

# Introduction to Mechanized Logging Safety

## Table of Contents:

1. Welcome
2. Module 1:
  - Workers' Compensation
  - Reality of paperwork & training
  - Stretching
  - Fire Extinguishers
  - Pre – Trip Inspection
  - PPE
3. Module 2:
  - Machine Orientation
  - Lockout/Tagout
4. Module 3:
  - Flammable and combustible liquids/SDS
  - Low Sulfur Diesel
  - Powerlines
  - Separation of Operations
  - Chain Shot / Slasher Safety / Blind Spots
5. Module 4:
  - Environmental Conditions
  - Safety & Health Topics
6. Referenced Documents
7. Glossary of Terms

## **Welcome Loggers!**

The State of Vermont welcomes you to the Mechanized Logging Safety Training. We hope you find this training both informational and interactive.

This training is intended to provide a foundational level of safety training to increase awareness of the many dangers associated with mechanized logging. It will also provide ways to improve safety procedures and help change work habits so that safety is the primary concern on your jobsite.

This training is divided into four modules with a total of fifteen different sections. Each section has a quiz and an activity to help reinforce the topic. There will be a variety of indoor discussion as well as outdoor presentations, as well as videos from experienced logging contractors.

In this binder you will find the PowerPoint presentation slides with a notes section if you would like to jot down notes. After the PowerPoint you will find a quiz and other supporting material.

This training is meant to be interactive with plenty of discussion. We can all learn from each other's experience in the woods, so don't be afraid to ask questions.

Enjoy and stay safe!

## **Module 1:**

Workers' Compensation  
Reality of paperwork & training  
Stretching  
Fire Extinguishers  
Pre – Trip Inspection  
PPE

This Page Blank

# Workers Compensation Insurance

1. What is Workers' Compensation Insurance - A type of business insurance that covers medical and rehabilitation costs and lost wages for employees who suffer from work-related injuries or illnesses.



- Workers' Comp helps protect the employee by covering the cost of workplace injuries and recovery.
- Workers' Comp helps protect the business/employer from lawsuits, covers employee workplace injuries, and keeps your business compliant with state regulations.
- Workers' Comp is administered by the State of Vermont. Each job is broken down by class codes. The class codes are rated based on how dangerous the job is. The rates are based on payroll. They are described as out of per \$100 of payroll.



2. How does Workers' comp differ between occupations?

Example #1 - Employees of a pharmacy including pharmacist, cashiers, assistants pay .80 cents per \$100 payroll or .08%

Example #2 - Building Salvage Workers pay 43.00 per \$100 of payroll or 43%.

\*The stark difference is directly related to how dangerous the occupation is.

3. Logging Specific Class Codes and Rates (Vermont) Workers' Comp Rate Classes for Logging

2702 - Logging Conventional ----- \$28.31

2709 - Logging Mechanical----- \$12.10

2721 - Logging Conventional Safety Certified----- \$24.06

2722 - Logging Mechanical Safety Certified----- \$10.28

Can safety certification lead to a significant reduction in WC rates? YES! See the example below.

- A Mechanical Logging Employee (2709) makes \$50,000 per year of payroll. The WC rate for 2709 is \$12.10 per hundred. The employer will pay **\$6,050** per year for WC on that employee.
- A Mechanical Logging Safety Certified Employee (2722) makes \$50,000 per year of payroll. The WC rate for 2722 is \$10.28 per hundred. The employer will pay **\$5,140** per year for WC on that employee.

\$6,865 (Uncertified)  
-\$5,835 (Certified)  
= \$910 per year difference (savings)

Cost of Training: \$400 (including wages)

Savings per year: \$510



How does taking a safety class change the rates for 2722?

- Those that attend training should have the knowledge to move the needle. But training only goes so far. If you do not apply the safety training or the company does not embrace the culture of Safety, the difference will be minor.
- That's why it's important to apply what you learn as a student/employee or owner. And the Employers create a culture of safety and you will see positive change in the logging rates.
- 2722 in Vermont is a pool of logging companies. Your loss data and claims are used to set the rate. You are all in this together.
- Health Insurance does not cover claims at work!!



#### 4. Vermont Workers Comp (WC) Claim for Mechanical Logging

##### **WC Claims by Category:**

Overexertion-	0
Repetitive Strain-	0
Slips Trips Falls	8
Struck by, Caught By/against objects	8
Exposure to Harmful Substances or environment	0
Burns (welding, fire, chemical)	1
Other	2
Total	19

