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Quiz: Site and Mechanical Hazards

1) A worker is pulling wire at large ground-mounted PV installation site near Tampa, FL. What is the minimum quantity of cool potable water that their employer must provide throughout the day?

a) Five gallons per day
b) One cup per hour
c) One gallon per hour
d) One pint per hour
e) Unlimited access to cool water

One pint per hour

Explanation

To prevent heat illness, employers should establish a complete heat illness prevention program, which includes providing a minimum of one pint of cool potable water per hour per worker. Frequent breaks and shade are also essential for preventing heat illness!

2) Which of the following equipment is below the OSHA permissible decibel exposure limit, and therefore does NOT require hearing protection when working within the vicinity?

a) central inverter in operation
b) pile driver
c) impact driver
d) forklift
e) bulldozer

Central inverter in operation

Explanation

OSHA recommends that employees not be exposed to noise levels greater than 85dBA, and the OSHA permissible exposure limit is 90dBA. Central inverters operate at approximately 70dBA, while pile drivers, bulldozers, forklifts, and impact drivers all operate at levels above 90dBA.

3) If it takes less than _____ to hear thunder after seeing a lightning flash, lightning is near enough to pose a threat.
a) 30 minutes
b) 10 seconds
c) 30 seconds
d) 1 minute
e) 1 second
30 seconds
Explanation
The "30/30" rule states that if takes less than 30 seconds to hear thunder after seeing a lightning flash, lightning is near enough to pose a threat. Workers should shelter in a fully enclosed building or hard-top vehicle until at least 30 minutes after the last thunder is heard. Note, some company safety policies may require work to end for the day.

4) True or False: Flammable chemicals may be found on a PV installation site.
True
Explanation
Examples of flammable chemicals which may be found on a large PV installation site include gas and diesel fuel, hydraulic oil, striping paint, insect spray, adhesive spray, and PVC cement. All chemicals brought on side should be added to the Chemical Inventory List and a Safety Data Sheet (SDS) provided. All flammable chemicals must be kept in the flammable cabinet.

5) What percentage of struck-by fatalities involve heavy equipment?
a) 100%
b) 50%
c) 25%
d) 95%
e) 75%
75%
Explanation
Per OSHA, 75% of struck-by fatalities involve heavy equipment such as trucks or cranes. More information can be found here:
https://www.osha.gov/SLTC/etools/construction/struckby/mainpage.html

6) Rate the following controls by effectiveness, with 1 being the most effective, and 5 being the least effective.

a) ____ warnings
b) ____ engineering controls
c) ____ PPE
d) ____ elimination or substitution
e) ____ trainings and procedures

1. elimination or substitution
2. engineering controls
3. warnings
4. trainings and procedures
5. PPE

Explanation

When possible, the most effective option for hazard control is to eliminate the hazard all together. Engineering controls are the next most effective option, followed by administrative controls such as warnings and labels, and then trainings and procedures. PPE is the least effective option and considered the last line of defense between hazards and humans.

7) True or False: Standard eye glasses are acceptable as PPE.

False

Explanation

Standard prescription eye glasses or sun glasses do not provide adequate protection against work hazards. Safety goggles and glasses must fit properly and be reasonably comfortable, provide unrestricted vision and movement, and be impact resistant and cleanable. ANSI Z87 must be printed somewhere on the frame or lenses.

8) Which type of hard hat is acceptable for high-voltage shock and burn protection?

a) Class C
b) Class D
c) Class E
d) Class G
e) Class F

Class E

Explanation

Class E hard hats are acceptable for use in situations where a worker is exposed to impact and penetration by falling objects, and they provide high-voltage shock and burn protection up to 20,000 volts. Remember, class "E for electrical".

9) Which of the following construction safety signs is required in major hazard situations where an immediate hazard presents a threat of death or serious injury?

a) Danger
b) Caution

c) Beware
d) Warning
e) Stop

Danger

Explanation

Danger signs shall be used in major hazard situations where an ***immediate hazard*** *presents a threat of death or serious injury to employees. The specifications in OSHA 1910.145 apply to the design, application, and use of signs or symbols that indicate and, insofar as possible, define specific hazards that could harm workers or the public, or both, or to property damage.*

10) To protect workers from excavation hazards, all materials and equipment must be kept at least _____ from the edge of the excavation.

a) 1 foot
b) 2 feet
c) 3 feet
d) 6 inches
e) 6 feet

2 feet

Explanation

Per OSHA 1926.651(j)(2), employees shall be protected from excavated or other materials or equipment that could pose a hazard by falling or rolling into excavations. Protection shall be provided by placing and keeping such materials or equipment at least 2 feet (.61 m) from the edge of excavations, or by the use of retaining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both if necessary.

11) It is necessary to _____ *before* performing any kind of excavation work.

a) choose the correct stepladder
b) erect shade structures for sun protection
c) locate module and equipment staging areas
d) determine the location of underground utilities
e) install fences

determine the location of underground utilities

Explanation

Call before you dig! 811 is a nationwide service (each state has its own call center) that provides free utility location to contractors and the general public. Call 811 several days prior to any digging, and 811 operators will notify local utilities to send underground utility locators to your digging site. Any time any kind of digging or excavation is planned, underground utilities must be located ***before*** *any digging begins. This includes any privately-owned utilities. Note, not all utilities are members of the one-call service and those must be contacted as well. Failing to locate underground utilities is not only an OSHA violation- it brings the very real possibility of injury, death, and/or damage to property.*

12) Which is the correct color code indicating the presence of underground gas, oil, steam, petroleum, or gaseous materials?

a) White
b) Pink
c) Red
d) Yellow
e) Orange

Yellow

Explanation

Public and private utility companies follow a national council uniform color code. A yellow marking indicates the presence of gas, oil, steam, petroleum, or gaseous materials. It is essential for worker safety to know the color codes for the various utilities which may be present.

13) Trenches must be inspected by a _____ person every day.

a) Qualified
b) Authorized
c) Competent
d) Reasonable
e) Senior

Competent

Explanation

Per OSHA 1926.651(k)(1), daily inspections of excavations, the adjacent areas, and protective systems shall be made by a competent person for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard increasing occurrence. These inspections are only required when employee exposure can be reasonably anticipated.

14) True or False: Anyone working on a PV installation site may operate a forklift.

False

Explanation

Any workers operating forklifts must be certified to operate a forklift and authorized by their employers to operate a forklift. A worker who does not have these credentials may not operate a forklift.

15) In order to choose the correct duty rating of a stepladder, it is important to consider the weight of the worker and _____.

a) all PV racking system components
b) the manufacturer of the stepladder
c) the material of the stepladder
d) the weight of any equipment
e) the color of the stepladder

the weight of any equipment

Explanation

When choosing the duty rating of a step ladder, you must choose the correct rating based on the weight of the heaviest worker who will be using the ladder, in addition to the maximum weight of the equipment that may be carried on the ladder at any given time by that worker. The duty ratings of step ladders can be found on a label on one of the side rails of the ladder.