

Fact Sheet

Ultraviolet (UV) Light

UV light is used in a variety of applications within the lab, including transilluminators, germicidal lamps, crosslinkers, and handheld units.



Health Effects

UV radiation primarily causes harm to two parts of the body – the eyes and the skin. Skin exposure can cause burns and raise your risk for skin cancer. Eye exposure can cause burns, impaired vision, temporary blindness, and inflammation of the cornea. Damage can occur very quickly, and even very brief exposures to UV light can cause harm. Injuries have been reported from as little as 3 seconds of exposure.

Certain conditions can also make you more susceptible to harm from UV radiation. If you have had cataract surgery and are exposed to UV light, it could permanently damage your retina and result in blindness. Also, some medications and medical conditions can increase your likelihood of injury from UV light exposure.

Types of UV Light

In order to assess the hazards of your lab's particular UV light, you must know what wavelength of UV light it generates. You can generally find this information in the specifications for your equipment. Match the wavelength your equipment generates with the chart below to help determine the level of hazard.

<i>Region</i>	<i>Range in nm</i>	<i>Hazard Potential</i>	<i>Hazard</i>
UV-A	315-400	Lowest	Cataracts, aging and darkening of the skin
UV-B	280-315	Mid to high	1 st or 2 nd degree skin burns, blurry vision, watery eyes, photokeratitis (inflammation of the cornea)
UV-C	100-280	Highest	Skin/eye burns

General Control Measures

Standard Operating Procedures (SOPs) and Training

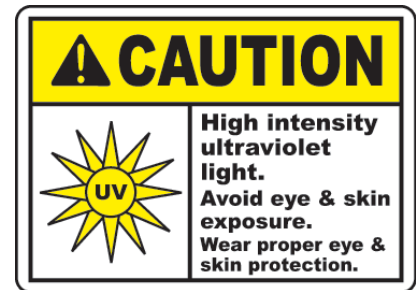
- Each laboratory should establish an SOP outlining the safe use of UV lights in your particular lab's applications of UV light.
- UV light users should be trained to understand the hazards of exposure to UV light and the control measures, personal protective equipment, shielding, or other precautions written out in the SOP. This training should be documented as part of the annual lab-specific training provided by your PI or department.

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- Include procedures to limit access to areas where UV light might be present. Even if you are not looking directly at UV light, it can still be harmful – keep this in mind when others are in the area while working.

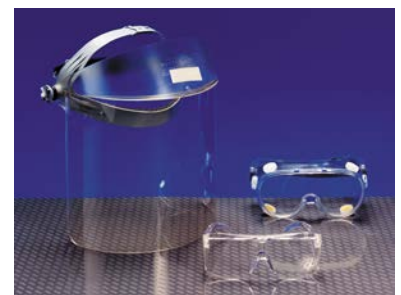
Equipment Set-up and Labeling

- Most equipment will have the wavelengths of UV light generated listed in the specifications. Make sure you know the wavelength, as all control measures must protect against that range.
- Make sure appropriate shielding is available if needed. Enclosures, filters, and screens can be used to help protect against UV radiation. Not all shields are protective against UV light, so make sure your shielding protects against the wavelength generated by your equipment. Many UV injuries are caused by not using proper shielding, or believing a shield was UV-protective and finding out later that it is was not.
- Ensure sources of UV light are labeled with a warning. These warnings should tell others that there is a UV light hazard, and include any control or protective measures they should take, such as wearing PPE or using a shield.
- Make sure surfaces around the source of UV light are dull and non-reflective. This helps reduce glare and reflections which may be harmful.



Personal Protective Equipment

- Gloves should be worn to protect your hands. Nitrile or latex gloves provide enough protection.
- A lab coat should be worn to protect your arms from exposure. Make sure to consider gaps at your wrists and protect your skin there too. Pulling your gloves up over your sleeve cuffs can be an effective way of doing this.
- A UV-protective face shield should be worn to protect your eyes and face. It should be marked with a U and a number between 2 and 6 if they provide UV protection. The higher the number, the more protection from UV light, though all are appropriately protective. If there is no U printed on the face shield, then it is NOT UV-protective. Make sure all of your face and neck is covered – many people forget underneath their chin.
- You may also choose to wear safety glasses or goggles underneath the face shield. They should be worn along with the face shield, not instead of.
- Sunscreen will *not* protect you from UV light in the lab. It will not protect your eyes, which are most sensitive to UV light. Also, because UV light generated in the lab is generally a shorter wavelength than that generated by the sun, sunscreen is not effective against it.



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Work Practices

- Try to limit exposure time to the UV radiation. Reduce the amount of time you must spend with the UV light on, and turn it off when it is not in immediate use.
- Remember that UV light in the lab can cause injury in as little as 3 seconds. Use shielding or PPE, even if it's "only for a second".
- Never remove your PPE in order to look closer at material being visualized, even for a short amount of time.
- UV lights in biological safety cabinets (BSCs) should always be inactive whenever you are working inside the cabinet. The use of UV lights is not required in BSCs, and has limited utility. See the BSC fact sheet here: http://www.dehs.umn.edu/bio_pracprin_biosafecab_uv.htm
- Incidents have happened in the past when students assumed shields or goggles were UV protective, and found out later that they weren't. Always make sure to check your equipment to ensure that it is specifically UV-protective.
- Transilluminators must always have a protective shield in place. This should be checked to ensure it is appropriately UV-protective, and that it doesn't have any cracks or damage.
- Crosslinkers should not be used if the door interlocking safety mechanism is not working correctly.

Questions

If you have any questions about UV light, protecting yourself from it, or how you can make your work safer, contact your Department Safety Officer, a DEHS Research Safety Professional, or call the DEHS main office at (612) 626-6002.