

Position Statement on Contact Lenses and Welding

Over the past 30 years a story has appeared many times in a wide range of papers and magazines warning of the supposed danger of wearing contact lenses when welding. The stories all have the same basic elements:

‘A welder was exposed to a welding arc while wearing contact lenses. The arc produced microwaves which were focused by the contact lenses, and instantly and painlessly fused the lenses to the eye. When he tried to remove the lenses later, his entire cornea came away with the lens, leaving the welder permanently blinded.’

This story is pure fiction!

Investigations into the origin of this story have tracked it to an incident that occurred in a shipyard in Baltimore in the USA in 1967. A switch box exploded in the face of a worker who was plugging in some equipment. The worker was wearing contact lenses and safety glasses at the time. After the accident the worker continued to wear his lenses for another 17 hours. The next day he was treated for minor corneal injuries. The two ophthalmologists who treated him stated that the injury was caused by overwearing his contact lenses (the lenses in use at the time had a safe wearing time of approximately eight hours), and that the electrical arc did not cause the injury. The worker’s vision returned to normal in a few days, and there were no long-term effects of the injury.

Since this story was first misreported in 1970 it has been reprinted and embellished regularly. The most common exaggeration in these reports is that a worker pulled their entire cornea off when they removed their lenses. This is physically impossible—it is like saying that someone pulled their ears off by removing their hat!

The allegation that the contact lens somehow ‘focused microwaves’ and ‘fused the lens to the cornea’ is also wrong. Apart from the fact that it is impossible to ‘fuse’ a lens to the eye, the vast majority of lenses will diverge any radiation striking them, rather than focusing it onto the cornea.

Not only is this story incorrect, it damages industry by diverting contact lens wearers from jobs that they are perfectly qualified to perform, and causes much unnecessary anxiety to workers.

The facts are:

- Contact lenses have no effect on the hazards associated with welding.
- The lenses do not ‘focus microwaves, drying up the tears and welding the lens to the eye’ as some of the reports claim. Indeed most lenses would disperse any radiation striking them. The risks faced by welders are the same whether they are wearing contact lenses, spectacles, or no corrective lenses.
- Contact lenses may be an advantage to welders in some circumstances.
- Welders often experience difficulties wearing spectacles under a protective shield—the glasses often do not fit comfortably, and may fog up. Contact lenses avoid these problems.
- Contact lenses can help protect the eye.
- Contact lenses may provide some minor protection from foreign bodies which strike the eye, but are not a substitute for safety glasses.
- Contact lenses are not suitable for use in all conditions.
- Extremely dry and dusty environments, for example, can cause problems for contact lens wearers.

Australian Standard

Australian Standard AS/NZS1336:1997 Recommended practices for eye protection in the industrial environment states:

Clause 4.7 (c)

There is no additional risk to wearers of contact lenses from any radiation arising from any welding process or operation such as an exposure to an arc flash. Further information regarding the wearing of contact lenses in the industrial environment is given in Clause 4.9

4.9 EYE PROTECTION FOR WEARERS OF CONTACT LENSES The wearing of contact lenses under eye protectors is entirely satisfactory in most industrial situations provided that the wearer is adequately trained in the use of the lenses. However, the wearing of contact lenses cannot be considered under any circumstances as replacing normal eye safety procedures. It is in the interest of the wearers of contact lenses to inform their employer that contact lenses are worn by them and the particulars of the type of lenses, for appropriate action in the event of an accident involving the eyes.

However, some industrial situations could be more hazardous to the wearers of contact lenses. These include those situations where the hazard is dust or harmful liquids, gases or vapours, since, in these cases, the consequence of a failure to protect the eyes might be greater when contact lenses are in place. (See also Clause 4.7(c).)

Advice for contact lens wearers

Contact lens wearers should take the same precautions when welding as any other worker, by wearing appropriate eye protection, and using the correct filter for the type of welding they are performing.

In the event of an accident involving injuries to the eyes, the contact lenses should be removed and expert help should be sought immediately. The lenses should not be worn until the eyes have been examined and approval for lens wear given.

As an injured worker may not be able to remove their lenses, other workers and safety officers should be instructed in how to handle the lenses.

Further information is available from Optometrists Association National Office. An excellent review of the history of this hoax can be found in: Giroux AR, Remba MJ. Contact lens fusion to corneas by welding arcs: a hoax revisited. J Am Optom Assoc 1990; 61: 162-164.