

# Eye Injury Prevention

Are eye injuries an accident, a pre-meditated act, or the loss of a bet with fate? How many times at home and on the job have you needlessly placed your ability to see on the line by not using eye protection? It is one thing when you unknowingly place yourself in jeopardy; it is another when you do it on purpose. When you, or one of the troops, go under a rig to do or check something, perform tasks overhead or do anything that causes the little voice to say “you should have safety glasses on”, you are betting your vision that you can get away with it. If the bet is lost, you and others pay in terms of dollars, pain, quality of life, and in many cases, a career.

As we begin to bring the issue into focus, there are certain numbers worth pondering;

- The population of the US is about 308 million.<sup>1</sup>
- There are about 2 million eye injuries per year in the US.<sup>2</sup>
- The chance of winning four dollars in the Florida Lottery is 1 in 126.<sup>3</sup>
- In 2008, there were about 80,000 firefighter injuries of all types.<sup>4</sup>
- Firefighter eye injuries account for about 5% (range is 3.5 – 6.7%) of annual firefighter injuries.<sup>5</sup>
- 90% of eye injuries are avoidable.<sup>6</sup>
- The average direct cost of an eye injury is \$916.51 per injury. The indirect cost is 3 to 7 times this number.<sup>7</sup>

Placing these numbers within the grasp, the chances of incurring an eye injury is about 1 in 154. Of the 2 million eye injuries per year, at least 800,000 were avoidable. Instead of 100,000 Americans being disabled from eye injury yearly, the number would be 10 – 20,000. Of the 80,000 firefighter injuries annually, 4000 are eye injuries with an annual direct and indirect cost of about 18 million dollars per year. Of the 4000 injuries, 3600 were avoidable. With these numbers, the question becomes, why don't folks utilize eye protection?

With the magic of eye injury prevention being the use of eye protection, what prevents this magic from occurring? Let's look at the components of an eye injury prevention system. From arduous study and observation, the components seem to be:

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<sup>1</sup> <http://www.census.gov/population/www/popclockus.html>

<sup>2</sup> McGwin G, Xie A, Owsley C. Rate of Eye Injury in the United States. Arch Ophthalmol. 2005;123:970-976.)

<sup>3</sup> [http://www.lottostrategies.com/script/prize\\_odds/101](http://www.lottostrategies.com/script/prize_odds/101)

<sup>4</sup> Firefighter Injuries in the United States, Michael J. Karter, Jr. & Joseph L. Molis, October 2009

<sup>5</sup> Range used to acquire percentage was (3.5%) from Eye, ISSN 0950-222X and (6.7%) from the IAFF

<sup>6</sup> Just about any search you do

<sup>7</sup> Florida League of Cities and Towns, Worker's Compensation

- Culture
- User
- Devices
- Availability
- Cost

**Culture** – Deny it or not, in the fire service, safety and risk managers are fighting a culture of risk taking compounded by the need to look cool, look the part, and never display weakness. Using eye protection reduces the potential for eye injury by 90%, ergo, use eye protection! What’s the issue? Perhaps it is one of complacency, the “not to me attitude” or education. Could your safety committee identify areas, procedures and situations, that eye protection should be worn? Could eye protection be provided with suitable encouragement to stimulate use? How about designating the apparatus bays as eye protection required areas?

**User** – Users want style, ease of use, and the knowledge that their eye protection will add, rather than detract from their appearance. Some users wear glasses and may not be willing to trade vision for protection. Finally, if the issue of eye protection is not dealt with as an important issue (the white hats comply, support and enforce), eye protection will be ignored as well.

**Devices** - While there is the normal plethora of standards for one issue (NFPA 1971, NFPA 1500, Federal OSHA Standards 29 CFR), all point to American National Standards Institute, Eye and Face Protection Standard Z87.1 or ANSI Z87.1. To be sure of compliance, eye protection devices should be marked “Z87” or “Z87+”. (the + indicates impact resistance).

Per Z87.1, All eye protection is broken down into two types:

- **Primary Protectors** - Devices that can be worn alone or with a secondary protector.
- **Secondary Protectors** – Devices worn only with a primary protector.

Armed with this information we now revisit some familiar, if not well used eye protection;

- **Goggles / Safety Spectacles with sideshields** – Primary protector devices that shield the eyes by fitting to the skin around the eyes. They may also be used in conjunction with secondary protectors.
- **Faceshields** - Secondary protector devices that protect (only if used) the eyes and some or all of the face. They must be used with a primary protector because while the faceshield will protect from impact, it will not protect against particulate.

- **SCBA mask** – Per NFPA 1500 and OSHA, if the regulator is attached, it is primary protection, if not and there is direct access to the face through the regulator port, it does not qualify as eye protection.

**Availability** – Ever gone to use equipment requiring eye protection and found the eye protection in need of a good cleaning or perhaps replacement? Availability means that eye protection is readily available and in condition for use without much fuss. Availability is useless if the protection is such that its appearance, cleanliness, fit, and distortions cause them to be ignored rather than used. The best method of ensuring availability is issuing them, having spares and having face shields to compliment them for use with equipment determined to require such protection.

**Cost** – If eye protection were used, rather than worn like decoration or ignored, the cost savings would be about 16 million dollars annually. This does not include the savings realized through reduced workers compensation insurance costs.

**To prevent eye injury, use protection, have a plan and enforce it.**

- Have your safety committee or safety coordinator identifying areas that may present eye hazards.
- Select protective eyewear designed for the specific hazard.
- Establish a mandatory program that requires the use of the protective eyewear.
- Have the eyewear properly fitted to each firefighter.
- Reinforce the use of protective eyewear by making it part of all training procedures.
- Those that wear glasses or contacts can get glasses that meet the requirements of safety spectacles and can be worn with SCBA. (The value of this type as opposed to SCBA mounted glasses is that when the mask comes off, the vision remains.)

The loss of vision is bad, partial loss of vision is worse. It takes about three years to adjust when one goes from binocular to monocular vision. The adjustment time frame is age dependent; the older you are, the longer it takes. The process involves “rebooting” the brain to interpret vision (see) in a new way. Should one loose partial vision in an eye, the adjustment process becomes much longer and may never occur.

While this epistle is directed to the on-the job aspects of eye protection, it is equally applicable at home, in sports and for those you care for.

For information about eye injuries, go to: <http://www.aao.org/aao/patients/eyemd/injury.cfm>

Stay safe and See safe.

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