Accident Prevention

Safety Manuals

Safety Manuals & Rules

Safe working procedures and safety rules are implemented to prevent disabling injuries and to save lives.

The majority of safety rules are written as a reactive measure.

Safety Manuals

In the occupational field of line construction, there are several organizations that implement safety rules and regulations that we must adhere to.

Safety Regulations

Federal, State and Local levels all have safety regulations that must be followed.

- ✓ OSHA Occupational Safety & Health Administration
- ✓ NESC National Electrical Safety Code
- ✓ ANSI American National Standards Institute
- ✓ IEEE Institute of Electrical & Electronics Engineers
- ✓ IOSH Iowa Occupational Safety & Health
- ✓ Customer XX Power and Light Company
- ✓ Employer XX Electrical Contractor
- ✓ Union International Brotherhood of Electrical Workers
- ✓ Apprenticeship XX JATC

Examples

*OSHA states that rubber gloves must be electrically tested every 6 months –

Your company may have them tested every 3 months or even monthly.

*Fire Resistant clothing is not required (yet) by OSHA –

Your company may require it now.

OSHA and other agencies set the minimum requirements. Your Company, Local Union, or State may have more stringent rules that must be followed.

It is **your responsibility** to take the time to read and thoroughly understand your employer's safe working practices.

Safety Manual

Your company spends a ton of money developing and implementing safety programs. Take advantage of this material.

Your Company

Safety Manual

Most rules and regulations in that manual have been written in blood.

An accident happened and a rule is implemented to avoid having it happen again.

Your Company

Safety Manual

Read Your Safety Manual

Know It,

Understand It,

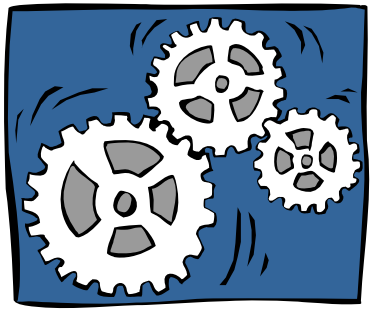
It May Save Your Life!!!

Your Company

OSHA states that you **SHALL** be familiar with safety related work practices, safety procedures and safety requirements of the job.

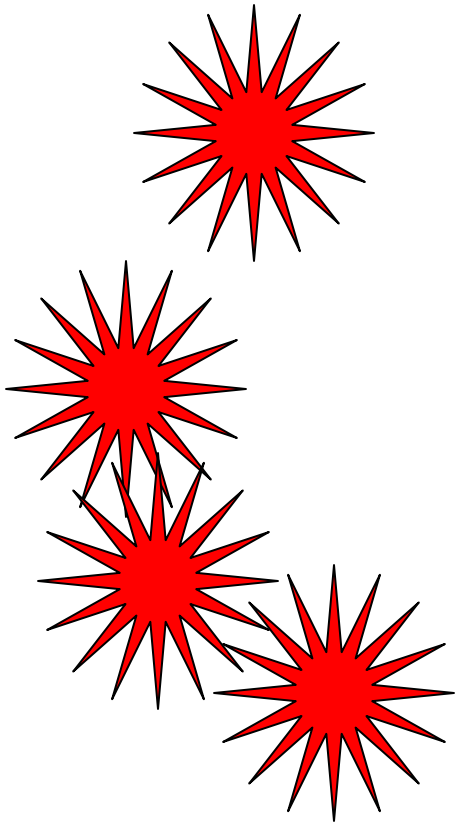
Accidents Are Caused by Three Things:

1. Mechanical failure
2. Acts of nature
3. Human error



Mechanical Failure

- Slings or rigging breaks
- Tire blows-out
- Air or hydraulic line bursts
- Faulty switches or contacts
- Metal fatigues or rusts
- Wood rots
- Etc.



Acts of Nature

- Wind blows objects
- Water in the ground - wash outs, mud
- Ice makes surfaces slippery
- Snow covers objects
- Lightning strikes
- Etc.