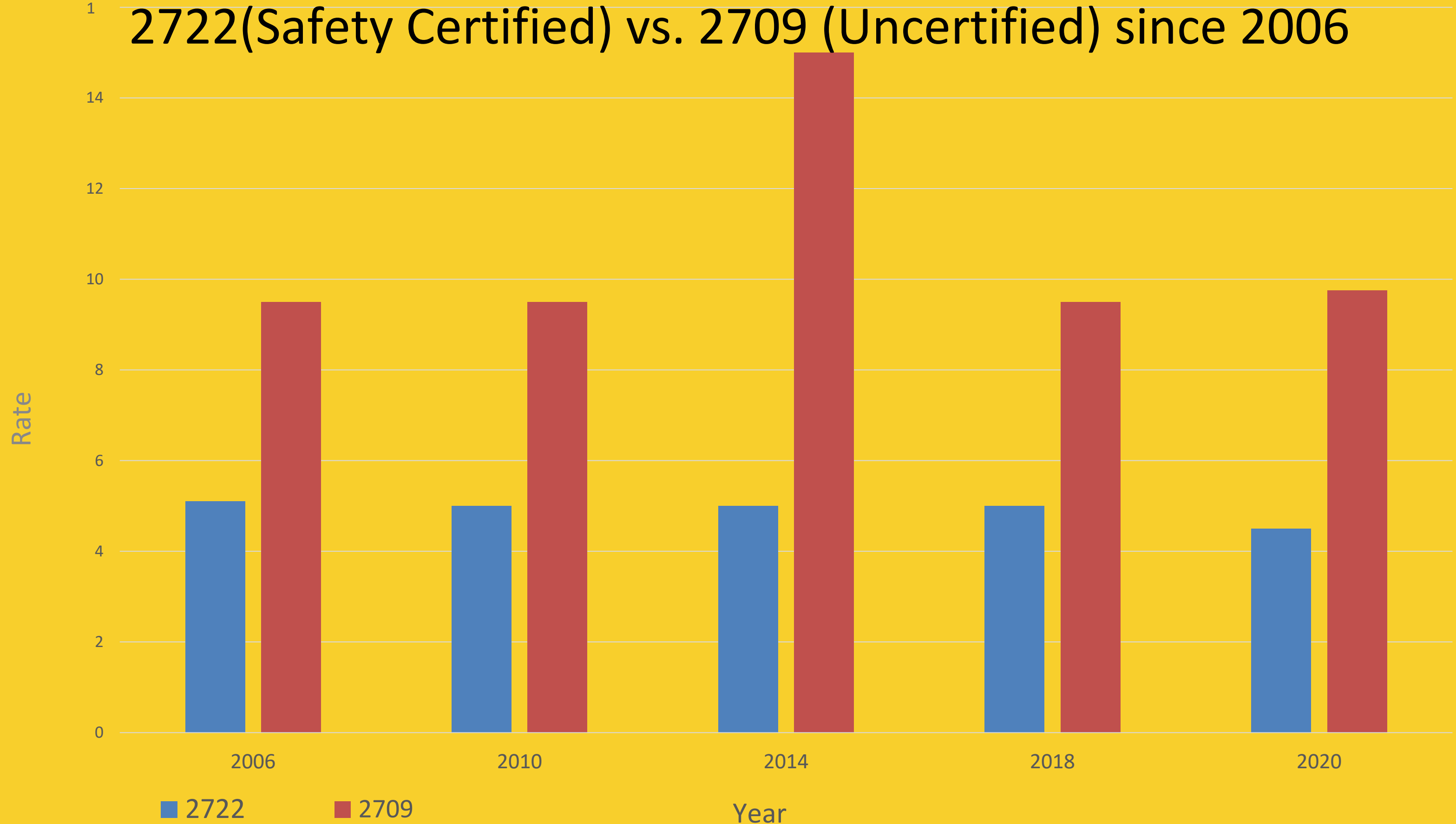
##### **WC Claims by area on the body:**

Head	2
Eye	1
Shoulder	0
Arm	2
Hand	2
Back	2
Chest	3
Leg or ankle	5
Other	2
Total	19

**See graph of Maine Mechanized Logging rates from 2006-Present - notice reduction of rates between safety certified and uncertified.**

# Workers' Comp. Rates in Maine (Mechanical)

## 2722(Safety Certified) vs. 2709 (Uncertified) since 2006





## Workers' Comp (WC) Quiz

Name: \_\_\_\_\_

1. Who is Workers' Comp for?
  - a. The employee
  - b. The employer
  - c. Your dog
  - d. Both a. and b.
  
2. True or False: Workers Comp is based on the amount of payroll for an employee.
  
  
  
3. True or False: Slips, Trips and Falls and Struck-by are the major categories for injuries in Vermont.
  
  
  
4. What is the class code for Mechanized Safety Certified in Vermont?

This Page Blank

# Reality of Documentation (paperwork) & Training

Definition: Material that provides official information or evidence or that serves as a record.

1. What written plans are needed? (**Plans need to work for you & the company**). A written plan needs to address the following questions for each of the following headings. (ie. Personal Protective Equipment - **What** PPE is to be worn. **When** is PPE supposed to be worn. **How** the employees will be trained to wear the PPE.
  - a. Personal Protective Equipment (PPE)
    - i. What
    - ii. When
    - iii. Training
  - b. Equipment
    - i. Who
    - ii. When
    - iii. Training
  - c. Hand Tools
    - i. Who
    - ii. When
    - iii. Where the tools are stored
    - iv. Training
  - d. Chainsaws
    - i. Who
    - ii. When
    - iii. Training
  - e. Hazard Communication Program
    - i. Safety Data Sheets (SDS)
    - ii. Job Safety Analysis
    - iii. Training
  - f. Lock Out/ Tag Out Procedure
    - i. Each piece of equipment
    - ii. Training
2. Training
  - a. Sign in sheet
    - i. Title.
    - ii. When was the training taught?
    - iii. Where was the training taught?
    - iv. Who taught the training?
      1. A short bio should be on file to demonstrate why this person is qualified to train. Experience is acceptable background.
    - v. The objectives that are being meet with this training.
    - vi. A short lesson plan (It does not need to long or complicated)
    - vii. A place for the participant to sign.
    - viii. Remember if the training is not documented, then the training did not happen, and you will need to do it again!

# Stretching

**Definition:** Stretching is a form of physical exercise in which a specific muscle or tendon (or muscle group) is deliberately flexed or stretched in order to improve the muscle's felt elasticity and achieve comfortable muscle tone. The result is a feeling of increased muscle control, flexibility, and range of motion.

## 1. Stretching

### a. Why Stretch?

- i. Improve your posture, which helps stabilize your spine.
- ii. Improve your muscle tone and overall conditioning.
- iii. Practice proper body mechanics.
- iv. Reduce pain from an existing strain or injury.

### b. Background – Why Stretch?

- i. Less muscle injuries after implementing a stretching plan.

### c. Plan – When to Stretch?

- i. There should be a targeted plan to stretch.

