

Not Rocket Science: A JHU Safety Note

Protect your eyes from high-intensity light

Protect your vision when working with:

- UV germicidal lamps;
- Lasers;
- Welding and arc lamps; or
- Other high-energy light sources.

Special goggles **limit the amount of light that can reach your eyes and skin**. The type and amount of protection depends on the frequency, nature, and intensity of light.

ADVICE FOR USING LIGHT-BLOCKING EYEWEAR

- Germicidal lamps can operate in all three of the ultraviolet ranges: UVA (320–400nm), UVB (290–320nm) and UVC (100–290nm). Conventional polycarbonate safety glasses are not appropriate since they have limited protection in the UVC range.
- Lasers can produce light at nearly any wavelength and at much higher intensities than a lamp or LED. Even the smallest and safest Class 2 laser pointers (1mW) are thousands of times brighter than the sun on your retina. Class 3B and 4 lasers emit light that can damage your vision in under a second; **you must use special laser goggles** when working with those types of systems.
 - Laser goggles must block all appropriate wavelength ranges with sufficient **optical density** to reduce the irradiance to safe levels. Many lasers produce multiple wavelengths.
 - Laser goggles should have the highest possible Visible Light Transmission because you need to be able to see in the lab to work and to align the beam safely.
- The arc flash from an arc welder (e.g., MIG or TIG welding), produces high intensity UV and visible light. **Standard arc welding goggles and face shields are specifically designed to block virtually all the light over a broad range of frequencies**. Do not use them for applications other than welding.

Contact an expert, such as the Laser Safety Advocate, Niel Leon (at nleon1@jhu.edu or 913-302-8500), for help choosing light-blocking eyewear—it is a highly technical field and expert assistance is necessary.

Vision is one of your most important senses. You only get one pair of eyes, and in an accident, you may have only one chance to protect them.