Human Error

- Failure to follow safety rules
- Lack of awareness
- Lack of knowledge / training
- Miscalculations or judgments
- Improper use of tools or equipment

Severity of Accidents

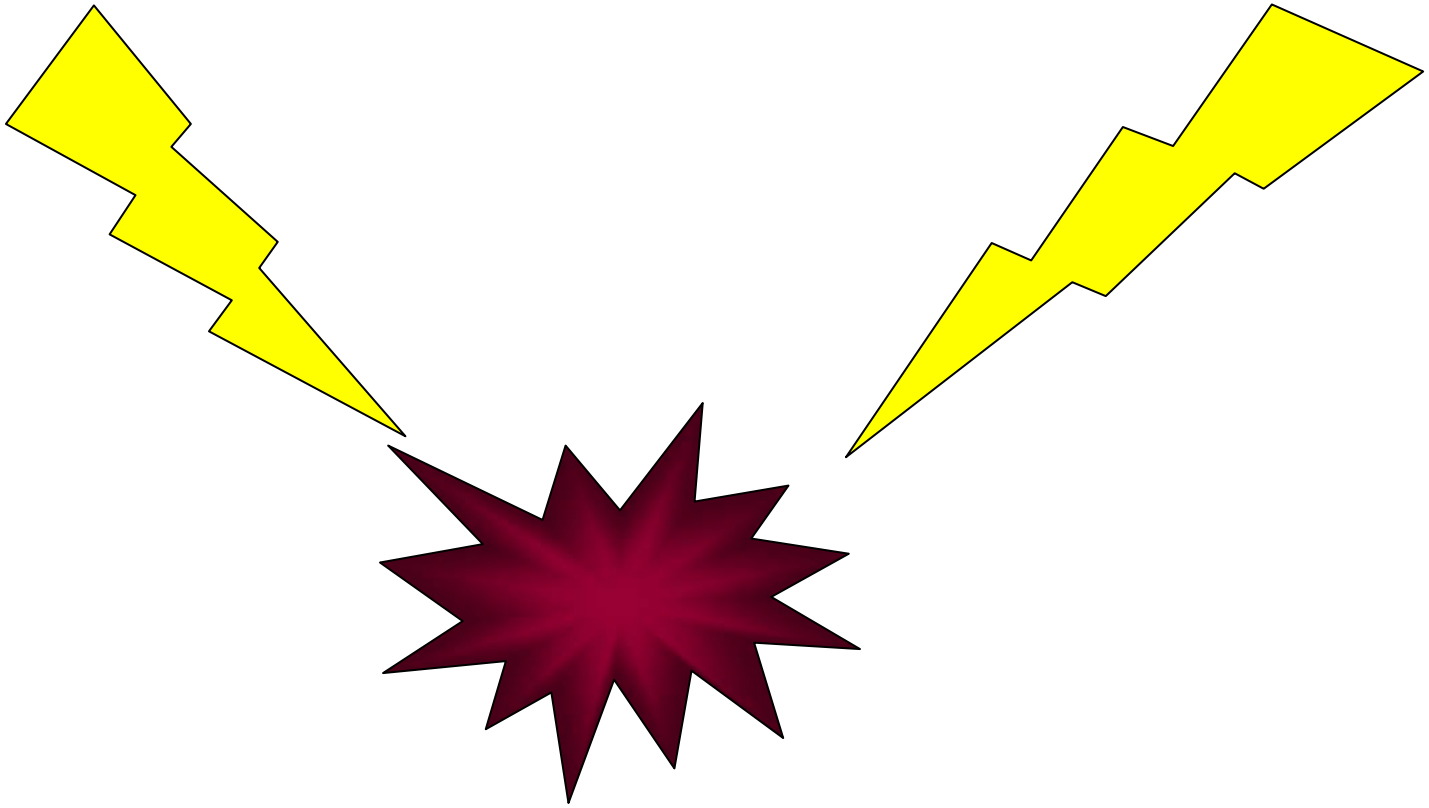
a. No sign that anything went wrong
b. Near miss or close call
c. Tool or item breaks
d. Minor property damage
e. Minor personal injury
f. Minor property damage and personal injury

Severity of Accidents

g. Major property damage
h. Personal injury resulting in lost time
i. Partial disability
j. Loss of limb, sight or hearing
k. Fully disabled
l. Fatality

The worst type of accident….

