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UV INTENSITY VARIATION FROM HIGH OUTPUT SOURCES - MERCURY ARC LAMPS

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ABSTRACT

The use of UV radiation for surface disinfection requires known intensity and dose distribution. Factors affecting these parameters include lamp output, reflector performance and fluid transmittance. This paper describes typical values, measurement methods and design implications for UV disinfection systems.

Lamp output is conventionally measured using an integrating sphere, however long lamps are not easily accommodated and an alternative method is described. This uses a slit to define a section of arc, and has the additional benefit of allowing axial variability to be assessed.

Reflectors may be simple folded sheet, parabolic (single or multi focus), or other form; all of which have performance and design implications for the UV system.

The UV dose delivered to the target material is also strongly influenced by the transmittance of the fluid (normally air or water) between the source and the target.

System design characteristics to ensure that the minimum required UV dose is achieved at all points on the target surface are described.