

Safety Considerations for using UV lamps: While there is no reason to expect that the light sources used in this demonstration have any health risks associated with their use, human eyes and skin are damaged by excessive UV light, and especially the high-energy UVB. On the other end of the spectrum, while red light is sometimes used to treat degenerative eye disease, color sensitivity of human sight is accentuated under the red lamps and may result in visual disorientation. Therefore, safety awareness and precautions should be incorporated into teacher and student use of these materials.

OSHA (Occupational Safety and Health Administration) does not have any regulation for UV exposure in the workplace; it references guidelines established by ACGIH (American Conference of Governmental Industrial Hygienists). The ACGIH has established allowable UV threshold limit values for direct ocular and skin exposures to UV radiation and suggests that exposure not exceed 1 mW/cm² continuously. To put in perspective, the intensity of the sun on a clear day is ~3 to 5 mW/cm². In another comparison, the ReptiSun 10.0 UVB lamp emits 10% UVB radiation. In contrast, only 3.3% of the solar radiation that penetrates the atmosphere is UV, and only 5% of the solar UV energy that reaches the equator is UVB. So this lamp produces considerably higher levels of UVB than naturally occurs outdoors. Therefore, even though this product is used by herpetology hobbyists in their homes, take care with its use in the classroom.

There are two ways to protect students and teachers from UV exposure: shield the people and/or shield the source lamp. Simple safety steps could/should include: 1) Set up the demonstration in the back or side of the classroom where the lamps won't be in direct line of vision. 2) Turn off the lamps when plants are being watered/fertilized or otherwise observed or handled, then turn them back on after plant evaluation/maintenance. This minimizes skin and eye exposure to the UVB radiation and/or visual disorientation from the red lights. 3) UVB rays do not penetrate glass (or UV-blocked polyethylene), so the UVB lamp could be set up in an aquarium or behind glass or plastic for added eye protection, or even in a back room or closet. 4) The UVB lamp could be placed on a timer to only emit light at night, as a boost to the high blue light treatment.