

Guidelines for a Safe Exhibit

Safety Reminders for Laser Exhibitors

A Safe Exhibit Is No Accident!

AN EFFECTIVE EXHIBIT requires careful advance planning and preparation. As part of the process, it is imperative that consideration be given to the safety of everyone in the exhibition area. Ensuring that an exhibit is a safe one is both a personal and a corporate responsibility.

The Optica (formerly OSA) Laser Safety Standards Committee has prepared these brief guidelines. They are intended to:

- ▶ Remind you of your responsibility for the safety of your exhibit and to encourage you to incorporate safety considerations in all stages of the planning of your exhibit.
- ▶ Inform you that a Laser Safety Office (LSO) will conduct inspections of all exhibits. Any exhibits judged to be unsafe (for any reason) will be summarily shut down until sufficient corrective modifications have been made. However, acceptance of the exhibit by the LSO does not constitute a guarantee that every potential hazard has been detected. You must be aware of and employ all safety guidelines to ensure your exhibit is safe.
- ▶ Describe a few common-sense guidelines that may help you to plan and conduct a safe laser exhibit.

These guidelines are not intended to be all-encompassing, and they do not spell out laser safety standards. It is your responsibility to be aware of and to conform to all applicable safety regulations and standards. For example, you should be acquainted with the contents of American National Standard Z136.1-2007, or subsequent editions of "For the Safe Use of Lasers." Be aware of the classifications and the corresponding safety regulations for the lasers that you plan to exhibit. In particular, note section 4.5.1, which relates to laser demonstrations.

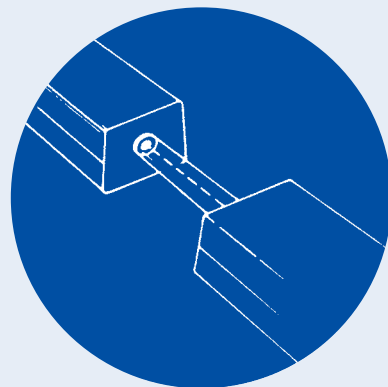
The guidelines given here are intended to set the tone for the planning and conduct of your exhibit. Direct any spe-

cific safety related questions to the conference LSO; every effort will be made to resolve such questions in an expeditious and practical fashion. In order to discuss a situation with the LSO in advance of the show, contact the exhibit manager for instructions.

Remember, a jury-rigged exhibit is not a good sales tool. Don't jury-rig your safety precautions either! A well-thought out, neat, and safe exhibit is recognized by visitors and reflects positively on you and your products.

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BASED ON OUR OBSERVATIONS of previous laser exhibits, the following guidelines illustrate methods for addressing several specific safety problems.

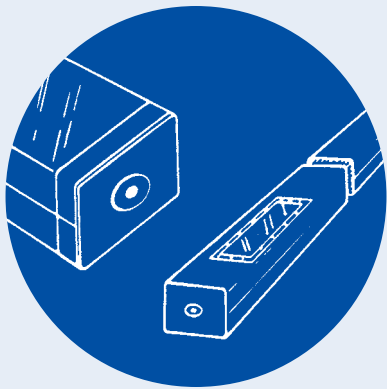


Beam Enclosure

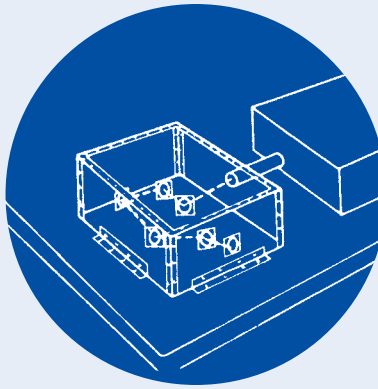
Any potentially dangerous laser beams must be enclosed or otherwise made inaccessible to visitors. The enclosures or guards must be sturdy enough and secured well enough to resist normal bumps and jostling and even causal, curious removal. An example, using simple materials, is shown here. A clear plastic tube encloses a laser beam as it passes from one device to another; the tube is firmly attached to each device.

Demonstrating Internal Laser Elements

Visitors often want to view the interior of working lasers or similar devices. Removing the cover of a working laser should not be done since this can expose persons in the exhibit to thermal, electrical, and optical hazards. One effective solution that has been widely employed is the use of clear or smoked plastic covers in place of the usual opaque laser covers. Another approach uses similar plastic to cover openings cut in the standard laser cover. Remember that reflections from internal optical surfaces and radiation from bright sources that are usually blocked by the cover may emerge through the semitransparent plastic. Check them carefully and provide internal beam blocks where required.



- ▶ All laser beams must terminate in a beam block that is firmly secured in place. A power meter that can be moved out of the way of the beam is not a beam block; a beam block should be provided beyond the power meter. The beam block must be substantial and suitable for the energy and wavelength involved. It must not produce specular reflections or excessively bright diffusely scattered light.



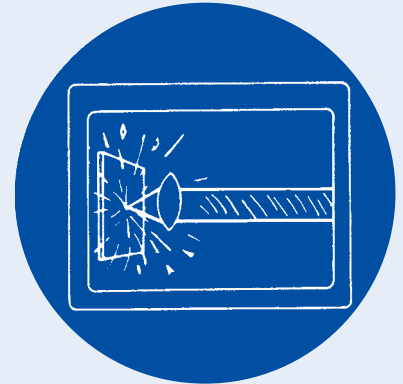
Demonstrating Laser Interaction Phenomena

A simple, but sturdy, plastic box can be used to enclose tabletop space in which multiple beams are involved in various interactions. Once again, carefully check to see that no stray beams leave the box; block them internally. This technique has the additional advantage of preventing curious visitors from readjusting the alignment.

- ▶ Exhibitors must be cognizant of the eye hazards that may occur during the often hectic setup phase of an exhibit. Precautions must be taken to protect other workers in the exhibit area as well as personnel in the booth itself. The use of temporary cardboard shields or curtains around the area is an effective way to prevent beams from wandering during the exhibit setup.
- ▶ Exhibitors are encouraged to bring extra material for shielding laser beams, fastening components to benches, etc. so that unforeseen problems that inevitably crop up can easily be dealt with.
- ▶ The eye hazards of some nonlaser light sources, such as intense UV arc lamps, flashlamps, and intense dye fluorescence, should be recognized, and appropriate safety precautions should be employed.

Video Demonstration

Dramatic demonstrations for which adequate safety precautions would be difficult might effectively be demonstrated by using video tape. An example for which this approach seems particularly appropriate would be the demonstration of laser welding and cutting.



Hazardous Material Handling

ALL COMPANIES WITH HAZARDOUS MATERIALS, such as laser dyes or solvents, must contact Exhibit Management to make arrangements for appropriate disposal. If compressed gas mixtures of fluorine, hydrogen chloride, or other toxic or corrosive gases are brought to the show, only the quantity necessary for reasonable operation during the show shall be permitted. Only the smallest gas bottles should be used, and premixed gases are required unless previous arrangements with the exhibit manager and laser safety officer have been made. Toxic or corrosive gases will only be permitted in the form of a mix, at a concentration no higher than 5%. Bottles shall be secured to the support structure. Only new valve fittings and glass regulators shall be used. Spent gas must be released only through an activated filter or approved scrubbing system. You should also be aware of the facility's state and local regulations regarding the use and disposal of hazardous materials.

Best wishes for a successful and SAFE exhibit!

OPTICA

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Formerly
OSA

Exhibit Show Management
2010 Massachusetts Ave., NW
Washington, DC 20036
+1.202.416.1911
www.optica.org