#### 1. When:

- 1 Before the day begins
- 2 Every two hours
- 3 Every time the job changes
- 4 At the end of the day

#### 2. How:

- 1 Stretch the muscles that are moving (how do you know which ones?)
- 2 Stretch the muscles that are not moving.
- 3 Push & hold for count of 10.
- 4 Think of how your muscles work or don't work (how?)
- 5 Use the piece of equipment to stretch (example?)
- 6 Keep the blood moving (what does this mean?)

## Examples of Stretches



This Page Blank

# Group Activity

1. Stand up and space themselves out by opening their arms out.
2. Start stretching:
  - i. Head
    1. Tilt
    2. Around
  - ii. Shoulders / Arms
    1. Shrug
    2. Small Circles
    3. Large Circles
    4. Raise up
    5. Arms front & back
  - iii. Arms / Hands
    1. Finger wrist bend (Up / Down)
    2. Rotate wrist
  - iv. Back
    1. Forward (touch your toes)
    2. Back with hands on your hips
    3. Rotate around with hands on your hips
  - v. Legs
    1. Bend one knee forward (Switch legs)
    2. Pull ankle to butt
    3. Step up on your tippy toes
  - vi. Ankles
    1. Rotate (Clockwise / Counterclockwise)

This Page Blank



# Fire Extinguishers

Definition: A container that holds fire extinguisher material (ie. Water, mono-ammonium phosphate, CO2)

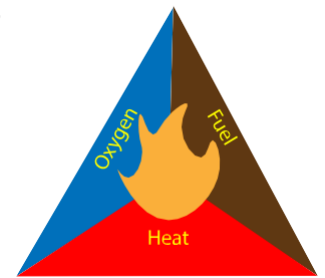
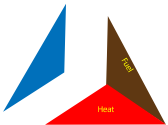
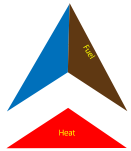
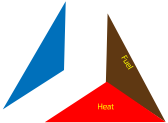
## 1. Fire types:

- a. A – Anything that produces **Ash** (ie. Wood & Paper)
- b. B – Anything that **Boils** (ie. Oil, Gas, Diesel)
- c. C – Anything that has **Current** (ie. Electrical)
  - i. Important concept: if you de-energize an electrical fire the fire either goes out or turns into a class A or B fire.
- d. D – Any **metal** fire (We don't see these in Logging often)
- e. K – **Kitchen** fires (Easier clean up)



## 2. Fire extinguisher types

- a. Dry Chemical (Usually ABC but not always)
  - i. Comes in numerous sizes by the pound
  - ii. Can come as pressurized or non-pressurized
  - iii. Dry chemical smothers the fire
- b. Pressurized water (sometimes with foam)
  - i. Class A Water only
  - ii. Class A – B Water & Foam (Loaded Stream)
    1. This also does not freeze
  - iii. Water cools the fire
- c. CO2
  - i. Removes the Oxygen



Fire Triangle

## 3. Inspecting a Fire Extinguisher

- a. Look for any damage (ie. Cracks, Dents, Rips)
- b. Check that the hose is un-obstructed.
- c. Verify the locking pin is intact and the tamper seal is unbroken
- d. Check Gauge (On pressurized Dry Chemical or Water)
- e. Look for leaks
- f. Check the last professional service date on the tag. (A licensed fire extinguisher maintenance contractor must have inspected the extinguisher within the past 12 months.)
- g. **Date & initial** the extinguisher inspection tag.

INSPECTION RECORD			
DATE	BY	ACCEPTED	REJECTED

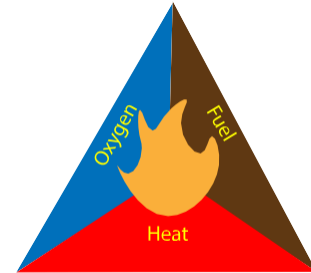


## 4. Operation “Remember PASS”

- a. From a safe position
  - i. **P**ull the pin
  - ii. **A**im at the base of the fire (Not at the flames or smoke)
  - iii. **S**queeze the trigger
  - iv. **S**weep (Back & forth until the fire is out)

5. Things to remember

- a. Start spraying the extinguisher, then walk toward the fire.
  - i. When you first squeeze the handle and start spraying, the fire can be unpredictable so walk towards while spraying.
- b. Wear gloves and eye protection when fighting a fire.
- c. Stay out of the smoke. It is no joke: smoke kills. People who die in fires mostly die from smoke inhalation, not by burning to death.
- d. You have to get to the base of the fire and take out one of the parts of the fire triangle:
  - i. Heat
  - ii. Oxygen
  - iii. Fuel
- e. Be ready for reignition.
- f. Out is only out when it is cold & out.



Fire Triangle

6. OSHA Standard

- a. 1910.266(d)(4) "Fire extinguishers." The employer shall provide and maintain portable fire extinguishers on each machine and vehicle in accordance with the requirements of subpart L of Part 1910
- b. [1910.157\(e\)](#) Inspection, maintenance and testing.
- c. [1910.157\(e\)\(1\)](#) The employer shall be responsible for the inspection, maintenance and testing of all portable fire extinguishers in the workplace.
- d. [1910.157\(e\)\(2\)](#) Portable extinguishers or hose used in lieu thereof under paragraph (d)(3) of this section shall be visually inspected monthly.
- e. 1910.157(g). Training and education.
- f. [1910.157\(g\)\(1\)](#) Where the employer has provided portable fire extinguishers for employee use in the workplace, the employer shall also provide an educational program to familiarize employees with the general principles of fire extinguisher use and the hazards involved with incipient stage fire fighting.
- g. 1910.157(g)(2). The employer shall provide the education required in paragraph (g)(1) of this section upon initial employment and at least annually thereafter.
- h. 1910.157(g)(3). The employer shall provide employees who have been designated to use fire fighting equipment as part of an emergency action plan with training in the use of the appropriate equipment.
- i. 1910.157(g)(4). The employer shall provide the training required in paragraph (g)(3) of this section upon initial assignment to the designated group of employees and at least annually thereafter.

