Arc Flash Hazards

An arc flash is an electrical explosion that occurs when an electric current passes through the air between energized conductors or between a conductor and ground. Arc flash is a phenomenon that can cause permanent injury, disfigurement, and death. It can damage your hearing, damage your eyesight, ignite your clothing, cause severe burns, and may even result in fatal burns. Arc flash protection begins with knowing the hazards involved and taking steps to prevent those hazards from causing accidents and injuries.

Each year, an average of 4,000 non-disabling and 3,600 disabling electrical contact injuries occur in the United States. One person is electrocuted in the workplace every day. Electrocutions are also the fourth leading cause of traumatic occupational fatalities. Over 2,000 workers are sent to burn centers each year with electrical-related burn injuries. Astonishingly, the majority of hospital admissions due to electrical accidents are from arc flash burns.

During an arc flash, the arc can heat the air to temperatures as high as 35,000 degrees Fahrenheit, which is about four times as hot as the surface of the sun. The arc flash generates such tremendous temperatures that it can cause the explosive expansion of both the surrounding air and the metal in the arc's path. The dangers associated with this include high pressures, extremely loud sounds, and flying shrapnel. High pressures can easily exceed hundreds or even thousands of pounds per square foot. Sounds accompanying these pressures can be louder than 160 decibels. Molten metal can be ejected at speeds of over 700 miles per hour.

When you work where there is the potential for an arc flash, wear all the necessary personal protective equipment. This may include flame-retardant clothing, flash hoods, gloves, hearing protection, and other protective gear. Check with your supervisor if you don't know what is required.

You should also follow safe work practices, which include:

- Conducting an arc flash hazard analysis to determine what hazards are involved.
- Creating electrically safe work conditions.
- Establishing shock and flash protection boundaries.
- Checking drawings and identifying all possible sources.
- Interrupting the circuit and opening disconnects.
- Visually verifying the opening of contacts where possible.
- Applying lockout/tagout devices according to company policy.

Keep in mind that arc flash safety extends well beyond electricians working on panels. If you are or could be working within 25 feet of that panel, you need to be concerned.

SAFETY REMINDER

If you work around live circuits, you need to fully understand the risks and take all of the necessary steps to protect yourself.