR Part 1910.302-308, Design of Safety Standard for Electrical Systems; Part 1910.331 through 1910.335, Electrical Safety-Related Work Practices; and Part 1910.147, Lockout/Tagout. All three of these parts have appeared in OSHA's top 10 most cited sections for the past several years.

These OSHA regulations focus on the design, use, safe servicing and maintenance of electrical equipment and systems. The standards cover only the exposed or operating elements of an electrical installation such as lighting, equipment, motors, machines, appliances, switches, controls and enclosures, requiring that they be constructed and installed to minimize workplace electrical dangers.

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The Desk of *Duane Richardson*

Numerous fatal accidents happen more often than we all wish to consider, but the most common hazards that we see happen in the Electric Utility Industry are the complacency of overlooking serious hazards electricity can impose.

The statistical figures clearly state how important it is to take precautions and avoid common electrical mistakes that result in electrical accidents. It is not only the responsibility of the employer to provide a safe environment for work but also the responsibility of the employees to make the workplace safe. However, training should be conducted to teach employees to use electrical equipment properly to avoid workplace fatalities.

Utility-line work ranks in the top 10 most dangerous jobs in the country. It is in your Utilities best interest to schedule safety meetings at the beginning of everyday. This provides 'Top of Mind Awareness' for what to look for, as well as a reminder of safe work practices.

Happy Labor Day to You and Yours!

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September 2019

IMEA CALENDAR

September

9- 13 IMEA 611 Basic Construction and Maintenance Workshop (Class # 040615 / #102615) *(Lebanon)*

24 - 26 IMEA Fall Conference & Business Meeting (Lawrenceburg, IN)

26 - 28 IMEA / Whiskey City Lineworkers Rodeo (Lawrenceburg, IN)

30 *IMEA 610 Wood Pole Climbing (Class # 093019) (Lebanon)*

October

1- 11 *IMEA 610 Wood Pole Climbing (Class # 093019) (Lebanon)*

Common Electrical Hazards in the Utility Industry

Most electrical accidents result from one of the following three factors:
•Unsafe equipment or installation
•Unsafe environment or
•Unsafe work practices
These accidents can be prevented with the use of safe equipment, guarding, grounding, circuit protective devices and safe work practices.

Safe Equipment
All electrical workplace conductors and equipment must be deemed "acceptable" by OSHA. To be deemed acceptable, equipment must be marked as tested by a Nationally Recognized Testing Laboratory (NRTL), such as Underwriters Laboratory (UL) or Factory Mutual (FM). OSHA will look for these markings on the equipment to deem it safe. The equipment must be installed and used within its labeled capacity so as to not exceed the limitations of the equipment (e.g., putting the wrong switch for too much load, causing it to overheat).

Matching the equipment specifications to the load expectations of the installation will help prevent unsafe conditions. Always use a qualified electrician to perform all electrical work.

Examples of these equipment devices are:
•Watertight devices
•Ground fault circuit interrupters (GFCIs)
•Temporary power devices
•Modular power devices
•Motor control devices
•Wire management: strain relief, conduit, tubing
•Arc flash devices
•Lockout devices: plug locks, switch locks
•Cable protection systems

Guarding
Guarding involves locating or enclosing electrical equipment to make sure people don't accidentally come into contact with its live parts. Effective guarding requires equipment with exposed parts operating at 50 volts or more to be placed where it is accessible only to authorized people qualified to work on it.

Grounding
Grounding intentionally creates a low-resistance path that connects to the earth. This will prevent the buildup of voltages that could cause an electrical accident that could result from a worker being in the ground path. A properly designed grounding system creates a low-resistance path away from workers. When designed correctly, grounding substantially reduces the risk of an electrical accident if combined with safe work practices.

Grounding falls into two types:
•Service or system ground or
•Equipment ground
A service or system ground is designed primarily to protect machines, tools and insulation against damage. This involves the neutral or grounded conductor, typically white or gray, that is grounded at the generator or transformer at the building's service entrance. Equipment grounding helps protect the operator by furnishing a second path for current to travel if a fault occurs. It will react much faster to prevent shock and serious injury to the operator. This is accomplished by use of circuit protection devices.

Circuit Protection Devices
These devices limit or stop the flow of current automatically in the event of a ground fault, overload, or short circuit in the wiring system. Common examples include fuses, circuit breakers and GFCIs.

Fuses and circuit breakers open or break the circuit automatically when too much current flows through them and will melt or trip to open the circuit. These are slow acting devices that are used primarily for protection of conductors and equipment. They typically do not open fast enough to prevent shock or further injury. They prevent overheating situations from occurring that result in damage to the conductors or equipment. ***Continued on Page 3***

Common Electrical Hazards in the Utility Industry

GFCIs are used typically in wet locations, construction sites, factory maintenance, and other high-risk areas to protect the equipment user. These devices react much faster than fuses and circuit breakers to interrupt the flow of current before shock and injury results.

GFCI protection is provided in a variety of devices, including:

•Receptacles
•Sensing modules
•In-line cords and
•Cord outlet modules

Safe Work Practices

Electrical accidents are largely preventable through safe work practices. Examples include:

•De-energizing electrical equipment before inspection or repair,
•Lockout/tagout procedures to prevent accidental or unexpected startup of electrical equipment,
•Keeping electric tools properly maintained,
•Exercising caution when working near energized lines and
•Using appropriate personal protective equipment.

Lack of lockout/tagout procedures and use of proper isolation equipment is a leading cause of unsafe work practices. The first step before beginning any inspection, repair or maintenance of any equipment is to follow the written procedure to isolate all energy sources to prevent accidental startup of the equipment.

Only trained authorized employees should maintain electrical equipment. One individual lockout device should be issued to each authorized employee performing the activity, and no two lockout devices should match. Authorized employees should be the only ones to apply and remove their device.

The responsibility of an electrical safety program should not be taken for granted. It should be assigned to someone with a complete knowledge of electricity, electrical work practices and the appropriate OSHA standards to administer the program. It is everyone's responsibility to follow the program to make it effective.

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