

# EFCOG Best Practice #160

**Best Practice Title:** Reference guides to help laser users with laser lab design, laser operations, and laser disposal

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**Brief Description of Best Practice:** Three reference documents were created with the intention to help and guide laser users establish or improve laser operations and give information on good practice techniques. These documents are posted online and are accessible to all interested laser users.

The first document (Reference 1) is a *Laser Reference Guide*. It draws attention to good practice techniques and to hazards associated with lasers, optics and other common equipment found in a laser lab. The guide describes both operations and safety considerations when working with lasers and laser systems. It includes sections on preparations prior to starting work, laser safety tools, best practices and alignment techniques, optics, fiber optics, selecting eyewear and bio effects.

The second document (Reference 2) is a *Laser Laboratory Design Guide*. It provides guidance, reminders and items to consider in establishing or retrofitting a laser lab. It includes an emphasis for achieving efficient and safe operations. Colored pictures help illustrate good examples and point out what should be avoided. There are sections on exterior design, interior layout, environmental factors, and human factors. Considerations for non-beam hazards (electrical, fire, seismic, chemical etc.) are included.

The third document (Reference 3) is a *Laser Disposal Guide*. It addresses what to do with unwanted laser equipment or lasers at the end of their life cycle and how to dispose of these safely.

**Why the best practice was used:** The documents were created to provide useful resource tools to researchers to improve efficiency, operability and safety for laser labs. In particular they were intended to help researchers, including students and other less experienced personnel, who may be new to laser operations or who may be setting up a laser lab for the first time.

**What are the benefits of the best practice:** The documents provide a concise reference and help researchers establish a laser lab in a timely manner. They consider safety and operational efficiency requirements and give ideas on what is the best way to accomplish these. They can be used by all laser users, including beyond the LBNL community.

**What problems/issues were associated with the best practice:** No problems were associated with the documents. They are references, easy to access and use.

**How the success of the Best Practice was measured:** The success of the best practice was measured by the positive response of the laser users and their appreciation of having

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needed information, advice and recommendations on how to set up a laser lab together in an easy to find place. The reference guides have been made to all the DOE labs with laser operations and many lab LSOs have distributed them to their laser personnel. The guides are available from the LSSG website for wide distribution (Reference 4).

**Description of process experience using the Best Practice:** Once a laser user is in the process of setting up a lab or retrofitting it, he/she is advised to consult the Reference Guides in addition to obtaining advice from the LSO. Usually the laser user is looking for ideas and both the LSO's advice and the references help accomplish that.

### References

1. K. Barat, *Laser Operations Reference Guide*,  
[http://www.lbl.gov/ehs/safety/lasers/assets/docs/Laser\\_Reference\\_Guide.pdf](http://www.lbl.gov/ehs/safety/lasers/assets/docs/Laser_Reference_Guide.pdf)
2. K. Barat, *Laser Laboratory Design Guide*,  
<http://www.lbl.gov/ehs/safety/lasers/assets/docs/Laser-Layout-Guide-LBNL.pdf>
3. K. Barat and J. Woo, *Laser Disposal Guide*,  
<http://www.lbl.gov/ehs/safety/lasers/assets/docs/Laser-Disposal-Guide-2012.pdf>
4. The LBNL Laser Reference Guides listed above are linked from the LSSG webpage,  
[http://www.efcog.org/wg/esh\\_ls/LBNL\\_Laser\\_Reference\\_Guides.htm](http://www.efcog.org/wg/esh_ls/LBNL_Laser_Reference_Guides.htm).