



Eye Protection: Matching the Proper Eyewear to the Job

It was 3:15 P.M., Friday, while he was staring at production reports on his desk. His mind was on how much painting he could get done on the garage before the kids' baseball game tomorrow. His thoughts were interrupted by the telephone. "Yes?" It was the midwest plant manager. There had been an accident at the facility earlier in the day. A young worker received what looked like a serious eye injury. No one knew how bad yet, but the worker is scared to death. "Okay. You know the routine. Our loss prevention people should be there tomorrow."

As production superintendent responsible for operations at six plants and a twenty-year veteran of manufacturing, he had heard the story before. He wished he could be more sympathetic. But he wondered how this could happen, after all the time that he and his staff spent in bringing the company into compliance with OSHA regulations, selecting the right protective devices, implementing suggestions made by insurance company and risk-control specialists, and communicating the message to personnel on all levels that safety is a priority. Was it employee carelessness? A failure on the part of the first-line supervisor to enforce safety procedures? A flaw or omission in the program itself?

As this fictional scenario points out, the bitter truth is that, despite all efforts, accidents do occur. National Safety Council figures show that eye injuries accounted for 5 percent, or approximately 90,000 of 1 million Worker Compensation claims filed in a recent 12-month period. Other statistics show that 41.3 percent of these occurred despite the fact that the individual was wearing eye protection.

Section 1910.133 of the Occupational Safety and Health Act provides that protective eye and face equipment must be worn by all individuals working on or around machines which may emit projectiles, glare liquids, injurious radiation or a combination of these.

It should be noted that this definition covers a majority of employees in a typical industrial environment and that many firms are extending eyewear requirements to visitors who are touring hazardous areas.

OSHA Requirements

OSHA further provides that eye or face protection devices (including safety glasses, cover goggles, face shields, welding goggles, and welding helmets) must be as follows:

- Adequate to protect against the particular hazard
- Comfortable to wear without interfering with movement
- Durable and easily cleanable
- Suitable for wearing with or able to be fitted with corrective lenses

- Designed, constructed, tested, and used in compliance with American National Standards Institute (ANSI), thus essentially controls the multimillion-dollar per year eye and face protection market.
- It is ANSI's purpose to establish criteria that—given a manufacturer's compliance—guarantees to the buyer that the safety device will perform the function for which it is designed.

ANSI originally accomplished this by the formulation of rigid design and performance standards, but the recently revised ANSI standard for eye and face protection calls for industry to adopt a more performance-oriented approach. It no longer defines that all protective eyewear has replaceable lenses but, rather, requires that it must be able to pass ANSI criteria, such as high-velocity, low-mass projectiles, such as those found in some machine operations.

ANSI's action is expected to free manufacturers to experiment with new technologies, which will result in many changes within the industry. Some of these are already becoming apparent as evidenced by the number of companies announcing plans to devote their research dollars to the development of one-piece frontal designs, which are more cost efficient to produce, and some manufacturer's decision to eliminate glass lenses as an option. Sellstrom Manufacturing, for instance, has decided to eliminate glass lenses as an option on any of its 1,500 products.

This latter action—startling to industry insiders because of the volume of business that glass represented to the company—was decided upon because of studies that clearly demonstrated the superiority of polycarbonate over glass in shatter tests and far outweighed any otherwise-considered comparisons. According to Barbara Sellstrom, company president and a director of the Welding Equipment Manufacturers Association, Sellstrom Manufacturing would not continue to “market glass when proof existed that eye protection devices containing these lenses could, given certain conditions, be a source of hazard themselves.”

Employer's Responsibility

It remains with the employer, under OSHA guidelines, to select devices that meet ANSI standards and are “adequate to protect against the particular hazard” inherent in individual work situations. But what constitutes “adequate?” Figure 1 is a general suggestion as to the types of eye protection to be worn for individual work activities. Safety specialists and management have final protection devices. With the selection of the proper device, those responsible for welding operations must also be concerned with proper filter plate selection for different types of welding activities. Consider the initial scenario of the production superintendent frustrated at the young employee's injury.

Proper Eyewear Selection

The injury, as in 94.1% of Bureau of Labor statistics-examined cases in which an accident occurred while the individual was wearing eye protection, was the result of the selection of the wrong device. In this particular incident involving a grinding operation, safety glasses without side shields had been provided (instead of safety glasses and a face shield as prescribed). A sliver of metal went around the frame and into the eye, nicking the optic nerve and lodging in the retina.

How could this situation have been prevented? The company thought it had done everything right. It had a logical, well-documented safety program. It had been publicized through meetings, employee newsletters, incentive campaigns and other means. Accountability for safety had been built into the performance review process of staff at all levels. What else could they have done?

The obvious answer is to have subscribed to the recommendations in Figure 2 and to have provided this handy guide for first-line supervisory personnel and as a posting for each department. Perhaps they might also have examined their program in light of some interesting statistics emanating from the U.S. government report—Number and Percentage of Disabling Work-Related Eye Injuries:

- 48% of all reported eye injuries occur in manufacturing settings while the construction industry accounts for another 15%.
- 64% of the approximately 90,000 eye injuries reported annually involve machine operators and craftsmen.
- 56% of these eye injuries stem from metal projectiles or other particles (sand, sawdust, etc.) and 12% from the splashing or handling of chemicals and chemical compounds.
- Rubbing the eye is the cause of 61% of all eye injuries, ranging from scratches received while trying to sweep away foreign objects to irritations caused by substance.
- 23% of injuries are derived from materials striking the eye, but only 39% of these incidents result in cuts, lacerations, or punctures.

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