ENVIRONMENTAL HEALTH & SAFETY
UNIVERSITY of WASHINGTON

LASER ALIGNMENT GUIDELINES

In the research setting, over 60% of all laser accidents occur during the alignment process, therefore alignment procedures are very important and should be strictly adhered to.

The following is a guide for developing specific alignment procedures for a **Class 3B or Class 4 laser system.**

- Only those personnel who have been trained in laser safety should align the laser. It is best to perform alignments with another trained person (to respond to a laser safety emergency) and exclude all unnecessary personnel during the period of alignment.
- Review all procedures before attempting the alignment.
- Make sure that all of the warning signs, lights, and locks are operating.
- Post the "Laser Alignment in Progress" notice sign outside the laser lab before beginning any alignment procedure.
- Check that laser curtain is securely closed with no gaps.
- Housekeeping is paramount. The work area and optical table should be free of objects or surfaces that could reflect the light.
- Remove any watches or jewelry, including objects in shirt pockets, and tape over rings so that they will not serve as reflectors.
- Make sure that any reflective surfaces in the area are blocked or covered.
- Wear protective eye wear at all times during the alignment. Make sure that it is appropriate to the wavelength of the laser.
- Use low-power visible lasers for determining the optical path. If this is not possible, try to use another laser (e.g. a low-power HeNe) or even a stabilized laser pointer.
- Make sure that beam paths are at a safe height (i.e., not at eye level when seated or standing).
- When aligning invisible beams (UV or IR) use phosphor cards or image converter viewers so that the beam can be located.
- Never allow the beam to propagate beyond the point to which you have aligned and always be aware of the full beam path.
- Always block the beam upstream when inserting/removing anything into/from the beam path, such as alignment irises.
- Pulsed lasers are aligned with single pulses if possible.
- If the laser is Q-switched, turn off the Q-switch and use low power, or CW.
- Enclose the beam as much as possible.
- Use beam blocks to block high-power beams at their source (except when the beam is actual needed for alignment).
- Use beam blocks behind optics (mirrors) if there is a possibility beams might miss the mirrors during alignment.
- Check for stray reflections before continuing the next part of the alignment process.
- Make sure all beams and reflections are terminated before high-power operations begin.

Please contact the EH&S Radiation Safety team at radsaf@uw.edu or (206) 543-0463 with questions.