# Group Activity

## Fire Extinguisher Inspection activity

1. Pass around fire extinguishers so that every table has at least one extinguisher at each table.
2. Have students inspect each extinguisher passing them around to other tables
3. Each student should inspect for 2-3 minutes
4. You will need one Extinguisher per table
5. Fill out the form below

TYPE	Identify Number or location	Damage	Hose un-obstructed	Pin	Check Gauge	Leaking	Annual Service Date	Comments
Example								
10 LBS. ABC Dry Chemical	#21	None	Clear	In Place	Good	None	01/20/20	This Extinguisher is good to go.

This Page Blank

Name: \_\_\_\_\_

## Fire Extinguisher Quiz

1. What does the acronym "PASS" stand for?

P \_\_\_\_\_

A \_\_\_\_\_

S \_\_\_\_\_

\_\_\_\_\_

2. What type of fire would you use the following extinguishers for?

A. \_\_\_\_\_

B. \_\_\_\_\_

C. \_\_\_\_\_

3. What type of fire extinguisher is a loaded stream?

A. AC

B. BC

C. B

D. AB

4. How does a dry chemical fire extinguisher put out a fire?

\_\_\_\_\_

5. How does a water fire extinguisher work?

\_\_\_\_\_

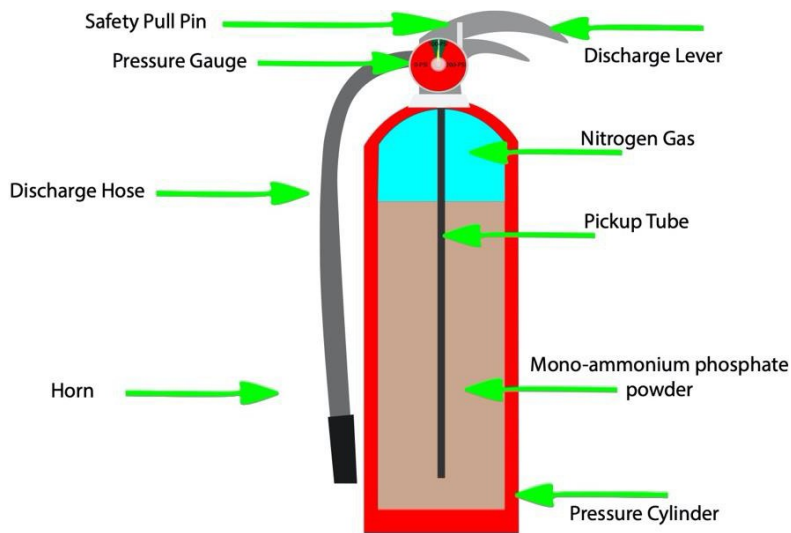
6. Why use a loaded stream extinguisher after the fire is out?

