Eye Protection Guideline

Section 1 - Purpose and scope

(1) This guideline outlines the type of eye protection required at the University of Queensland (UQ), and as stipulated in UQ Personal Protective Equipment Procedure. It applies to all UQ workers. For the purposes of this Guideline, the definition of workers is broad and includes staff, higher degree by research students, volunteers, and contractors, and others (undergraduate students, visitors, clinic clients), across all UQ operations and sites who are required to work in or enter an area designated as requiring eye protection.

Section 2 - Choosing suitable eye protection

(2) It is a requirement of the Work Health and Safety legislation that risks in workplaces are appropriately managed. Across UQ there are many facilities and workplaces that may contain potential hazards affecting eyes and include chemical, biological and physical hazards. An overall risk management approach using the hierarchy of control is used to eliminate or minimise exposure to eye hazards. The use of eye protection should not be used in isolation but with higher order controls in place.

(3) Organisational units should refer to Table 4.1 of AS/NZS 1336:2014 Eye and face protection – Guidelines for specific hazards and control measures. .

(4) The type of eye protection required for UQ workers will depend on the hazards they are exposed to and should be determined by undertaking a risk assessment. The risk assessment should take into account the hazards that are present in the entire work area and consider the work of the group as a whole, not just that of an individual.

(5) Eye protection selected should comply with the relevant requirements of:

a. AS/NZS 1337.1: 2010 – Personal eye protection, Part 1: Eye and face protectors for occupational uses
b. AS/NZS 2243.1: 2021 – Safety in laboratories - Planning and operational aspects
c. AS/NZS 1336: 2014 – Eye and face protection - Guidelines

Section 3 - Types of eye and face protection

(6) Ordinary prescription glasses and sunglasses do not provide adequate protection from injury to the eyes and could even be hazardous to the wearer and are therefore are not considered safety equipment. For further information on prescription glasses, see clauses 22 to 26.

(7) There are three basic types of eye and face protection which will meet the majority of UQ's laboratory requirements as determined through a risk assessments appropriate to the task or activity. These are:

a. safety glasses (with side shields).
b. safety goggles.
c. face shields.

(8) It may be necessary to change from one type of eye protection to another as different tasks are undertaken or the risk profile of the work environment changes. Further information on eye protection types and their use can be found in Table 4.2 of AS/NZS 1336:2014 Eye and face protection – Guidelines.

Safety glasses

(9) Safety glasses look very much like normal glasses but have lenses that are impact resistant and frames that are much stronger than standard prescription glasses. Safety glasses should have side shields and be worn whenever the risk assessments for the task or activity indicates as part of higher order controls (for example where there is a possibility of objects striking the eye, such as particles, glass or metal shards).

(10) While many potential eye injuries can be avoided by wearing safety glasses, they may not always provide adequate protection from chemical splashes as they do not seal to the face. Safety glasses may be adequate where the potential splash is minimal e.g., opening Eppendorf tubes, or where the chemicals in use are of low toxicity.

Safety goggles

(11) Safety goggles come in a variety of styles for maximum comfort and splash protection. Like safety glasses, safety goggles are impact resistant. For example, goggles should be worn when working with glassware under reduced or elevated pressure and when glass apparatus is used in combustion or other high temperature operations. Chemical splash goggles will have indirect ventilation so hazardous substances cannot drain into the eye area. Some can be worn over prescription glasses. For example, Uvex supply 'Flex Seal'is a lightweight goggle that fits prescription eyewear underneath.

Face Shields

(12) Face shields can be worn to protect from either impact or splash and typically used when working with large volumes of hazardous materials or generating large quantities of flying particles.

(13) AS/NZS 2243.1 Safety in laboratories - Planning and operational aspects provides the following examples where a face shield should be used when working in a laboratory:

a. Where glass apparatus is evacuated, recharged with gas or pressurised.
b. When pouring corrosive liquids.
c. When using cryogenic fluids.
d. When combustion processes are being carried out.
e. Where there is a risk of explosion or implosion.
f. When using chemicals that can cause direct damage to the skin.
g. When using chemicals and biological agents that can be rapidly absorbed into the body via any path e., through the skin, eyes or nose.
h. When opening an autoclave where there is a risk of exposure to high volumes of steam.

(14) A face shield is also recommended in the following work situations:

a. Using a grinder/drill/sander/saw in awkward positions (above your head) or when required to hold your head in close proximity (confined space, vision impeded etc).
b. Working with molten material e.g., molten metal or plastics.
c. Using a UV transilluminator or similar.
d. Over prescription glasses.

(15) The level of protection chosen should consider any eye and face hazards from other work being carried out in the

vicinity that could affect the worker at the distance by which the operators are separated.

Laser eye protection

(16) Working with lasers may require use of specialised eye protection with filtered lenses to disrupt and block wavelengths of light that can damage the eyes. AS/NZS IEC 60825.1:2014 Safety of Laser Products Part 1: Equipment Classification and Requirements states that appropriate laser safety glasses, specific to the type of laser, should be available and worn when operating Class 3 or Class 4 lasers.

(17) Some lasers emit more than one wavelength of light, and this may be a particular problem with some laser systems such as frequency-doubled lasers or dye lasers. Appropriate engineering controls should be used for work with such lasers. If higher order controls have not eliminated the risk of injury to eyes, dual-frequency eyewear should be considered as part of mitigating the risk of harm.

