



## Laser Safety Protocol # 004

**TO:** Laser users  
**FROM:** Laser Safety Program  
**SUBJECT:** Activation Audible Devices  
**VERSION DATE:** 2008

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### Goal

Specification of the application and requirements for activation/audible/visual laser warning signs at LBNL.

### Protocol

The Laser Safety Officer at LBNL will evaluate on an individual basis the necessity for activation/audible/visual warning devices/signs for all Class-3B and Class-4 laser use areas. The requirement for activation warning systems will be made based on this evaluation.

### ANSI Z136.1 / CDRH Specification

The ANSI Z136.1 standard for the Safe Use of Lasers is the Laser Safety Program's general guidance document.

The Center for Devices and Radiological Health (CDRH) is the Food and Drug Administration body tasked with developing laser-light-product performance safety standards for lasers sold in the United States.

LBNL PUB-3000, Chapter 16 (Lasers), also guides laser use at LBNL.

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

- Section 4.3.9.4.1 (Activation Warning System): An alarm, a warning light, or a verbal countdown command for single-pulse or intermittent operations shall be used for Class-4 laser systems during activation or start up.
- Section 4.3.9.4.2 (Audible Warning Devices): For single-pulse lasers, an audible system may commence operation when the laser power supply is charged for operation.
- Section 4.3.9.4 (Visible Warning Devices): Gives possible configurations of that warning device. This section only mentions lights; there is no discussion of posted signs.

### Rationale

When deciding on the applicability of ANSI controls, the LBNL LSO considers its safety implications and engineering feasibility. All lasers are authorized through an Integrated Safety Management (ISM) process, and laser use is authorized after approval of an Activity Hazard Document (AHD).

Guidance from the ANSI standard for audible and visible warning devices are all listed as "one form or possible

configurations” and are not the only options one shall consider. Unless it is from secondary devices, single pulse laser labs do not currently have an audible operation device; however, each area where a Class-3B or Class-4 laser is in use is posted with an exterior laser warning sign. The majority of laser-use rooms have an illuminated sign indicating that the lasers are energized. Commercial Class-4 lasers have an emission indicator light on the laser housing per CDRH.

Audible and visual activation devices are common in some industrial manufacturing settings, in particular where excessive noise and distractions exist. The LBNL LSO has surveyed laser-use facilities that are comparable to LBNL’s. This survey indicated only one institution that occasionally uses an audible system. Under our current laser systems and applications, audible warning devices or activation warning systems are not applicable, and do not appreciably add to laser safety. All systems are under local user control. In some situations, such as when the laser source and laser accessible points are at great distances apart from each other (excluding fiber-optic communication settings), such devices may have a safety value. The LSO will make a case-by-case determination for such situations.

Many LBNL AHDs have statements concerning user communication within a laser group; for example, “No laser or enclosure should be turned on or opened without notifying the staff in the room of the potential hazard.” This AHD requirement is deemed equivalent to the single laser pulse count down option.

## **Contact Information**

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