\_\_\_\_\_

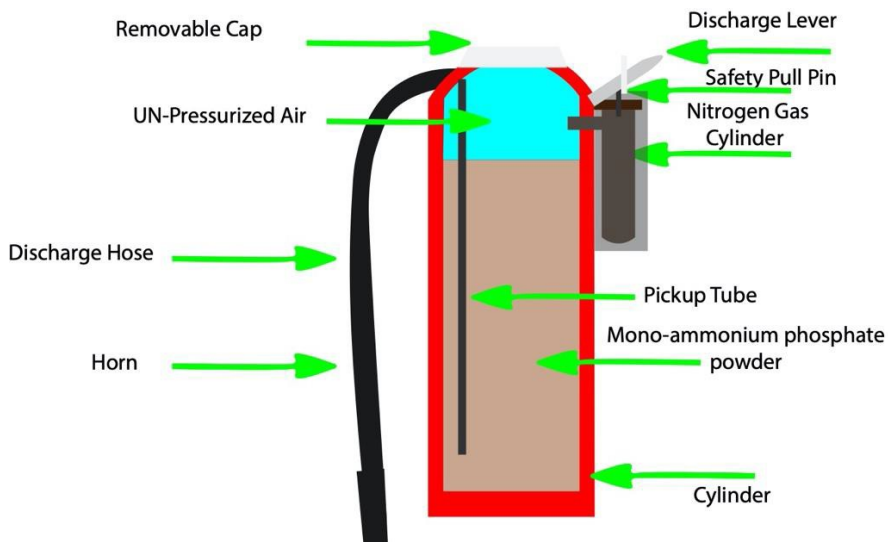
This Page Blank

# Fire Extinguisher Types:

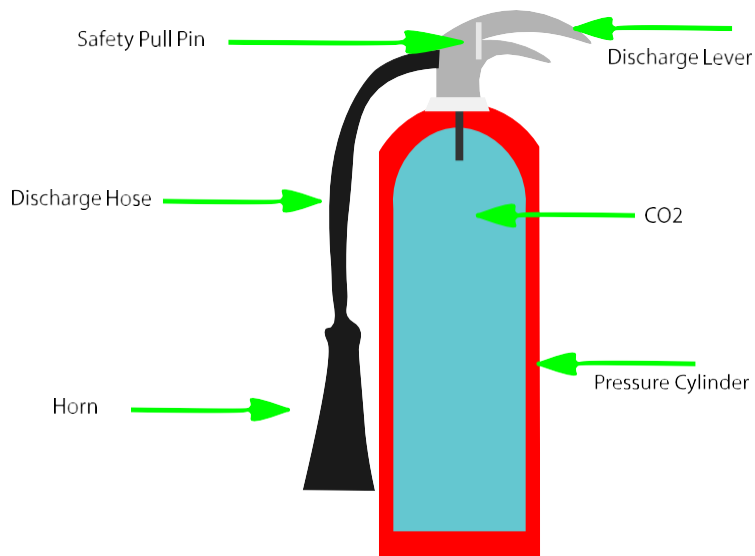
## Pressurized "ABC" Dry Chemical



## Non-Pressurized On-site refillable "ABC" Dry Chemical

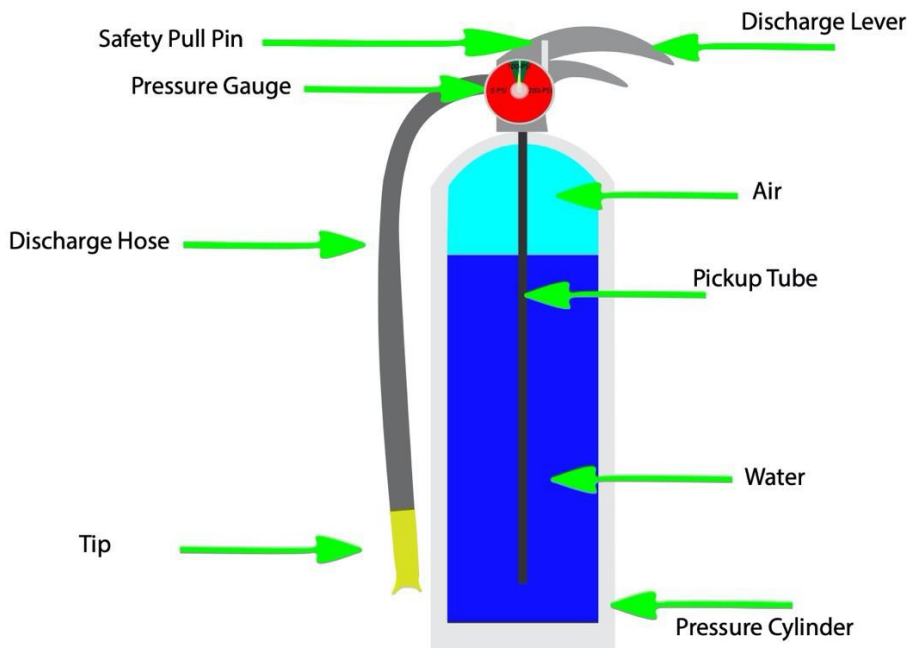


## CO<sup>2</sup> "BC" Extinguisher



## Water "A" Extinguisher

(Add Foam (AFFF ATC FOAM) it is "AB" and does not freeze called a loaded steam)





# Pre - Work Inspection

Definition: A Pre-Work inspection is a plan that is executed every day before work to make sure that equipment is in good working order.

1. At the beginning of each shift, you need to perform a Pre-Work inspection of your equipment:

a. To ensure that the equipment is not:

- i. Unsafe
- ii. Leaking oil
- iii. Damaged in any way

b. To ensure that the equipment is in serviceable condition:

i. All fluids are in the operation level

1. Engine Oil
2. Coolant level
3. Hydraulic Oil
4. Transmission Oil
5. Fuel Level
6. DEF
7. Brake Fluid
8. Gear Box
9. Planetary Oil (Drive & Turning)

ii. Glass is clean and undamaged

iii. Bearings are tight. (i.e., Saw, Center)

iv. Pins & Bushings are tight (i.e., Grab arms, Grapple arms, Bucket arms)

v. Look for Cracks (Pay attention to places that are stress areas)

vi. Look for wear points.

1. Electrical Wires
2. Hydraulic Hoses
3. Fuel Lines
4. Coolant Lines
5. Teeth / Holders
6. Chains

vii. Check all guards.

1. Guards firmly in place.
2. Bolts are tight.

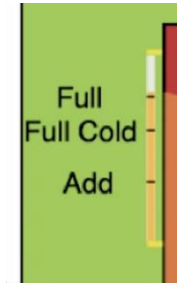
viii. Check for excess debris build-up.

c. Check that Equipment is up to date & Functional.

i. Fire Extinguisher checked once a month

ii. Check first aid kit once a month (OSHA requires annual review).

1. See Appendix A for the OSHA standard for mandatory First Aid items.



- d. 2<sup>nd</sup> Means of Egress (Sometimes there are two)
  - i. Understand the location of the 2<sup>nd</sup> egress.
  - ii. How the 2<sup>nd</sup> egress works.
  - iii. Exercise the lock at least once a month (inside & out).
  - iv. Check that there is nothing in the way of the Egress working (Extra lights, Fire Suppression equipment, any other modifications from the original manufacturer).
  - iv. Cab
    - 1. Seatbelts
      - a. Good condition
      - b. Serviceable
    - 2. Clutter
      - a. Everything needs to be secured in your cab. Including:
        - i. Tools
        - ii. GPS Units
        - iii. Thermos
        - iv. Lunch Box
        - v. Spare parts
    - 3. Roll Over Protection Structure (ROPS) / Falling Object Protective Structure (FOPS) are in good condition.
      - a. Look for Damage, cracks, bends.