When One Worker Causes the Death of Another Coworker or Bystander.



Not only a fatality but also the trauma and personal guilt, the surviving worker must live with the rest of his/her life.

Some Alarming Stats.

Fatality Assessment and Control Evaluation (FACE). NIOSH

244 electrocutions between November 1982 and December 1994, were investigated by NIOSH.

243 males – 1 female

Age range- 17-70

NIOSH Stats Cont.

- Industry with the highest electrocutions ***Construction*** (121)
- Linemen typically receive extensive training, YET had the highest number of fatalities! **47**
- Fifty-five percent of lineman fatalities were due to ***failure*** to wear PPE!!
- Twenty Six linemen may possibly be alive today, **IF they followed the Safety Rules!**

NIOSH Stats Cont.

- Lack of enforcement to wear PPE and lack of supervisory intervention was a common factor
- Supervision was present at the site in 120 of the incidents (53%)
- 42 (19%) victims were supervisors
- 100 (41%) victims had been on the job less than 1 year

IBEW Safety Team Stats

332 lineman died between 1995 – 2003

- 78% in distribution (259)
- 15% in transmission (50)
- 6% in substation (20)
- 80% electrical contact (265)
- 10% falls (35)
- 6% struck by object (20)
- 3% flash burns (10)

Common Factors

- Failure to follow proper procedures (safety rules)
- Lack of personal protective equipment
- Lack of cover-up

Safety Responsibility

It really doesn’t matter

- How young or old you are
- If your inexperienced or experienced
- Whether you are an apprentice or a Journeyman

What Really Matters Is

Whether or Not You Choose to Follow the Safety Rules

This Job Is Only:

As Safe As You Want to Make It

Safety Responsibility

It’s imperative that all members of the crew exercise proper safe work procedures at all times.

Safety Responsibility

Be Ready to take some HEAT!!

Difference of Potential

Recognizing Hazards

Review Contact Area

(Class Discussion)

Before the job begins

Secure Worksite

*Upon arrival, set up cones, signs etc.

*Make sure public cannot enter work area

*Check surroundings for current and future hazards

Before The Job Begins

Tailgate Discussion

As covered in earlier presentation

Before The Job Begins

Test / Inspect Equipment

All rubber protective equip. shall have the appropriate ASTM markings in addition to having a valid test date before being used.

Before The Job Begins

Test / Inspect Equipment (con't)

No Insulated Aerial Device will be used unless it has a current dielectric certification sticker/label affixed to the vehicle.

Insulated Aerial Devices must be electrically tested every 12 months.

Before The Job Begins

Test / Inspect Equipment (con't)

Bucket liners are required for all hot work and shall be electrically tested every 12 months.

All insulated parts shall be inspected and wiped clean if necessary.

Before The Job Begins

Remove jewelry, watches, and keys etc. OSHA 1910.269(L)(6)(i) States you shall remove before going near energized lines.

Metal next to your body magnifies the heat from a flash or arc, causing concentrated burns.

Before The Job Begins

Ground to Ground Rule

It is recommended that Rubber gloves and sleeves must be put on while on the ground before working on any energized structure and shall not be removed until the worker is back on the ground.

Whether you are climbing the structure or using an insulated aerial device.

Before The Job Begins

Circuit Interrupting Devices (OCRs)
are to have their automatic re-closing feature
made inoperative (placed on one-shot).

During the job

No body part shall make contact with energized lines except with Rubber Gloves or Live Line Tools.

All conductors and equipment must be under control at all times.

