



## **Laser Beams – The Invisible Eye Hazard**



**Greater Houston  
Chapter**

*Did you know that you can't see the injurious light rays generated by welding equipment, or laser beams. And unfortunately, their effects often are not felt until hours (or days) later.*

In **OSHA's 1926 Construction Standards (Subpart E – Personal Protective Equipment and Life Saving Equipment)**, all workers are required to wear eye protection “when operations present potential eye injury from physical, chemical, or radiation agents (lasers).”

**In this same OSHA Standard** it stipulates that “...employees whose occupation or assignment requires exposure to laser beams shall be furnished suitable laser safety goggles which will protect for the specific wavelength of the laser, and be of optical density adequate for the energy involved.

**Again, in this same OSHA Standard**, Table #E-3 (Selecting Laser Safety Glass), the type of glass is prescribed, depending on the optical density (i.e., power of the laser beam, duration, attenuation factor, etc.).

**Now that we've gotten past the OSHA** determination of eye protection to be worn, let's discuss some everyday protection procedures when laser beams are in use on your construction site. Here are some tips to be remembered when you see laser beams in operation:

- a) Don't stare at the beam.
- b) Turn off laser beam equipment when not in use.
- c) Post signage: WARNING – LASER BEAM EQUIPMENT IN USE.
- d) Only trained (and authorized) can operate laser beam equipment.
- e) Don't aim laser beam into oncoming traffic.
- f) Don't aim laser beam at “sidewalk superintendents” (passers-by).
- g) Uninvolved workers should be restricted from the areas where laser beams are in use.
- h) Provide all workers in the areas where laser beams are in operation with appropriate laser beam protection goggles (See OSHA Table E-3).
- i) Lock up laser beam equipment when not in use.
- j) Store laser beam equipment in locked, designate areas.
- k) As a minimum, keep the laser beam “cap” over the lens when not in use.
- l) During work/lunch breaks, all laser equipment must be locked up in a designated storage area.
- m) If anyone on-site complains of eyesight impairment injury, get victim to the hospital ASAP.

### **Laser Control Program:**

If a company has ongoing use for laser equipment, it is necessary for them to adopt a LASER CONTROL PROGRAM, consisting of the following steps:

1. Physical control (enclosures, interlocks, beam stops, etc.)
2. Protective Equipment (goggles, clothing, etc.)
3. Warning Devices (signs, lights, labels, etc.)
4. Procedures

### **Protective Eyewear:**

- Laser protective eye wear must be worn whenever operational conditions may result in a potential eye hazard.
- All protective eye wear must be clearly labeled with the optical density at the appropriate laser wavelength.
- Adequate optical density must be weighted with the need for adequate visible light transmission.
- Periodic inspection must be made to ensure that pitting, cracking, etc., will not endanger the wearer.
- The frame of the protective eye wear should also be inspected for mechanical integrity and light leaks.

### **Signage:**

- All signs must be conspicuously displayed at entrances to controlled laser areas.
- Signage should indicate any pertinent precautionary instructions or protective actions which are required (varies depending on whether Class 3a, 3b, etc.)

### **Related Hazards:**

- The operations of lasers and laser systems, like any industrial/construction process, involve possible related hazards.
- Potential hazards to use laser use include: electrical, explosion, fire, compressed gases, cryogenic liquids, toxic materials, noise, ultraviolet light, and ionizing radiation.

*As simple as most laser beam equipment appears to be, the responsible/controlling agent (owner, general contractor, specialty contractor, supplier, etc.) should take steps to ensure that the workers exposed to laser beam equipment are fully protected at all times.*