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### DETERMINING EPROM ERASURE OR STERILIZATION TIME

Sterilization dosage = (UV intensity) x (Exposure time). Therefore,

$$\text{Sterilization time in seconds} = \frac{\text{Sterilization dosage: (W.sec/cm}^2\text{) x 1,000,000}}{\text{Intensity: (\mu W/cm}^2\text{)}}$$

or

$$\frac{\text{Sterilization dosage: (\mu W.sec/cm}^2\text{)}}{\text{Intensity: (\mu W/cm}^2\text{)}}$$

Notice the term “μ” in the numerator of the second equation - this is not in the first equation. By multiplying the numerator in the first equation by 1,000,000, you are converting *watt* into *microwatt*. One microwatt = one watt x 10<sup>-6</sup> (10 to the (-6) power).

Assume you are sterilizing ostrich or emu eggs and the sterilization dosage = 8800 μW.sec/cm<sup>2</sup>; the intensity of the light source is 1500μW/cm<sup>2</sup>. Note that we are referring to *microwatt* seconds. Since the dosage is already in microwatts, there is no need to multiply the numerator by 1,000,000.

The resulting equation would be:

$$\frac{\text{Sterilization dosage: 8800}\mu\text{W.sec/cm}^2}{\text{UV Intensity: 1500}\mu\text{W/cm}^2} = 5.87 \text{ seconds}$$

Now assume you are erasing EPROMs and the recommended erasure dosage is 15W.sec/cm<sup>2</sup>. Assume the intensity of the light source is 18,000W/cm<sup>2</sup>. The equation would be:

$$\frac{15\text{Wsec/cm}^2 \times 1,000,000}{18,000\mu\text{W/cm}^2 \times 60} \quad \text{You get} \quad \frac{15,000,000\mu\text{Wsec/cm}^2}{18,000\mu\text{W/cm}^2 \times 60} = \frac{833.33 \text{ sec.}}{60} = 13.89 \text{ minutes}$$