2. OSHA Standards:

- 1910.266(d)(2) "First-aid kits."
- b. 1910.266(d)(2)(i) The employer shall provide first-aid kits at each work site where trees are being cut (e.g., felling, buckling, limbing), at each active landing, and on each employee transport vehicle. The number of first-aid kits and the content of each kit shall reflect the degree of isolation, the number of employees, and the hazards reasonably anticipated at the work site.
- c. 1910.266(d)(2)(ii) At a minimum, each first-aid kit shall contain the items listed in Appendix A at all times.
- d. 1910.266(d)(2)(iii). The employer also may have the number and content of first-aid kits reviewed and approved annually by a health care provider.
- e. 1910.266(d)(2)(iv). The employer shall maintain the contents of each first-aid kit in a serviceable condition.
- f. 1910.266(d)(3) "Seat belts." For each vehicle or machine (equipped with ROPS/FOPS or overhead guards), including any vehicle or machine provided by an employee, the employer shall assure:
  - g. 1910.266(d)(3)(i). That a seat belt is provided for each vehicle or machine operator.
  - h. 1910.266(d)(3)(ii). That each employee uses the available seat belt while the vehicle or machine is being operated.
  - i. 1910.266(d)(3)(iii) That each employee securely and tightly fastens the seat belt to restrain the employee within the vehicle or machine cab.
  - j. 1910.266(d)(3)(iv). That each machine seat belt meets the requirements of the Society of Automotive Engineers Standard SAE J386, June 1985, "Operator Restraint Systems for Off-Road Work Machines", which is incorporated by reference as specified in Sec. 1910.6.

# Group Activity

1. What Fluids would you check / how often?

	Fluid		How Often
a.	_____	/	_____
b.	_____	/	_____
c.	_____	/	_____
d.	_____	/	_____
e.	_____	/	_____
f.	_____	/	_____
g.	_____	/	_____
h.	_____	/	_____
i.	_____	/	_____

2. Bearing / Pins / Bushings

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_
- f. \_\_\_\_\_
- g. \_\_\_\_\_
- h. \_\_\_\_\_

### 3. Common Wear Points

Model of Machine / Common Issue

a. \_\_\_\_\_ / \_\_\_\_\_

b. \_\_\_\_\_ / \_\_\_\_\_

c. \_\_\_\_\_ / \_\_\_\_\_

d. \_\_\_\_\_ / \_\_\_\_\_

e. \_\_\_\_\_ / \_\_\_\_\_

f. \_\_\_\_\_ / \_\_\_\_\_

g. \_\_\_\_\_ / \_\_\_\_\_

h. \_\_\_\_\_ / \_\_\_\_\_

i. \_\_\_\_\_ / \_\_\_\_\_

j. \_\_\_\_\_ / \_\_\_\_\_

k. \_\_\_\_\_ / \_\_\_\_\_

l. \_\_\_\_\_ / \_\_\_\_\_

m. \_\_\_\_\_ / \_\_\_\_\_

n. \_\_\_\_\_ / \_\_\_\_\_

# Pre-Work Inspection reference

## OSHA Mandatory 1<sup>st</sup> Aid Kit Contents

The following list sets forth the minimally acceptable number and type of first-aid supplies for first-aid kits required under paragraph (d)(2) of the logging standard. The contents of the first-aid kit listed should be adequate for small work sites, consisting of approximately two to three employees. When larger operations or multiple operations are being conducted at the same location, additional first-aid kits should be provided at the work site or additional quantities of supplies should be included in the first-aid kits:

1. Gauze pads (at least 4 x 4 inches).
2. Two large gauze pads (at least 8 x 10 inches).
3. Box adhesive bandages (band-aids).
4. One package gauze roller bandage at least 2 inches wide.
5. Two triangular bandages.
6. Wound cleaning agent such as sealed moistened towelettes.
7. Scissors.
8. At least one blanket.
9. Tweezers.
10. Adhesive tape.
11. Latex gloves.
12. Resuscitation equipment such as resuscitation bag, airway, or pocket mask
13. Two elastic wraps.
14. Splint.
15. Directions for requesting emergency assistance.

[59 FR 51672, Oct. 12, 1994; 60 FR 47022, Sept. 8, 1995]

This Page Blank

Name: \_\_\_\_\_

## Pre-Work Quiz

1. It is important to do a Pre-Work inspection.
  - a. True
  - b. False
  
2. It is important to have a \_\_\_\_\_.
  - a. Buddy
  - b. Plan
  - c. Coffee
  - d. Snacks
  
3. Leaking hydraulic oil can be which hazard?
  - a. Slipping
  - b. Environmental
  - c. Fire
  - d. All of the above

This Page Blank



# Personal Protective Equipment

Definition: Personal Protective Equipment are items that a logger wears to further protect their body from injury. The most important piece PPE is your brain. You are the most important factor for not getting hurt so when you put your PPE on make sure your brain is engaged fully.

- i. Why is it important to you.
  - a. Wearing your PPE can mean the difference between being well and getting hurt. "It sounds simple, but who of us would wind back the clock 30 seconds before you got hurt and do something different?"
  - b. This sounds stupid, "But who wants to be hurt?"
  - c. Wear your PPE and prove us wrong.
  - d. "Looking professional is the first step in being professional."

- ii. Inspection of PPE

- a. Inspect your PPE every day and replace as soon as it is identified that it is bad.
- b. Look for.
  - i. Cracks
  - ii. Rips
  - iii. Holes
  - iv. Cleanliness
  - v. Structural integrity
  - vi. Discoloration
    1. Sun damage
    2. Chemical damage



- iii. 6 Pieces of PPE. (We are not going over Chaps because this is Mechanical Logging safety only. If you are going to use a chainsaw even for a small amount of time, chaps are required)

- a. Helmet
  - i. Not more than 3 years old
  - ii. Passes the Squeeze test: You can test your hard hat by doing a Squeeze Test. To perform this test you need to hold the hat upside down and squeeze the two sides together. If you hear a cracking sound then it is time to replace the entire hard hat to prevent impact injuries
  - iii. Has full in liner width suspension
  - iv. Adjusted to fit your head
  - v. When you get a new helmet write on the inside the date that you put it in service.
  - vi. Meets the ANSI Z89.1-2014
    - ANSI Marking
      - The manufacturer's Name.
      - Date of Manufacture
      - The Legend "ANSI Z89.1-2014"
      - The Type & Class Designation
      - The Approximate Head Size Range



- Optional Features
  1. Reverse Donning
  2. LT – Lower Temperature (Designed to work at -22 F)
  3. HV – High Visibility
  4. HT – High Temperature (375 F)



b. Safety Glasses / Eye protection

- i. Pick the glasses that fit the job.
  1. Should meet the impact standard.
  2. Should have side shields or wrap around.
  3. Some jobs require face shields.
  4. Stamped that they comply with ANSI Z87.1-2015
  5. Use Safety Glasses and a face shield when grinding.



c. Hearing protection

- i. Pick the hearing protection that fits the job you are doing.
- ii. Needs to meet the hearing protection standard.

