**Health Care Factsheet - Eye Protection**

**What Is The Hazard ?**

Employees can be exposed to a large number of hazards that pose danger to their eyes and face. Many occupational eye injuries occur because workers are not wearing any eye protection while others result from wearing improper or poorly fitting eye protection. Eye injuries alone cost lost production time, medical expenses, and worker compensation.

**How Can It Harm Me ?**

Employees can sustain eye injuries if they are exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, potentially infected material or potentially harmful light radiation.

Infectious diseases can also be transmitted through various mechanisms, among which are infections that can be introduced through the mucous membranes of the eye (conjunctiva). These include viruses and bacteria that can cause conjunctivitis (e.g., adenovirus, herpes simplex, *Staphylococcus aureus*) and viruses that can cause systemic infections, including bloodborne viruses (e.g. hepatitis B and C viruses, human immunodeficiency virus), herpes viruses, and rhinoviruses. Infectious agents are introduced to the eye either directly (e.g., blood splashes, respiratory droplets generated during coughing or suctioning) or from touching the eyes with contaminated fingers or other objects.

**What Engineering & Work Controls Can Be Used ?**

Controlling a hazard at its source is the best way to protect employees. Depending on the hazard or workplace conditions, OSHA recommends the use of engineering or work

practice controls to manage or eliminate hazards to the greatest extent possible.

When engineering, work practice and administrative controls are not feasible or do not provide sufficient protection, employers must provide personal protective equipment

(PPE) to their employees and ensure its use. Personal protective equipment, commonly referred to as "PPE", is equipment worn to minimize exposure to a variety of hazards. PPE includes the correct type and use of eye protection.

**What Safe Work Practices Can I Use ?**

The eye protection chosen for specific work situations depends upon the circumstances of exposure, other PPE used, and personal vision needs. There is wide variety in the types of protective eyewear, and appropriate selection should be based on a number of factors, the most important of which is the nature and extent of the hazard. Eye protection must be comfortable and allow for sufficient peripheral vision and must be adjustable to ensure a secure fit. It may be necessary to provide several different types, styles, and sizes. Selection of protective eyewear appropriate for a given task should be made from an evaluation of each activity, including regulatory requirements when applicable.

Eye protection provides a barrier to infectious materials entering the eye and is often used in conjunction with other personal protective equipment (PPE) such as gloves, gowns, and masks or respirators.

Employers must be sure that their employees wear appropriate eye and face protection and that the selected form of protection is appropriate to the work being performed

and properly fits each worker exposed to the hazard.

Selecting the most suitable eye and face protection for employees should take into consideration the following elements:

* Ability to protect against specific workplace hazards
* Should fit properly and be reasonably comfortable to wear
* Should provide unrestricted vision and movement
* Should be durable and cleanable
* Should allow unrestricted functioning of any other required PPE
* Ensure your eye protection fits properly. Eye size, bridge size, and temple length all vary. Safety glasses should be individually assigned and fitted.
* Wear safety glasses so that the temples fit comfortably over the ears. The frame should be as close to the face as possible and adequately supported by the bridge of the nose.
* Clean eye protection daily according to the manufacturer's instructions. Avoid rough handling that can scratch lenses, which impair vision and weaken lenses.
* Store eye protection in a clean, dry place where they cannot fall or be stepped on. Keep them in a case when they are not being worn.
* Replace scratched, pitted, broken, bent, or ill-fitting eye protection with identical

parts from the original manufacturer to ensure the same safety rating.

Some of the most common types of eye and face protection include the following:

**Safety spectacles**. These protective eyeglasses have safety frames constructed of metal or plastic and impact resistant lenses.

**Goggles.** These are tightfitting eye protection that completely cover the eyes, eye sockets and the facial area immediately surrounding the eyes and provide

protection from impact, dust and splashes. Some goggles will fit over corrective lenses.

**Welding shields.** Constructed of vulcanized fiber or fiberglass and fitted with a filtered lens, welding shields protect eyes from burns caused by infrared or intense radiant light; they also protect both the eyes and face from flying sparks, metal spatter and slag chips produced during welding, brazing, soldering and cutting operations.

