THE DEVELOPMENT OF EXPOSURE LIMITS FOR LASER RADIATION

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Lasers have been a cause of public concern only for the past 20 years. During this period extensive research has resulted in a reasonably good understanding of the biological effects induced by optical radiation emitted from such devices. There is now good agreement between national and international bodies concerning exposure limits and exposure standards. The exposure limits are reasonably complex being related to both variations in physical parameters of the source and fundamental differences in the biological targets, namely the skin and the eye. Between 400 and 1400 nm the eye is a particular problem in that it is specifically adapted to increase the effective irradience between the cornea and the retina. A further complication for the eye is that three different damage mechanisms occur whose thresholds are roughly related to time duration of the exposure.

This paper will discuss the above problems highlighting those areas of limited data and relating the scientific arguments used in establishing the present standards. Particular reference will be made to the IRPA guidelines on the limits of exposure to laser radiation.