1. Types
  - a. Ear Plugs
  - b. Earmuffs
2. Noise Reduction Ratings (NRR)
  - a. NRR is applied to all hearing protection and if it is not don't buy them.
  - b. To decide if you need to one set or a combination use this math.

i.  $(NRR - 7) / 2$  – Noise level.

ii. Ear plugs with the NRR rating of 27 i.  $(27 - 7) / 2 = 10$

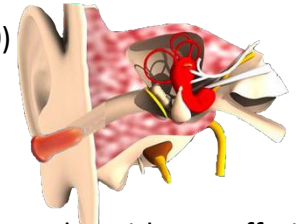
iii. Noise level of a Machine 110

iv. Effective noise level to your ears is

1.  $110 - 10 = 100$  dB

2. Go to the chart in Appendix B

3. By this chart you can operate only 2 hours a day without suffering hearing loss.



c. Ear plugs (NRR 30) & Earmuffs (NRR 27)

i. Add 5 just to the higher rated protector

1.  $(30 + 5 = 35)$  then  $(35 - 7) / 2 = 14$

ii. Effective noise level to your ears is

1.  $110 - 14 = 96$  dB

2. Go to the chart at the end of the lesson plan

3. By this chart you can operate only 3.5 hours a day without suffering hearing loss.



3. Options for sound testing

- a. NIOSH app for your phone as long you use a microphone attachment.
- b. Sound meters

4. How to insert ear plugs in your ear?

- a. Roll
- b. Pull
- c. Hold
- d. Check Fit

d. Hi-Vis Vest

- i. Worn at all times outside of a Pickup, Log Truck or piece of Logging equipment.
- ii. OSHA Standard 1926.651(d) Exposure to vehicular traffic. "Employees exposed to public vehicular traffic shall be provided with, and shall wear, warning vests or other suitable garments marked with or made of reflectorized or high- visibility material."
- iii. Should fit well.
- iv. Keep clean and reflective.
- v. Should meet the ANSI Class 1 (ANSI has 3 classes of safety vests.
  1. Class 1 is for an employee that is in the lowest risk category as defined by ANSI this way "Class one vests are for workers whose job puts them at the lowest risk level. These would be jobs in areas where traffic is traveling at or below 25 mph, and work is taking place at a safe distance from a roadway. An example of this type of work would be sidewalk repair in a small residential neighborhood."
  2. Definition of ANSI Class 1 safety vest, it must either a safety yellow or safety orange color and have a minimum of 155 square inches of reflective tape. These reflective strips must go around the middle of the vest as well as over the shoulder. These **ANSI safety vests** are designed to cover the torso only and do not require sleeves.
- vi. Velcro tear away vests are highly recommended in case you get it caught in a piece of equipment it will rip off you.



e. Gloves: Pick the right glove for the job

- i. Leather / Insulated for the winter
  1. Pulling Cable / Chain
  2. Working on Saw Chain
  3. Turning Wrenches
- ii. Cotton Gloves
  1. Driving / Operating Equipment
- iii. Nitrile Gloves
  1. First aid
  2. Handling Oil
  3. Dispensing Diesel or Gas
  4. Greasing
  5. Sometime confused with Latex. Throw away any Latex gloves you get in 1<sup>st</sup> aid kits.
- iv. Kevlar
  1. Handling very sharp item (i.e., Chipper knives)



f. Boots

- i. High top with good ankle support
- ii. No Crush Toe
- iii. Steel Shank
- iv. OSHA Standard 1910.266(d)(1)(v).

"The employer shall assure that each employee wears foot protection, such as heavy-duty logging boots that are waterproof or water repellent, cover and provide support to the ankle. The employer shall assure that each employee who operates a chain saw wears foot protection that is constructed with cut-resistant material which will protect the employee against contact with a running chain saw. Sharp, calk-soled boots or other slip-resistant type boots may be worn where the employer demonstrates that they are necessary for the employee's job, the terrain, the

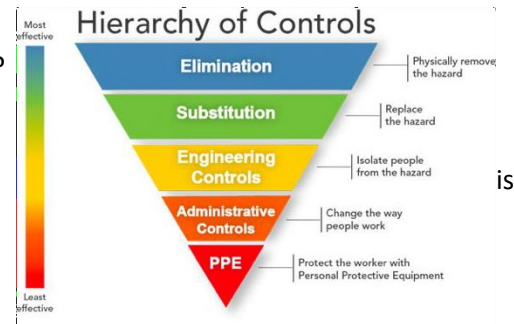


timber type, and the weather conditions, provided that foot protection otherwise required by this paragraph is met.”

iv. Hazard Assessment

- a. This is the assessment that is done to determine what PPE is too be worn.
- b. Pick a job activity and ask these questions:

- i. (Elimination) Can you eliminate the hazard?
- ii. (Substitution) Can you substitute the Job with a safer one?
- iii. (Engineering Controls) Can you separate the employee from the hazard? (ie. Guarding)
- iv. (Administrative Controls) Can you change the way the job done?
- v. Can you wear PPE will make this activity safer?



v. What PPE do I need when?

a. OSHA Standard:

i. OSHA Standard **1910.266(d)(1)** "Personal protective equipment."

