THUNDERSTORM AND LIGHTNING HAZARDS

Thunderstorms and lightning are most likely to develop on hot humid days and can be very dangerous to employees working outdoors. Thunder is the sound generated by lightning and is typically an indicator of an approaching storm. Lightning kills approximately 80 people each year and injures hundreds. Workers in agriculture, construction, and the utility industries have been struck by lightning on the job. Lightning occurs most frequently in the late afternoon in the spring and summer. Lightning seeks ground to discharge energy and will typically strike the tallest objects (trees, utility poles or a person standing in an open field). It will also strike metal objects and water. There are a number of ways that lightning can injure workers.

The Effects of Lightning
Lightning can cause damage in the following ways:

- A direct strike usually results in cardiac arrest. If the lightning current passes through the heart or the brain, death may occur. The average lightning bolt carries 30,000 amps to ground. As few as 50 milliamps (.05 amps) can kill a human being.

- The current from a lightning flash or strike may range from a tingling shock to massive current diverted from a poorly grounded utility pole through the power grid system.

- Current radiates out through the ground from a struck tree or utility pole, affecting any person or animal close to the pole. Many livestock deaths are attributed to this effect.

- Fallen trees, poles and wires are secondary effects of lightning that also cause injuries. During dry periods, lightning can also start forest or brush fires that can cause fatalities and massive property damage.
Lightning and Thunderstorms

Protection during Storms
Precautions to take during a storm are:

- If you see lightning or hear thunder, act quickly, especially if the thunder is heard less than 30 seconds after seeing the lightning flash. If the elapsed time between the thunder and the lightning flash is decreasing, the storm is moving closer. An early indicator of an imminent lightning strike is when body hair stands up; this is due to the electrical charge in the air. If this happens, drop any tools and don't lean or hold onto any object which may ground your body. If given advance warning of a lightning storm, some preparations can be made to minimize risks. Power tools and electrical cords should be disconnected from their power sources. Windows and doors in buildings should be closed. Avoid using telephones, computers, and wireless devices. Move away from metal objects such as scaffolding, construction equipment, and electrical systems. Also move away from water sources.

- If caught in a lightning storm without warning, put down any objects which could conduct electricity such as rakes, shovels or other metal tools. Seek shelter in an enclosed building if available. Isolated, open-air structures such as bus shelters and tents should be avoided since they are often struck by lightning and provide little protection. Vehicles can be used as a shelter; however, the windows and doors should be closed. A secondary concern with vehicles is that they are often parked under utility lines and trees, and the occupant could be injured by fallen wires or trees. Consider this when selecting a vehicle as shelter from the storm. If caught out in the open, seek lower elevations such as a ditch or gully and keep your body low to the ground. When caught in the open, never seek shelter under taller structures such as utility lines or trees, as they attract lightning.

Response to Injuries
In the event that damage and injuries result from the storm, take the following actions:

- If a person has been struck by lightning, call 911 immediately. Victims struck by lightning will not remain electrified and can be touched immediately without risk. They may have burns, nervous system damage, broken bones, loss of hearing, confusion, and loss of memory. If properly trained in first aid, check the victim immediately for pulse and breathing. If the victim is not breathing but has a pulse, begin mouth-to-mouth resuscitation. If there is no pulse, begin CPR. Do not move the injured if spinal injury is suspected. Cover burns with dry sterile dressing. If one burn is discovered there will usually be a second, one for the entry and one for the exit of the electrical current. Keep victims cool until medical help arrives. If the victim appears only stunned or otherwise unhurt, medical attention is still needed to assess for other internal injuries.

- If fallen wires and fires result from the storm, call 911 immediately. If wires have fallen on an occupied vehicle, the driver should remain in the car until help arrives.