

Preventing Eye Injuries

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Special Operations Reports are issued to initiate management actions in response to events whose subject matter represents significant Departmental safety or health concerns.

Safety Alerts are issued to initiate immediate action on potentially significant safety or health issues.

Safety Bulletins are issued to share information and recommend actions on potential safety or health issues.

Safety Advisories are issued to provide information to the DOE Complex on potentially significant safety or health issues.

PURPOSE

This Bulletin provides information on a safety concern that may impact operations at Department of Energy (DOE) facilities. Specifically, the concern is the prevention of eye injuries.

BACKGROUND

DOE records show that there have been 31 eye safety incidents over the last 5 years. Twelve of the occurrences involved laser exposures and inadequate hazard analysis and work planning deficiencies involving lasers, with 6 of these 12 cases resulting in injuries. Another two incidents, including one injury, involved ultraviolet exposure. None of the injured was wearing laser eye protection.

Eleven incidents dealt with eye damage and near misses to chemical exposure injuries. Protective eyewear prevented serious injury in some of these cases; however, in two cases, the chemicals either blew or splattered into the eyes behind the safety glasses. Adequate pre-job hazard analyses and wearing goggles would have prevented these latter occurrences.

The remaining six cases occurred during other work activities where the workers either did not wear protective eyewear or where their safety glasses, when worn, helped mitigate the degree of injury.

THE COMMON CAUSES OF EYE INJURIES ARE

- Radiation exposure
- Chemical exposure
- Flying and moving objects such as tools, particles, or materials

LASER HAZARDS

Laser eye exposures may go undetected because the laser beam is often invisible and the retina lacks pain sensory nerves. Retinal damage may be associated with an audible "pop" at the time of exposure. Visual disorientation from retinal damage may not be apparent to the individual until considerable thermal damage has occurred.

TYPES OF SAFETY EYE PROTECTION

If you are working in an area that has particles, flying objects, or dust, you must at least wear safety glasses with side shields or safety goggles. If you are working with chemicals, you should wear goggles. If you are working near welding, lasers, ultraviolet light, or fiber optics, you must use special-purpose safety glasses, goggles, face shields, or helmets designed for that task.

CONTROLLING EYE INJURIES

- Be aware of potential eye hazards before beginning work.
- All workers and bystanders must be properly trained for the job activities.
- Make sure all workers and bystanders wear the appropriate proper eye protection
- Complete an eye hazard assessment as part of a comprehensive job hazard analysis.
- Use guarding, work screens, or other engineering controls.
- For lasers, use beam path controls, interlocks, and warning systems.
- Allow only authorized personnel in the laser or work area.
- Post appropriate signs and safety notices.
- Turn off or disable equipment when not in use.

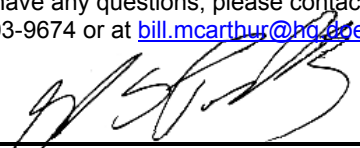
ADDITIONAL SOURCES OF INFORMATION

- Your Safety and Health Office
- Information on the web on DOE related operating experience, DOE lessons learned, and OSHA Standards and guidance:
 - DOE Special Operations Report 2005-01, *Laser Safety* (http://www.eh.doe.gov/paa/reports/Laser_Safety_Report.pdf)
 - OSHA guidance on laser hazards (<http://www.osha.gov/SLTC/laserhazards/index.html>)

SUMMARY

Eye injuries can be avoided. Wear appropriate safety eyewear whenever there is a chance of an eye injury.

If you have any questions, please contact Dr. Bill McArthur at 301-903-9674 or at bill.mcarthur@hq.doe.gov.



Glenn S. Podonsky
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PREVENT EVENTS

Learning from Industry Experience

PREVENT EVENTS is intended for use by personnel during morning meetings, pre-job briefings, and work unit meetings to communicate key industry experience.

Management:

1. Do we have a laser safety program that conforms to the OSHA and national consensus standards?
2. Have our workers been properly trained to anticipate and address eye safety dangers?
3. Do we have written procedures on the use of safety eyewear for work with lasers, chemicals, and other work activities?
4. Have we made available to our workforce the engineering controls and personal protective equipment to do the work safely?

Supervisors and Workers:

1. Do we need protective eyewear for the job?
2. Has a pre-job hazard analysis been performed to indicate the need for or type of safety eyewear to use?
3. Do we have a laser safety officer or someone knowledgeable in laser safety that we could consult?
4. Should safety signs or notices be posted?
5. Should we use face shields in addition to goggles when working with potentially explosive or high-pressure operations?

