# The Ten Golden Rules in Laser Safety

This is a list of suggested "do's and don'ts" for laser users to bear in mind when working with lasers. It should help users to work safely (it is not an exhaustive list) and can usefully be displayed locally as a reminder.

1. **Do not look into a laser beam**. Don't look down specular reflections (e.g.: from mirrors or other reflective surfaces). Don't stare at diffuse reflections. Don't look back along the optical path through an experiment with the laser energised. If it looks bright-don't stare at it.
2. **Keep room lights on brightly if possible**. The brighter the ambient lighting level, the smaller the eye's pupil will become, and the chance of a laser beam entering the eye will be lessened.
3. **Remove personal jewellery**. Watches, rings etc act as reflectors. When entering a laser lab, remove anything which may pose a reflection hazard. This is to protect you and your co-workers.
4. **Locate and terminate all laser beams**. Make sure that all beams are terminated with a suitable beam dump which is capable of handling the power of the laser beam. Remember all transmitting components also back-reflect causing stray beams. With IR or UV lasers these will not be visible! Stainless steel vacuum chambers and VDU screens found in many laser labs are good reflectors of stray incident beams.
5. **Secure all optical components in position**. Use good quality optical mounts, firmly clamped to the table top etc; this helps prevent your experiment from becoming misaligned and reduces the chances of a component moving and sweeping a laser beam over you. Blu-Tak is definitely NOT a good way to mount optics!
6. **Keep beams in a horizontal plane below eye level, preferably at waist height**. Horizontal beams are easier to work with and are predictable. Avoid vertical and skew beams if possible. Change beam height only if absolutely unavoidable and then with a periscope, and be careful when aligning it.
7. **Don't bend down below beam height**. If you drop something, block the laser beam at the laser before picking the object up. If you can't stop the beam (for instance, if you are in the middle of an experimental run), kick the object out of the way so that you don't trip over it. If you must sit down in a lab, make sure that the stool is high enough that your head is above beam height.
8. **Remember, optical components reflect, transmit and absorb light**. Often, a transmitting component will also reflect light, a reflecting component will transmit light etc. This can lead to stray beams. Beware that the reflectivity etc of components may be different in different spectral regions or with different light polarisation. Beware also that optical components may change their characteristics when used with high power lasers i.e.: neutral density filters can bleach, crack or even explode.
9. **Don't forget non-optical hazards**. Don't trip over, electrocute yourself, spill solvents, burn yourself on liquid nitrogen etc.. Remember that laser dyes and solvents are nasty chemicals (COSHH assessments required.)
10. **Wear laser safety protection**. Be certain that you have suitable eyewear provided and wear it. Protect skin as well as eyes. Don't put bare hands into a laser beam.

**If in doubt, FIND OUT**