1. **1910.266(d)(1)(i)**. The employer shall assure that personal protective equipment, including any personal protective equipment provided by an employee, is maintained in a serviceable condition.
2. **1910.266(d)(1)(ii)**. The employer shall assure that personal protective equipment, including any personal protective equipment provided by an employee, is inspected before initial use during each shift.

Operation	Electrode size in 1/32" (0.8mm)	Arc Current	Minimum Protective Shade
Shielded Metal Arc Welding	< 3	< 60	7
	3 - 5	60 - 160	8
	5 - 8	160 - 250	10
	> 8	250 - 550	11
Gas Metal Arc Welding and Flux Cored Arc Welding		<60	7
		60 - 160	10
		160 - 250	10
		250 - 500	10
Gas Tungsten Arc Welding		<50	8
		50 - 150	8
		150 - 500	10
Air Carbon	(Light)	< 500	10
Arc Cutting	(Heavy)	500 - 1000	11
Plasma Arc Welding		< 20	6
		20 - 100	8
		100 - 400	10
		400 - 800	11
Torch Brazing			3
Torch Soldering			2
Carbon Arc Welding			14

## OSHA Guidelines for Filter Lenses for Protection Against Radiant Energy

Operations	Plate Thickness Inches	Plate Thickness MM	Minimum Protective Shade
Gas Welding Light	< 1/8	<3.2	4
Gas Welding Medium	1/8 - 1/2	3.2 - 12.7	5
Gas Welding Heavy	> 1/2	>12.7	6
Oxygen Cutting Light	<1	<25	3
Oxygen Cutting Medium	1 - 6	25 - 150	4
Oxygen Cutting Heavy	> 6	> 150	5

## Sound level examples

### Painful:

150 dB = Rock Concerts at Peak  
 140 dB = Firearms, Air-Raid Siren, Jet Engine  
 130 dB = Jackhammer  
 120 dB = Jet Plane Take-off, Car Stereo

### Extremely loud:

110 dB = Machinery, Model Airplanes  
 100 dB = Snowmobile, Chain saw  
 90 dB = Lawnmower, Shop Tools

### Very loud:

80 dB = Alarm Clock, Busy Street  
 70 dB = Vacuum Cleaner  
 60 dB = Conversation, Dishwasher

### Moderate:

50 dB = Moderate Rainfall  
 40 dB = Quiet room

### Faint:

30 dB = Whisper, Quiet Library

Permissible Noise Exposures			
	Duration per Day, in Hours		Sound Level in Decibels (dB)
	8		90
	6		92
	4		95
	3		97
	2		100
	1.5		102
	1		105
	1/2		110
	1/4		115

## How To Wear Soft Foam Earplugs

To get the best protection from your soft foam earplugs, remember to roll, pull, and hold when putting them in. Use clean hands to keep from getting dirt and germs into your ears!

### 1. Roll

Roll the earplug up into a small, thin "snake" with your fingers. You can use one or both hands.



### 2. Pull

Pull the top of your ear up and back with your opposite hand to straighten out your ear canal. The rolled-up earplug should slide right in.



### 3. Hold

Hold the earplug in with your finger until it expands to fill the ear canal. Your voice will sound muffled when the plug has made a good seal.



**Check the fit** when you're all done. Most of the foam body of the earplug should be within the ear canal. Try cupping your hands tightly over your ears. If sounds are much more muffled with your hands in place, the earplug may not be sealing properly. Take the earplug out and try again.





# Group Activity

## Personal Protective Equipment Assessment Check list

Personal Protective Equipment assessment check list															
Job to do	Eye Hazard		Head Hazard		Hearing Hazard		Breathing Hazard		Hand Hazard		Leg Hazard		Foot Hazard		Comments:
Example: Change teeth on a buncher high speed saw.	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	1. When setting up this job make sure that the head of the buncher is firm on the ground with zero gravity energy potential. 2. The Machine should be off with the key to the ignition in your pocket 3. The saw should be stopped & blocked from rotating at the front of the saw where you can
	X		X		X				X	X			X	X	
What PPE do you need to do this job Safer?	Standard Safety Glasses Helmet Ear plugs Leather Gloves Steel Toe Boots														
Personal Protective Equipment assessment check list															
Job to do	Eye Hazard		Head Hazard		Hearing Hazard		Breathing Hazard		Hand Hazard		Leg Hazard		Foot Hazard		Comments:
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	
What PPE do you need to do this job Safer?															

This Page Blank

Name: \_\_\_\_\_

## Personal Protection Equipment Quiz

1. Ear protection should be worn?
  - a. Anytime the noise exceeds 90 decibels.
  - b. Never! Huh?
  - c. Anytime the noise exceeds 150 decibels.
  - d. Whenever the safety inspector or the boss comes by.
  
2. What are the pieces of PPE?
  - a. Helmet, Steele Toe Boots, Gloves, Safety Glasses, Hy-Vis. Vest, Hearing Protection
  - b. Helmet, Gloves, Flashlight, Hy- Vis. Vest
  - c. Helmet, Lighter, Safety Glasses, Steele Toe Boots
  - d. Dew, Cigarettes, Chew, Donuts
  
3. When performing first aid on a co-worker, what kind of gloves do you use?
  - a. Insulated Leather Gloves
  - b. Kevlar Gloves
  - c. Nitrile Gloves
  - d. No Gloves Needed
  
4. Safety Glasses are needed when?
  - a. Only when you want
  - b. Anytime you could get something in your eye
  - c. Swinging a hammer
  - d. When you look good in them
  
5. What Class of HY-Vis Vest do you need to wear?
  - a. Class 1
  - b. Class 2
  - c. Class 3
  - d. The Strippers Vest

This Page Blank