

DEPARTMENT OF THE ARMY
OFFICE OF THE SURGEON GENERAL
5109 LEESBURG PIKE
FALLS CHURCH, VA 22041-3258

SGPS-PSP (40)

11 Apr 94

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Vision and Ocular Assessments of Personnel in Laser and Radiofrequency Radiation Environments

1. References:

a. Memorandum, USAHPSA/SGPS-PSP-0, 06 Feb 92, subject: Surveillance of Laser and Radiofrequency Radiation Personnel.

b. American National Standards Institute (ANSI) Standard Z136.1-1993, 05 Feb 93, subject: American National Standard for Safe Use of Lasers.

c. Technical Guide No. 153, Guidelines for Controlling Potential Health Hazards from Radiofrequency Radiation, April, 1987.

2. Scope: This memorandum applies to personnel working in laser or radiofrequency radiation (RFR) environments (i.e., personnel working with or near lasers or RFR, and personnel having a known or suspected overexposure to laser or RFR emissions).

3. Reference 1a is rescinded and replaced by this memorandum which is based on references 1b and 1c.

4. Personnel Categories for Vision/Ocular Assessments.

a. Laser Radiation.

(1) *Personnel Categories* for each employee shall be determined by the Laser Safety Officer (LSO) of the installation. (The LSO is often the Radiation Protection Officer [RPO]).

(2) *Vision/Ocular Assessments* are not required for personnel using Class 1, Class 2, Class 2a, or Class 3a lasers and laser systems as defined in paragraph 3.3.3.2 of reference b. Vision/Ocular Assessments are required for personnel using Class 3b and Class 4 lasers and laser systems. The type of medical examination required will be based on the Personnel Category as determined by the installation LSO.

(a) Laser Workers are those individuals who routinely work in laser environments. These individuals are ordinarily protected by engineering controls, administrative procedures, and/or personal protective equipment. Examples of laser workers would be research and development personnel, maintenance/repair personnel, system training personnel, and personnel using lasers for medical treatment.

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(b) Incidental Laser Personnel are individuals working in a laser area whose work makes it unlikely that they will be overexposed to laser energy sufficient to damage their eyes or skin. Examples of incidental laser personnel include laser custodial personnel, military personnel during field exercises, and clerical and supervisory personnel not working directly with laser devices.

b. Radiofrequency Radiation (RFR)

(1) Personnel Categories are no longer designated for RFR workers.

(2) Vision/Ocular Assessments are required only in the event of a known overexposure to RFR in excess of five (5) times the Permissible Exposure Limit (PEL).

5. Vision/Ocular Assessments for Personnel In Laser Environments.

a. Preplacement Screenings are performed on all Laser Workers using Class 3b and 4 lasers and all Incidental Laser Personnel working with Class 3b and 4 lasers. The purpose of this examination is to determine the baseline visual acuity and ocular health status of the employee. (Laser Workers and Incidental Laser Personnel potentially exposed to only Class 1, 2, 2a and 3a lasers have no vision screening requirement beyond that done routinely in their preplacement physical or under other Occupational Health guidelines.) Individuals having non-normal findings will be referred for a Diagnostic Examination.

b. Diagnostic Examinations are performed on those individuals who are found to have other than normal ocular findings on their Preplacement or Termination Vision Screening. The purpose of this examination is to determine the cause of the non-normal findings. These examinations should be done in a non-urgent but timely manner.

c. Immediate Ophthalmic Examinations will be administered when there is a known or suspected laser overexposure. The Immediate Examination will be performed within 24 hours of the overexposure, or as soon as possible after the suspected overexposure is reported. In the event of a reporting delay, this examination should be performed even if a significant period of time has elapsed since the overexposure. See para 7c for the Immediate Ophthalmic Examination protocol.

d. Termination Vision Screenings will be performed on all Laser Workers and those Incidental Laser Personnel who work with Class 3b and 4 lasers when they terminate their employment, or transfer to another installation or work activity. To ensure that termination screenings are performed, prior to the worker's departure the installation Occupational Health Physician should make an entry on the DA 5571 (Master Problem List) within the worker's medical records indicating the need for a Termination Screening. Individuals having non-normal findings will be referred for a Diagnostic Examination.

6. Vision/Ocular Assessments for Personnel In RFR Environments.

a. RFR Workers have no vision screening requirement beyond that done routinely in preplacement physicals or under other occupational health guidelines.

b. It is highly unlikely that overexposure to RFR from conventional systems will result in isolated damage to the eye. However, in the case of known or suspected overexposure to RFR in excess of 5 times the PEL, it is recommended that an appropriate eye examination be done at the discretion of the optometrist or ophthalmologist, which includes ocular history, visual acuity, and examination of the crystalline lens as per para 7.c.(1),(2) and (4).

c. The management of whole-body RFR exposures is beyond the scope of this memorandum. Information on medical treatment and reporting of RFR exposures is contained in AR 40-5, AR 40-400, AR 385-40, and TG 153.

