



## Historical Perspective

The reality of a comfortable lens that would correct vision by being placed on the cornea of the eye began around 1950 and became a fairly common form since the introduction of soft lenses in 1971. Contact lenses today are available both in "hard" or semi-rigid material and in "soft" material. The last few years have seen great improvements in lens material and designs which have resulted in more comfortable and healthier eyes while also allowing more applications. For example, many people are now using bifocal contact lenses rather than reading glasses. Regardless of lens material or design the use of contact lenses in industry was generally discouraged in the early days of their use, particularly where there was a potential for chemical splash or exposure to chemical vapors or dust. Since 1978, the National Institute of Occupational Safety and Health (NIOSH) has recommended that workers exposed to chemicals that present an eye irritation or injury hazard not wear contact lenses. The primary concern was that a hard or semi-rigid lens would trap chemicals under it or a soft lens would absorb the chemical and hold it against the cornea. Either case would increase the likelihood of chemical injury. However, in some circumstances, wearing contact lenses can provide a worker with better vision or comfort from improved visual acuity and peripheral vision as well as from less fogging (e.g., glasses or prescription inserts). Contact lens wearer can also have greater choice of eye and face protection and full-face respirators.



## Current NIOSH Recommendations

In June 2005<sup>1</sup>, NIOSH revised its recommendation on contact lens wear in chemical environments. In the Current Intelligence Bulletin (CIB) #59, Contact Lens Use in a Chemical Environment, NIOSH recommends allowing contact lens wear "when handling hazardous chemicals provided that the safety guidelines listed here are followed and that contact lenses are not banned by regulation or contraindicated by medical or industrial hygiene recommendations."

## NIOSH Safety Guidelines

Upon review of professional guidelines, chemical exposures in industrial environments, and literature and injury data, NIOSH recommends following these safety steps before authorizing worker use of contact lenses in hazardous chemical environments:

1. Conduct an eye injury hazard evaluation in the workplace that includes an assessment of:
  - Chemical exposures (as required by Occupational Safety and Health Administration (OSHA) [Personal Protective Equipment, General Requirements, 29 CFR 1910.132])
  - Contact lens wear
  - Appropriate eye and face protection for contact lens wearers
2. Provide suitable eye and face protection for all workers exposed to eye injury hazards, regardless of contact lens wear.
3. Establish a written policy documenting general safety requirements for wearing contact lenses, including the eye and face protection required and any contact lens wear restriction by work location or task.
4. Comply with current OSHA regulations on contact lens wear and eye and face protection.
5. Notify workers and visitors about any defined areas where contact lenses are restricted.

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6. Identify to supervisors all contact lens wearers working in chemical environments to ensure that the proper hazard assessment is completed and the proper eye protection and first aid equipment are available.
7. Train medical and first aid personnel in the removal of contact lenses and have the appropriate equipment available.
8. In the event of a chemical exposure, begin eye irrigation immediately and remove the contact lenses as soon as practical.
9. Instruct workers who wear contact lenses to remove the lenses at the first signs of eye redness or irritation.
10. Evaluate restrictions on contact lens wear on a case-by-case basis.

### **What Isn't Specifically Covered – Where Health and Safety Must Make Professional Decisions**

1. Use under respirators. The respirator presents a unique environment to the eye. In most cases where there is a full face respirator, air is either filtered with the breathing process or provided by a remote source such as tank or pump. The constant air flow may cause the eye tissues and/or lens to dry to the point that the lens wear becomes uncomfortable or potentially injurious to the eye.
2. Military field training or deployment. Military personnel are prohibited from wearing contact lenses in field training or deployments.<sup>2,3</sup> Civilian support personnel in these operations are prohibited from contact lens use where the hazard is such that the respirator or mask cannot be removed without the worker exiting the chemical exposure area or undergoing decontamination prior to removing the respirator and subsequently the contact lenses. This is particularly the case in military unique operations where nerve, blister, or other agents present an exposure hazard. Extended use of contact lenses in these settings may lead to problems of over wear with resultant corneal irritation, abrasion, or possible ulceration.
3. OSHA recommends against contact lens use when working with acrylonitrile, methylene chloride, ethylene oxide, and methylene dianiline.
4. Safety Data Sheet on any chemicals should always be checked for the latest and specific information regarding eye hazards in general and contact lens use specifically.

### **Tri-Service Vision Conservation and Readiness Program Recommendations**

1. Follow the 10 points of safety guidance from the NIOSH CIB as listed above.
2. Ensure a complete paper trail of the decision (include names and specialties of those making the authorization), what operations/hazardous areas are authorized to have workers using contact lenses, and who is authorized contact lens use.
3. Ensure a clean area is available in the work area for the removal and reinsertion of contact lenses for both routine wear procedures and in the case of an exposure.
4. In certain hazardous operations, especially military unique operations such as working with nerve, blister, or other agents, prohibit use all together unless approved by the installation Commander, Preventive Medicine Officer, Safety Officer, and Optometrist or Ophthalmologist familiar with the potential ramifications of exposure to the hazard. The process of approving contact lens use in hazardous chemical areas is involved but may be of value for some installations where the risks to the employee are not particularly high or where the benefits outweigh the risks.

<sup>1</sup> NIOSH Publication No. 2005-139, "*Current Intelligence Bulletin #59*", June 2005

<sup>2</sup> Department of the Army Pamphlet 40-506, The Army Vision Conservation and Readiness Program, Jul 2009

<sup>3</sup> Department of the Army Regulation 11-34, The Army Respiratory Protection Program, Jul 2013