During the job

Never use your glove as a shield between another body part and something energized. No favors here, you’re actually doing more harm.

During the job

Rubber Gloves shall **never** be worn inside out or without approved protectors.
They shall be exchanged at any time they become damaged or suspect.

Approved protectors shall **not** be worn except when in use with Rubber Gloves.

During the job

*Protective Equipment should not be left on energized lines for extended periods of time (i.e.. overnight)
*Should this be deemed necessary, they must not be depended upon to protect the employee.
*They must be removed, cleaned and visually inspected before re-use and if suspect, submitted for electrical test.

During the job

Apply protective equipment to the closest or lowest conductor first. Then work your way in or up.

Apply protective equipment from a position below the conductor if possible.

During the job

Hand lines shall be attached to the pole or aerial device and shall not be supported from the lip of the bucket or “energized lines”

Hand lines and other ropes must be clean and dry.

During the job

Only approved devices will be used for picking up or dropping load.

No other work will be allowed on a pole while hot work is in progress.

During the job

Work shall only be done on **one potential** at a time.

Get away from mindset of "Work only one phase at a time"
May mislead others to thinking it's OK to work a phase and ground at same time.

During the job

At no time shall the insulated boom or bucket on Insulated Aerial Devices contact unprotected conductive equipment or grounded objects when an employee in the Insulated Aerial Device is working energized lines.

During the job

Do the work properly (con’t)

Conductive objects carried inside the bucket shall not extend above the lip.

Conductive objects shall not be allowed to hang on the outside of the bucket.

During the job

Do the work properly (con't)

When using the winch line of material handlers on energized lines, an approved link stick must be used.

Electric tools and power cords shall be removed from the bucket when working on energized lines.

During the job

Do the work properly (con't)

A minimum of 40" of insulated boom must be extended on boom of a Digger Derrick when using pin-on type bucket.

The winch line must be retracted and secured below the primary area.

During the job

Communicate

Keep conversation limited and to the job

While working from Insulated Aerial Devices, the lineman operating the boom controls shall notify other lineman in area prior to moving the boom.

During the job

Communicate

Lower controls shall not be operated unless permission has be obtained from linemen in bucket.
Exception-- Emergency situations.

During the job

Protect Workers and Public

Trucks shall be considered energized any time boom is in primary area.

Do not allow workers on ground to touch line truck.

Keep extra set of gloves OFF line truck.

After the job

Remove Cover and Grounds

Insulated protective devices shall be removed in the reverse order they were applied.

If grounds or neutrals were changed, they must be made correct again.

After the job

Remove Cover and Grounds

Make sure to return and store all tools and equipment in their safe and proper location.

Take care of your equipment and it will take care of you!

After the job

Go Home Safe

Hot line work can be done safely if…

everyone follows **all** the safety rules.

The intent is to go home alive and with all the body parts you showed up with.

Summary

Three Tools That Could Save Your Life

1. Your Company's Safety Manual.
2. Your Personal Protective Equipment.
3. Your Brain.

Summary

The use of rubber gloves to work on distribution voltages up to 36kv is not intended to eliminate the use of hot line tools.

It is simply another work method that can be utilized.

Summary

In most instances the work is physically easier when using rubber gloves and preferred by those employees who are given the option of using rubber gloves or live line tools

Generally, rubber gloving is more productive than live line tools.

Summary

There are a total of six classes of rubber gloves in our industry.

Class	Test V.	Max. Use V.
00	2,500	**500**
0	5,000	**1,000**
1	10,000	**7,500**
2	20,000	**17,000**
3	30,000	**26,500**
4	40,000	**36,000**

Summary

Rubber Sleeves are available in classes 0 through 4.

Rubber sleeves **MUST** be worn to give added protection to that area of the elbow and upper arm**.**

Summary

Rubber gloves – Intentional contact.

Rubber sleeves – Accidental contact only!

Line hose - Accidental contact only!

Blankets - Accidental contact only!

