

---

# ULTRAVIOLET RADIATION HAZARDS FROM GROW LAMPS

Aerobiological Engineering Report 10-15-15

Grow lamps are seeing increasing use in the expanding medical marijuana industry but growers may be unaware of hazards from grow lamps due to low levels of ultraviolet radiation emitted from certain types of grow lamps. Two of the most common types of grow lamps are Metal Halide (MH) lamps and High Pressure Sodium (HPS) lamps. In general, lamps that generate UVC radiation (200-280 nm) include a glass outer shell or a blocking plate intended to filter out the UVC light. Fluorescent lamps generate UVC internally but are coated with phosphors to absorb the UV radiation.

Little detailed information is being provided by manufacturers on the exact amount of UVA, UVB, and UVC radiation emitted by their lamps. Anecdotal sources from the Internet have provided some information. For example, one 315 W Ceramic Metal Halide (CMH) lamp is specified as producing 3.45 mW/cm<sup>2</sup> of UVA, 0.01 mW/cm<sup>2</sup> of UVB, and 0.03 mW/cm<sup>2</sup> of UVC. The latter irradiance value is equivalent to 0.3 W/m<sup>2</sup> and according to the NIOSH/ACGIH limits of exposure this would limit the time of exposure to 100 seconds. Obviously there is a potential hazard for any lamp that emits this level of UVC radiation and growers need to be made aware of the dangers.

Another Internet source quotes the UVC output of a 1000W Metal Halide lamp as 0.02 mW/cm<sup>2</sup> or 0.2 W/m<sup>2</sup>, which has an exposure time limit of about 180 seconds. **Growers need to take precautions around grow lamps and it is recommended that full-body coverage and protective glasses be worn in grow rooms when the lights are on.**

There is also a concern that some growers are removing the UV light blocking plates that are included with some lamp fixtures. The removal of these glass or plastic plates can cause severe eye damage and skin burns. According to one source that measured the UVC coming from an uncovered 70 W Metal Halide lamp, the levels were 0.57 W/m<sup>2</sup> at 8 inches distance, and 0.08 W/m<sup>2</sup> at 24 inches distance from the lamp surface. The former time exposure limit would be about 52 seconds while the latter would limit exposure to about 8 minutes. Clearly these blocking plates should not be removed.

Fluorescent grow lamps can also present a UV hazard if the phosphors contain a gap and UV radiation leaks out. This is a hazard that has been noted by a number of groups for compact fluorescent lamps and one that poses a skin cancer risk due to long term exposure.

I have personally measured UVC levels from two types of lamps, a Hortilux 1000 W grow lamp and a 100 W fluorescent grow lamp and detected no measurable UVC radiation. If anyone has actual measurements of the UVC output of Metal Halide lamps, or manufacturer's specifications on UVC output, please forward them to the author.

[drkowalski@aerobiologicalengineering.com](mailto:drkowalski@aerobiologicalengineering.com)