

Toolbox Talks 2

073: Unsafe Conditions: Operational Sites

Discussion leader duties for this session:

Think about the dangers that are likely on an operating site where non-electrical personnel are present.

What this Safety Talk covers:

This Safety Talk addresses unsafe conditions that often exist on operating sites.

Discussion notes:

Additional considerations

On new sites, the owner or tenant typically isn't there to cause you additional safety concerns. On an operating site, however, the owner or tenant is running the place—and sometimes not very well.

Unsafe conditions on operating sites

- **Clearance violations.** OSHA and the NEC provide minimum clearance requirements, depending on the voltage and conditions (1926.403 and 110.26, respectively). The minimum may be as high as four feet. OSHA is federal law. Don't work where clearances are insufficient. Report violations to your foreman, immediately.
- **Crowding.** You may have adequate minimal clearances per OSHA and the NEC, but still not enough room to work safely. The OSHA and NEC minimum clearances are based on flash and touch hazards. They don't account for other factors. If equipment or materials make it hard for you to work, contact your foreman about moving them. The move can be temporary, depending on conditions.
- **Illegal storage.** Combustibles, flammables, and toxins may be stored in the area you're supposed to work in. For example, it's common for tenants to store fluorescent lamps in electrical closets. Contact your foreman immediately.
- **Bonding violations.** As equipment gets added or modified, grounding and bonding errors are likely. Plant maintenance personnel have typically not even seen a copy of the NEC, much less been trained in it. The same is true of equipment designers, who typically come from an electronic rather than electrical background. Equipment manuals often require an unbonded ground rod, directly in violation of basic electrical theory. This practice puts the equipment at a different potential from other metallic objects. That difference creates in a shock hazard and an arc hazard.
- **Miscellaneous NEC violations.** Be on the lookout for unplugged enclosure openings, missing panel bolts, raceway used as a cable support means, and load-side neutral-ground bonds. Such violations pose a direct threat to your safety. But your company also steps on a legal landmine if it does work where these conditions exist. If you see these violations, notify your foreman immediately.
- **Operations.** The items we have mentioned so far have been deficiencies that need correction. But ongoing operation also presents dangers. Stay out of areas that you don't need to be in. Follow the safety rules of the owner/tenant. Coordinate lockout/tagout, equipment operation, and electrical testing with your site contact. Take the precautions needed to protect operations personnel from the dangers of your work. For example, rope off the area around the switchgear you're working on.

Review and discussion

1. What's the basic difference between operational sites and green con-

2. Why are the legally mandated working clearances important? What should you do if these have been violated?

3. How does *inadequate* working clearance (crowding) differ from violations of legally mandated clearances? [Note to Presenter: Many people don't understand this concept, and will try to work unsafely simply because they have three feet of clearance. It's a common mistake to disregard the clearance table and use three feet as the universal minimum clearance. But another mistake is using the table or three feet as the universal **maximum** clearance. OSHA also stipulates, just prior to where it provides the table, "Sufficient working space shall be provided and maintained about electrical equipment to permit ready and safe operation and maintenance of such equipment." If the space is too crowded to allow you to safely do the task you're doing, you have an OSHA violation.]

4. What kinds of items can be stored close to electrical equipment? *[Note to Presenter: None. Storage violates NEC 110.26(B) and OSHA 1926.403. You may need these references to compel the owner to move stored items to a legal location. When the stored items are hazardous substances, you have an especially bad situation. For one thing, you can't just move them to another illegal location. Normally, it's best if the owner/tenant accepts responsibility for relocating these.]*

5. Why should you care about ground rods driven next to equipment?

6. What are some ways you can address bonding violations? *[Note to Presenter: The one thing you can't do is ignore them. If the owner/tenant won't pay for repair, you still need bonding so you can work safely. You may need to install temporary jumpers, and document their removal after completing the job. Work this out with your foreman and the project manager.]*

7. What are some NEC violations that can pose a safety threat while you're working?

8. Why should you coordinate lockout/tagout with the operators?

9. Why should you coordinate electrical testing with the operators?

10. What are some steps you can take to protect the tenants while you're installing new power distribution that runs through an operating area?

Participant's Signature and Date

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.