**Laser safety goggles**. These specialty goggles protect against intense concentrations of light produced by lasers. The type of laser safety goggles an employer chooses should depend upon the equipment and operating conditions in the workplace.

**Face shields**. These transparent sheets of plastic extend from the eyebrows to below the chin and across the entire width of the employee's head. Face shields protect against nuisance dusts and potential splashes or sprays of hazardous liquids but will not provide adequate protection against impact hazards. Face shields used in combination with goggles or safety spectacles will provide additional protection against impact hazards.

Prescription Lenses

Everyday use of prescription corrective lenses will not provide adequate protection against most occupational eye and face hazards, so employers must make sure that

employees with corrective lenses either wear eye protection that incorporates the prescription into the design or wear additional eye protection over their prescription lenses.

It is important to ensure that the protective eyewear does not disturb the proper positioning of the prescription lenses so that the employee's vision will not be inhibited or limited. Also, employees who wear contact lenses must wear eye or face PPE when working in hazardous conditions.

Laser Operations

Laser light radiation can be extremely dangerous to the unprotected eye and direct or reflected beams can cause permanent eye damage. Laser retinal burns can be

painless, so it is essential that all personnel in or around laser operations wear appropriate eye protection.

Laser safety goggles should protect for the specific wavelength of the laser and must be of sufficient optical density for the energy involved. Safety goggles intended for use

with laser beams must be labeled with the laser wavelengths for which they are intended to be used, the optical density of those wavelengths and the visible light

transmission.

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Goggles: Appropriately fitted, indirectly vented goggles with a manufacturer’s antifog

coating provide the most reliable practical eye protection from splashes, sprays, and respiratory droplets. Goggles must fit snugly, particularly from the corners of the eye across the brow. While highly effective as eye protection, goggles do not provide splash or spray protection to other parts of the face. Directly vented goggles may allow penetration by splashes or sprays; therefore, indirectly vented or non-vented goggles are preferred for infection control.

Many safety goggles or plano (nonprescription) safety glasses fit comfortably over street eyewear and can provide satisfactory protection without impairing the fit of the prescription eyewear.

Face Shields

Face shields are commonly used as an infection control alternative to goggles, a face shield can also provide protection to other facial areas. A face shield should have crown and chin protection and wrap around the face to the point of the ear, which reduces the likelihood that a splash could go around the edge of the shield and reach the eyes.

Safety Glasses

Safety glasses provide impact protection but do not provide the same level of splash or droplet protection as goggles and generally should not be used for infection control purposes.

Contact lenses, by themselves, offer no infection control protection. However, contact lenses may be worn with any of the recommended eye protection devices, including fullface respirators. Contact lens users should rigorously adhere to hand washing guidelines

How should potentially contaminated eye protection be removed?

Eye protection should be removed by handling only the portion of this equipment that secures the device to the head (i.e., plastic temples, elasticized band, ties), as this is considered relatively "clean." The front and sides of the device (i.e., goggles, face shield) should not be touched, as these are the surfaces most likely to become contaminated by sprays, splashes, or droplets during patient care. Nondisposable eye protection should be placed in a designated receptacle for subsequent cleaning and disinfection. Healthcare setting specific procedures for cleaning and disinfecting used patient care equipment should be followed for reprocessing reusable eye protection devices.

Contaminated eye protection devices should be reprocessed in an area where other soiled equipment is handled. Eye protection should be physically cleaned and disinfected with the designated hospital disinfectant, rinsed, and allowed to air dry. Gloves should be worn when cleaning and disinfecting these devices.

**What are the recommended Exposure Limits from ACGIH,NIOSH,OSHA ?**

The eye and face protection selected for employee use must clearly identify the manufacturer. Any new eye and face protective devices should comply with ANSI standard Z87.11989.

**This factsheet was compiled of excerpts from the following publicly available sources:**

United States Center For Disease Control & Prevention

United States National Institute for Occupational Health and Safety (NIOSH).

United States Department Of Labor - Occupational Safety & Health Administration