Letters

Lasers and Eye Protection

The Food and Drug Administration's Bureau of Radiological Health has been conducting preliminary tests of equipment to protect eyes against laser radiation. The test findings and actions being taken as a result may interest those who buy or use such equipment.

Protective goggles are used in certain laser applications to protect operators or bystanders from direct exposure to high radiation levels which could cause serious eye damage. Without protective eyewear and either fixed or portable shields of the same material, many injuries from laser exposure possibly would have occurred.

The exposure of laser goggle materials to sufficiently high power or energy will cause damage in the form of melting, bleaching, bubbling, or shattering. However, some eye-safety products will fail after several seconds of exposure to laser beams of about 1 watt, or a power density of about 6 to 12 watts per square centimeter. The Bureau of Radiological Health is concerned that not all users or buyers of eye-protection equipment are aware of this fact.

Manufacturers have been notified that some types of protective eyewear have failed during preliminary nonhuman testing in bureau laboratories. The bureau, however, has received no reports to date of human injury that might have occurred as a direct result of eye-protection equipment failures.

Representatives of manufacturers and of professional groups met on 5 October at bureau headquarters in Rockville, Maryland, to discuss methods by which all products providing eye protection from lasers could be uniformly evaluated and appropriately labeled, and the essential information disseminated to users and purchasers.

The bureau is working with manufacturers and other affected groups to develop criteria for the selection and use of protective eyewear in order to provide guidance for laser users and purchasers at the earliest possible date.

Laboratory personnel at the bureau noted that protective goggles intended for use with helium-neon gas lasers, which normally have an output of a few milliwatts, have not shown signs of failure in the limited tests conducted thus far. Those who use these goggles when operating such low-power, helium-neon lasers should continue to do so.

Individuals using protective goggles around high-power lasers—for example, a multiwatt argon-ion laser—are advised to determine the failure points of their eyewear by contacting the manufacturer. In the event that the necessary information is unavailable, the eyewear should be tested by exposure to the most intense radiation against which it is expected to provide protection. Such a test should represent the worst case condition of exposure to the eyewear. The eyewear tested should be carefully inspected before it is returned to service. If the eyewear fails, operation of the system should be suspended until alternate means of personnel protection are provided. Eye-protection equipment should always be inspected before each use for signs of melting, bleaching, bubbling, or cracking. If any one of these signs is noted, the eyewear should be removed from service.

Multiwatt lasers may commonly be found in universities, industry, research laboratories, and in medical facilities. In some instances, servicing and alignment procedures for these lasers may result in possible direct exposure to a high-power laser beam over a period of seconds or possibly minutes. Under these circumstances, the worker may risk serious eye injury if he is unaware of the failure point of the protective eyewear.

The chance of eyewear failure increases as laser power and energy rise. Therefore, persons buying a laser product are urged to make certain that the presently owned eye-protective equipment will accommodate the power of the new product.

It is the intention of the bureau to develop, both from laboratory experience and from suggestions submitted, a set of criteria for the selection and use of protective eyewear in laser applications. Suggestions, comments, or information that would assist the bureau in establishing criteria and collecting data on eyewear failure would be welcome. Communications should be directed to the Director, Bureau of Radiological Health, Food and Drug Administration, 5600 Fishers Lane, Rockville, Maryland 20852.

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Safety of Cosmetics

During the past 3 years, government officials and consumer activists have repeatedly charged that cosmetics cause serious injury to 60,000 people every year. That the acceptance of the charge as fact is a serious matter is indicated by the statement (*1*) made by Senator Thomas F. Eagleton (D–Mo.) in announcing the scheduling of hearings on his bill (*2*) to amend the Federal Food, Drug, and Cosmetic Act:

> The National Commission on Product Safety reported that 60,000 people, mostly women, are injured by cosmetics every year severely enough to restict activity for one day or require medical attention.

Investigation of this oft-repeated statement reveals that it is erroneous and misleading. Senator Eagleton was quoting the National Commission on Product Safety (NCPS) correctly (*3*), but NCPS misrepresented the report (*4*) by the Department of Health, Education, and Welfare (HEW) from which the 60,000 figure was taken. That report made it clear that the figures were only estimates, with an unknown error. According to the major author of the report, John H. Morrison, Jr. (*5*), because of the lack of information at that time on injuries from cosmetics, the figures cited in the report were derived almost exclusively from the reports (*6*) of accidental ingestions of products from the national network of poison control centers in the United States. By statistical extrapolation from these reports, the figure of 60,000 was arrived at. He agreed that the reported accidental ingestions were not necessarily serious injuries but explained that they met the definition of injury in the HEW study because medical attention was sought.

Since most cosmetic products are innocuous when ingested, the overwhelming bulk of the inquiries do not even result in treatment, much less injury. To illustrate, one finds that only 7 out of each 1000 instances of acci-