7. Vision/Ocular Assessment Protocols for Personnel in Laser Environments.

a. Vision Screening will be performed for preplacement and termination as indicated below:

(1) Laser Workers will have an ocular history, visual acuity measured at distance for each eye (with corrective lenses if applicable), a test for color recognition, and a test for central visual fields and macular function (Amsler Grid or similar test) performed by an individual qualified to accurately administer the test (See Sample Amsler Grid Certification, Appendix A). If any abnormal findings are noted, such as visual acuity less than 20/20 in either eye, or distortions or missing portions of the Amsler Grid, the worker will be referred to an optometrist or ophthalmologist for a Diagnostic Examination. (Note: Laser Workers who have not previously had an Amsler Grid Test should have one performed as soon as practical and have the results entered into their occupational health record.)

(2) Incidental Laser Personnel will have each eye screened for visual acuity (with corrective lenses if applicable). If visual acuity is less than 20/20 in either eye, the worker will be referred to an optometrist or ophthalmologist for a Diagnostic Examination.

b. Diagnostic Examinations will be performed by an optometrist or ophthalmologist, who will evaluate the vision system as necessary to determine the cause of the non-normal finding.

c. Immediate Examinations will be performed by an optometrist or ophthalmologist. The examination will include as a minimum:

(1) Ocular History, with emphasis on previous eye injury or disease and use of any medications, especially those with photosensitizing side effects.

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(2) Distance Visual Acuity (with correction) in each eye. If the corrected distance visual acuity is less than 20/20 in either eye, a refraction will be performed to obtain the best corrected visual acuity.

(3) An Amsler Grid or similar pattern test for macular function to detect distortions, scotomas or other abnormal findings when present.

(4) A Slit Lamp Biomicroscope examination of the cornea, crystalline lens and other structures accessible to this instrument, recording as a minimum the presence or absence of opacities in the ocular media.

(5) Ocular Fundus evaluation through dilated pupil (unless medically contraindicated) describing as a minimum the sharpness of the optic nerve head margins, the cup to disc ratio, the absence of blood, the size and condition of retinal blood vessels, disturbances of pigmentation, presence or absence of a well-defined macula and foveal reflex, and any retinal abnormalities noted.

(6) Ocular Fundus Photography including the macular area, the optic disc area, and any retinal abnormalities noted. (If photography absolutely cannot be performed, a representation of the findings should be hand-drawn.)

8. Over-Exposure Reporting. For any known or suspected overexposure to Laser or RFR, contact the installation RPO. In addition, contact the U.S. Army Environmental Hygiene Agency, Vision Conservation Team, at DSN 584-3534, Commercial (410) 671-3534, and the Laser/Microwave Division at DSN 584-3000, Commercial (410) 671-3000 as soon as possible after the overexposure occurs.

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9. POCs are COL Myers, Radiological Hygiene Consultant to The Surgeon General (DSN 289-0132; Commercial 703-756-0132) and COL Evenson, Occupational Medicine Staff Officer (DSN 289-0311; Commercial 703-756-0311).

FOR THE SURGEON GENERAL:


for
RUSS ZAJTCHUK
Brigadier General, MC
Director, Professional Services

2 Encls

1. App A

2. App B

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EACH U.S. ARMY MEDICAL CENTER/U.S. ARMY MEDICAL DEPARTMENT

ACTIVITY/U.S. ARMY HEALTH CLINIC, ATTN: PREVENTIVE MEDICINE SERVICE

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Appendix A
Amsler Grid Certification Form (Sample)

Amsler Test

Administrator _____
Title First Name Last Name Degree

Work Address _____

I certify that the above named individual has demonstrated the knowledge and skill necessary for the administration of the Amsler Grid Test.

Optometrist or

Ophthalmologist _____
Title First Name Last Name Degree

Work Address _____

Signature Date

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Appendix B

Vision/Ocular Assessment Protocols for Personnel Using Class 3B and 4 LASERS or R

| Type worker | Preplacement Screening Protocol | Diagnostic Examination Protocol | Immediate Examination Protocol | Termination Screening Protocol |
|----------------------|--|--|---------------------------------------|---------------------------------------|
| Laser worker | Para 7a(1) | Para 7b | Para 7c | Para 7a(1) |
| Incidental personnel | Para 7a(2) | Para 7b | Para 7c | para 7a(2) |
| RFR worker | none | none | Para 6b | none |