



Laser Safety Protocol #005

TO: Laser users
FROM: Laser Safety Program
SUBJECT: ANSI Z136.1–Style Warning Sign
VERSION DATE: May 2008

Goal

Document the application and requirements for laser warning signs at LBNL.

LBNL Protocol

The Laser Safety Program at LBNL has determined that not all the information required in ANSI Z136.1, Section 4.7.4.2, is of value in our setting, and will modify our warning signs in the following manner:

Below the tail of the sunburst, present/accessible wavelengths and required optical density will be the preferred information on display. In some cases where four or greater wavelengths are in use, the warning sign will simply state, “Multiple wavelengths are in use. Check with operator for proper protective eyewear.”

ANSI Z136.1 Specification

The ANSI Z136.1 standard references laser warning signs in the following sections:

- Section 4.3.9 (Laser Warning Sign Purpose) explains the purpose of laser warning signs and explains signal words.
- Sections 4.3.10 and 4.3.10.2 state the need for laser-warning signs at Class-3B and Class-4 indoor laser-controlled areas.
- Section 4.7 (Warning Signs and Labels) describes the requirements of such signs. Of particular concern is the statement in Section 4.7.4.2, which requires the following information be displayed below the tail of the sunburst: the type of laser, the emitted wavelength, pulse duration (if appropriate), and maximum output.

Rationale

The LBNL LSO questions the value of the items listed in Section 4.7.4.2 in an R&D setting. According to Section 4.3.9.1 (Laser Warning Sign Purpose), “The purpose of a laser area warning sign is to convey a rapid visual hazard alerting message that:

1. Warns of the presence of a laser hazard in the area
2. Indicates specific policy in effect relative to laser controls
3. Indicates the severity of the hazard (e.g., class of the laser)
4. Instructs appropriate actions(s) to take to avoid the hazard (eyewear requirements, etc.)”

ANSI Z136.1-2007 allows for the use of a wavelength or type of laser. As to the ANSI Z136.1-2000 version, it is the responsibility of the LBNL Laser Safety Program that item 1 is achieved by the posting of the sign. Item 2 is achieved by the wording above the sunburst symbol (as per ANSI): “Laser Radiation—Avoid Eye or Skin Exposure to Direct or Scattered Radiation.”

Item 3 is achieved by indicating the highest-class laser in the area.

Item 4 can be achieved by indicating the optical density for laser eyewear, or stating that eyewear is required.

In our research setting, as the beam transverses the optical table, it can change wavelengths more than once. An Nd: YAG laser may produce 1064 nm, 532 nm, or 266 nm. Just indicating the name of the laser source does not give an accurate description of the laser wavelengths one might be exposed to. In the same way, using a generic term such as “diode laser” conveys insufficient useful data. Similarly, since the accessible laser radiation may change as it transverses through an experimental system, indicating the initial laser’s maximum output also gives the user no useful data, or at least no more than the stated laser hazard classification, to make a hazard determination.

Therefore, taking these factors into consideration, our abbreviated warning-sign data seem more compatible with our setting and more instructive for our users than the information suggested by ANSI Z136.1.

Contact Information

In case of questions or comments, contact Ken Barat, Laser Safety Officer (LSO), at ext. 2544, kbarat@lbl.gov.

Comment [TND1]: do you mean, “a specific wavelength or type of laser”?