Hoods- Accidental contact only!

Summary

- Rubber goods shall be inspected and tested every time they are used.
- Rubber goods shall be properly cared for and stored.
- Insulated aerial devices will be tested and maintained and kept clean (booms)
- Baker boards will be inspected and properly cared for.
- Hot sticks will be tested and kept clean and dry

Summary

Rubber gloving shall be done by utilizing the principles of

INSULATE

and

ISOLATE

Summary

In order to obtain both insulation and isolation

Rubber gloves must be worn whenever you are using hot sticks

Summary

If a conductor is not grounded, it must be worked as if energized.

Summary

Second point of contact

In order for current to flow through the body there must be a path for the current to travel (entry and exit).

By properly insulating yourself and the work zone, along with isolating yourself from any differences of potentials you can remove the second point of contact hazard.

Summary

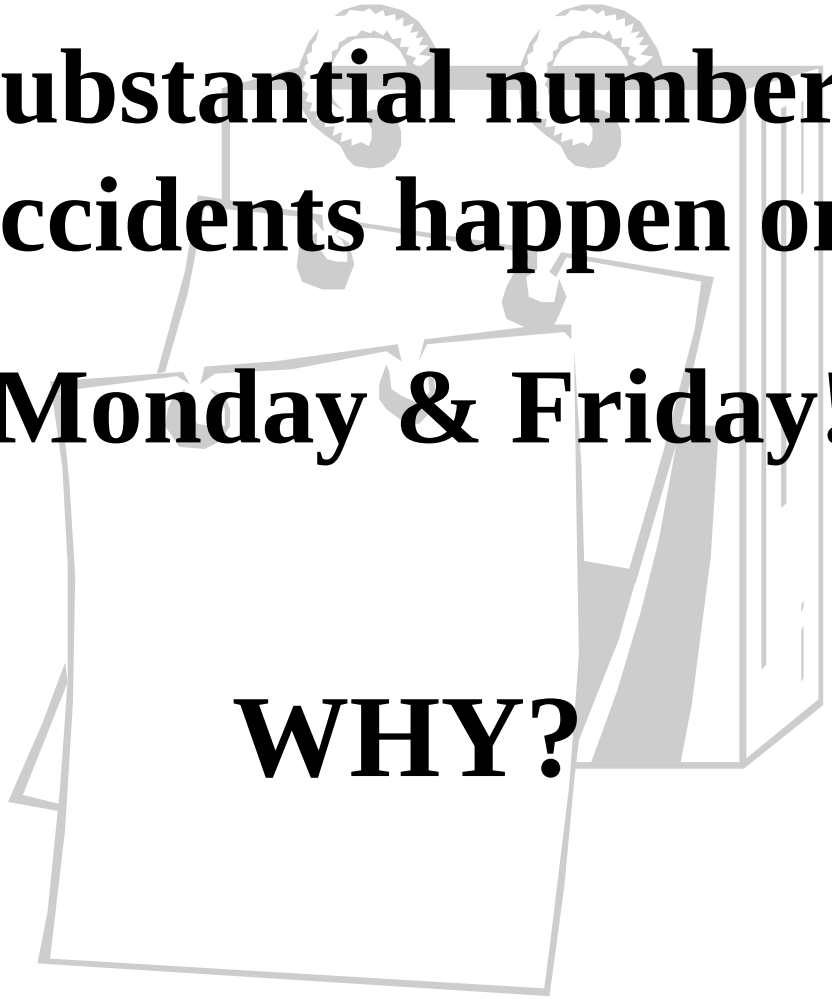
Evaluate and Re-evaluate.

What safety equipment do I need?

Have things changed?

Keep track of your surroundings and protect yourself and others.

