Office of Compliance

fast facts

advancing safety, health, and workplace rights in the legislative branch

Electrical Panel Accessibility and Enclosure of Live Parts

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When an employee receives a shock from an electrical circuit or appliance in the workplace, shutting off the source of power may be the only safe method of preventing the individual from contacting the electric source. Electrical panels contain circuit breakers designed to trip and stop the flow of current to specific circuits and appliances. Easy access to electrical panels is essential for the protection of employees in the workplace, and panels should never be blocked or inaccessible. To promptly respond to an emergency, it is also critical that circuit breakers are clearly labeled with accurate and up-to-date directories.

Potential Hazards

Figure 1: Blocked Electrical Panel

Blocking electrical panels that house circuit breakers as shown in Figure 1 is a violation of both Occupational Safety and Health Administration (OSHA) regulations and National Fire Protection Association (NFPA) codes. These regulations require accessibility to the front of electrical panels to have a minimum of three feet of clearance and a minimum width to be the width of the equipment or 2.5 feet, whichever is greater. This assures that in case of an electrical emergency, there is a clear working space in front for quick access to the circuit breakers. Having up-to-date directories of circuit breakers also saves time.

The three electrical panels shown in Figure 1 lack the required three foot clearance. The table blocking the panels further delays access in the event of an electrical emergency.

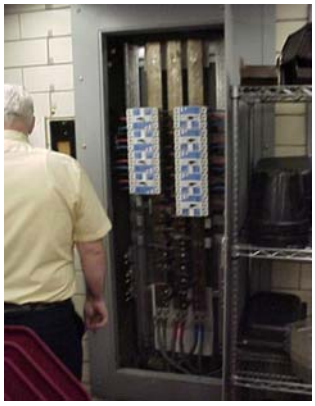

Figure 2a: Electrical panel with missing dead front

Electrical panels contain multiple junctions of live wires and other components, and they are required to be accessible at all times. Panels are also required to have a "dead front," per 29 CFR 1910.305(d). NFPA 70 describes a dead front as an area of the panel "without live parts exposed to a person on the operating side of the equipment." All live components must be covered in this way so that anyone using the circuit breaker is safe from electric shock. The large electrical panel shown in Figure 2a displays the hazard of a missing dead front. Not only are all the live components in this panel exposed, but the panel door's lock is broken so that anyone might open the panel. Electrical panel boxes in commercial buildings should be locked and accessible by trained personnel only. This panel is located in a large dishwashing area, where a wet floor might result in electrocution. Such hazards present imminent danger and should be corrected immediately. Figure 2b shows the same electrical panel with a new dead front.

Figure 2b: Same electrical panel after abatement. This panel now has a "dead front."

fast stats

Damage Caused by Power Switch Gear or Overcurrent Protection Device (Circuit Breaker) in office properties. 2000-2004 annual average

- 40 fires (1%)
- 6 civilian (non-firefighter) injuries (18%) and no deaths

Source: NFPA Fire Analysis and Research, May 2007

Injuries and Losses in Private Industry Related to Electric Parts in 2007

- 112 fatal occupational injuries
- 4960 nonfatal occupational injuries
- 0.5 injuries per 10,000 employees
- 1220 employees (24.6%) unable to work for 31 days or more because of injuries from electric parts

Source: US Department of Labor Bureau of Labor Statistics. "Electric parts" is a classification for unattached electric parts which primarily carry or generate electrical currents. This includes electric wiring, generators, transformers, controls, switchboards, alternators, coils, etc.

Codes and Standards Related to Electrical Panels

- The OSHA standard (29 CFR 1910.303 (g)) requires sufficient access and working space around all equipment serving 600 volts or less. For equipment serving between 120 volts and 250 volts, the regulations require a minimum of three feet of clearance. The width of the working space in front shall be 30 inches minimum or width of the equipment.
- The OSHA standard (29 CFR1910.305 (d)) requires a dead front on electrical panel boards.
- The National Electrical Code (NFPA 70 110.26) requires a minimum of three feet of clearance for all electrical equipment serving 600 volts or less.
- The National Electrical Code (NFPA 70 110.27) requires live parts of electrical equipment operating at 50 volts or more to be guarded to prevent accidental contact by approved enclosures.

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The Office of Compliance advances safety, health, and workplace rights in the U.S. Congress and the Legislative Branch. Established as an independent agency by the Congressional Accountability Act of 1995, the Office educates employees and employing offices about their rights and responsibilities under the Act, provides an impartial dispute resolution process, and investigates and remedies violations of the Act.

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