(18) Factors to consider in selection of laser safety glasses include the following:

a. Wavelength or spectral region of laser radiation.
b. Optical density of the glasses at the particular wavelength(s).
c. Maximum irradiance (W/cm2) or beam power (W).
d. Type of laser system.
e. Power mode, single pulse, multiple pulse or continuous wave, and the strength, i., both peak and average power.
f. Possibilities of reflections, specular and diffuse.
g. Ventilation ports to prevent foggin

(19) Further information on laser eye protection can be found in AS/NZS ISO 19818.1:2023 Eye and face protection – Protection against laser radiation and AS/NZS 1337.5: 2011 Eye protectors for adjustment work on lasers and laser systems (laser adjustment eye-protectors).

Welding eye protection

(20) Welding processes can emit ultraviolet (UV), visible light and infra-red radiation which have the potential to cause both temporary and permanent damage to the eyes. Therefore, specialised protective eyewear is required for those who are welding and consideration must also be given to other workers nearby. Ideally the welding process should be isolated from non-essential workers by using non-flammable screens, partitions or welding curtains. However, where this is not reasonably practicable, specialised protective eyewear may be required for other persons nearby.

(21) There are many types and sizes of welding lenses available, e.g., auto-darkening or passive, fixed or varied shade. Manufacturers with products compliant with Australian Standards often provide recommended shades for specific types of welding and the current used. When choosing welding eye protection, consider the balance between an appropriate level of protection for the eyes and the ability to see the welding work. Welding eye protection filtration is outlined further in AS/NZS 1338.1:2012 Filters for eye protectors - Filters for protection against radiation generated in welding and allied operations.

Prescription spectacles

(22) Prescription spectacles (as distinct from prescription eye protectors) are generally inadequate against flying objects or particles and could even be hazardous. For persons requiring eye protection in addition to sight correction, the use of prescription spectacle worn with additional protection may be necessary, e.g., over glasses, wide vision goggles or clip-ons.

(23) It is important to note that the use of safety goggles worn over prescription lenses will not necessarily provide

protection against impact from flying objects. Fracture of the prescription lenses can occur when the safety goggles deflect under impact, even if the safety goggles are not penetrated.

(24) Furthermore, many prescription eye protectors can provide no more than low impact protection because of their lightweight design. Where medium impact resistance is required, medium impact resistant eye protectors complying with AS/NZS 1337 should be used. Some suppliers have a product where the lens can be made to fit inside medium impact resistance safety glasses.

(25) The RX insert is a practical alternative to the traditional over the glass style safety specs. It fits snugly into the inside of the PulSafe XC safety glasses and when fitted offers the wearer medium impact resistance under AS/NZS 1337.1.

(26) Further information on the requirements for prescription eye protectors is given in AS/NZS 1336:2014.

Section 4 - Contact lenses

(27) Contact lenses are not eye protective devices and wearing them does not reduce the requirement for eye protection.

(28) When the work environment entails exposure to intense heat, molten metals, a highly particulate atmosphere, corrosive substances or any of the following substances - acrylonitrile, methylene chloride, 1,2 dibromo-3-chloropropane, ethylene oxide and methylenedianiline, contact lens use should be avoided.

(29) The following safety measures should be implemented if contact lenses be worn by individuals working with chemicals by the laboratory managers or supervisors:

a. Conduct a risk assessment prior to working with any chemicals or biological material to determine what type of eye protection is required, and whether the wearing of contact lenses should be avoided.
b. Notify workers and visitors about any defined areas where contact lenses are restricted.
c. UQ workers to advise supervisors if they wear contact lens' if working/studying in chemical environments so that supervisors can complete risk assessments and the appropriate eye protection and first aid equipment is available.
d. Train medical and first aid personnel in the removal of contact lenses and have the appropriate equipment available.
e. In the event of a chemical exposure, begin eye irrigation immediately and remove contact lenses as soon as practical. Do not delay irrigation while waiting for contact lens removal.
f. Instruct workers who wear contact lenses to remove the lenses at the first sign of eye redness or irritation.

Section 5 - Roles, responsibilities and accountabilities

Managers/Supervisors

(30) The risk management process is undertaken.

(31) Supply UQ workers with suitable eye protection for the task being performed as required.

(32) UQ workers required to wear eye protection are trained in its appropriate use.

All workers

(33) Wear the appropriate PPE when required.

(34) Comply with supervisor/laboratory manager instructions.

Section 6 - Cost and reclamation

(35) Each Organisational Unit or School is responsible for the funding of its eye protection to UQ workers, except contractors, who must supply and wear the appropriate PPE as advised by the Organisational Unit. Undergraduate students are required to supply their own eye protection if deemed necessary by the lecturer, in line with the appropriate Australian Standards as mentioned in this document. Eye protective devices issued to UQ workers remain the property of UQ and are to be returned when the use of the device is no longer necessary.

(36) Scheduling and payment for eye examinations to obtain prescriptions for safety glasses, and the purchase of prescription lenses for safety glasses is the responsibility of the UQ worker.

(37) Eye protective devices are personal items and are issued for the exclusive use of each individual.

Section 7 - Suppliers

(38) Organisational units and schools may choose the most appropriate supplier as per UQ procurement requirements providing the eye protection meets the relevant Australian Standards and is marked as such. The following websites are a good starting point:

a. https://www.uvex-safety.com
b. https://www.honeywellsafety.com

Section 8 - Contacts for Further Information

(39) Health Safety and Wellness Division: hsw@uq.edu.au

(40) Visit University of Queensland Science Store – Chemical & Lab Consumables, then click on Visit UQeMarket to purchase (Find products, suppliers, details about prices, and more).

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