Summary

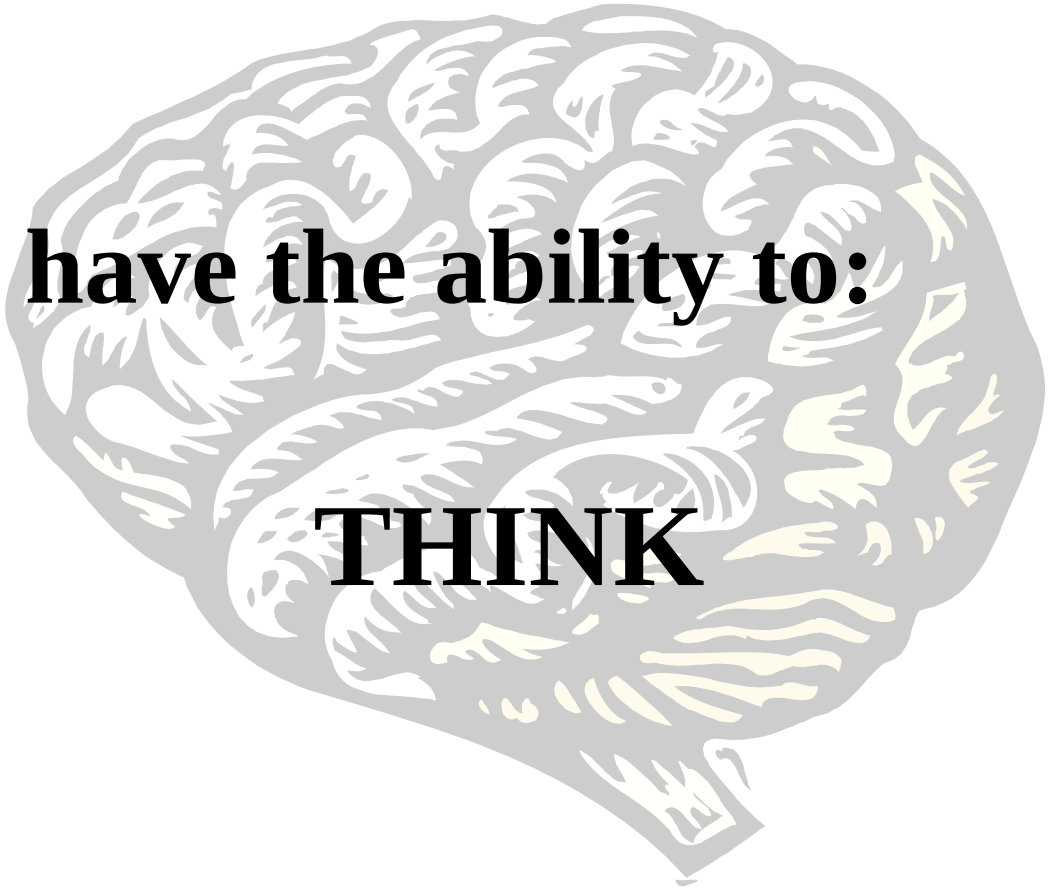


A substantial number of accidents happen on

Monday & Friday!

WHY?

Closing



You have the ability to:

THINK

Closing

Ability to Inquire

If you are not sure or don’t understand

ASK

Closing

It doesn’t matter how much safety equipment you have, how many safety rules or laws there are, if you don’t use them, then all the lineman who have been hurt or killed would have been for nothing.

Closing

This work is as safe as <u>you</u> want to make it.

Not only are you the future of this industry but you are the industry TODAY

Closing

You can expect to get some resistance from others when you try to follow all the safety rules.

Closing

It’s important to learn how to deal with people who may not work safely…especially if they are your supervisors.

Closing

A wise man once said, “Never paint the other guy into a corner.”

It will be more effective if you use diplomacy in trying to change someone into doing something a safer way.

Closing

If you have checked in your safety manual and…

If you believe the job is being performed unsafely and…

You don’t have the authority to make it safe and…

You are told to do the job unsafely anyway…

Closing

If you feel you could get hurt, you have the ability to

Refuse to do a job.

Closing

SAFETY;
It’s not just for yourself…
be safe for them.