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PUBLIC HEALTH SERVICE  
FOOD AND DRUG ADMINISTRATION  
BETHESDA, MARYLAND 20892

A D V I S O R Y   O P I N I O N

SUBJECT: VISIBILITY OF LASER RADIATION EMISSION INDICATORS THROUGH  
PROTECTIVE EYEWEAR: 21 CFR 1040.10(f)(5)(iv)

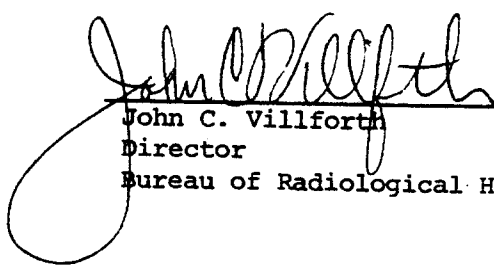
QUESTION: What kind of visual laser radiation emission indicator would be acceptable to use in conjunction with protective eyewear? For a HeNe laser emitting a 632.8 nm wavelength there are several types of laser safety glasses which would safely attenuate the emitted laser beam. However, if a yellow light-emitting diode is used as the visible emission indicator it would not necessarily be visible through blue laser safety eye glasses, and similarly, a green light-emitting diode is not necessarily visible through other laser safety eye glasses with limited transmission in selected regions of the visible light spectrum. Is either a yellow or green light-emitting diode acceptable as an emission indicator for a Class II HeNe laser? If either one individually is not acceptable, then can both be used, or is it a requirement that an incandescent light bulb lamp be used as the laser radiation emission indicator?

ADVISORY OPINION: Section 1040.10(f)(5)(iv) of the Federal performance standard for laser products states that, "Any visible signal required by paragraphs (f)(5)(i) or (ii) of this section shall be clearly visible through protective eyewear designed specifically for the wavelength(s) of the emitted laser radiation." The phrase "protective eyewear designed specifically for the wavelength(s) of the emitted laser radiation" means protective eyewear which:

1. Attenuates laser radiation predominately at the wavelength(s) or within the wavelength range(s) of the emitted laser radiation.
2. Transmits sufficient luminous flux at visible light wavelengths to allow visibility of emission indicators.

The Standard is a performance standard rather than a design standard. Thus, indicator lights of a specific color are not required, nor does the Standard prohibit an indicator consisting of a combination of two or more lights as long as there is one indicator and its meaning and significance are clear. An emission indicator fails to comply with the Standard if it is not visible through protective eyewear recommended by the manufacturer of the laser product or through other available protective eyewear generally considered as suitable for laser radiation emitted by the product. Laser product manufacturers should make every reasonable effort to assure visibility of emission indicators when used with all the protective eyewear which can be expected to be used with the laser product.

DATED: NOV 21 1975

  
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