



Defense Health Agency

ADMINISTRATIVE INSTRUCTION

NUMBER 108
August 9, 2019

AD-CS/PHD

SUBJECT: Non-Ionizing Radiation Safety

References: See Enclosure 1.

1. **PURPOSE.** This Defense Health Agency-Administrative Instruction (DHA-AI), based on the authority of References (a) through (c) and in accordance with the guidance of References (c) through (y), establishes the Defense Health Agency's (DHA) procedures for the safe use of non-ionizing radiation, to include lasers, laser systems, and controlled radio frequency (RF) radiation (RFR) sources within DHA's facilities to protect DHA personnel and patients from non-ionizing radiation and related risks.

2. **APPLICABILITY.** This DHA-AI applies to all DHA personnel to include: assigned, attached, or detailed Active Duty or Reserve members, federal civilians, and other personnel assigned temporary or permanent duties at DHA, to include intermediate management organizations, markets, medical treatment facilities, and all other organizational entities within the DHA (referred to collectively in this DHA-AI as the "DHA Components"). Deviation from this DHA-AI requires the approval of the Director, DHA, through the DHA Radiation Safety Committee (RSC).

3. **POLICY IMPLEMENTATION.** It is DHA's policy, pursuant to Reference (h), to ensure the safe use of non-ionizing radiation within DHA's subordinate organizations. The DHA Radiation Safety Program (RSP) will oversee the use of non-ionizing radiation in DHA's subordinate organizations.

4. **RESPONSIBILITIES.** See Enclosure 2.

5. **PROCEDURES.** See Enclosure 3.

6. RELEASABILITY. **Not cleared for public release.** This DHA-AI is available to users with Common Access Card authorization on the DHA SharePoint site at: <https://info.health.mil/cos/admin/pubs/SitePages/Home.aspx>.

7. EFFECTIVE DATE. This DHA-AI:

- a. Is effective upon signature.
- b. Will expire 10 years from the date of signature if it has not been reissued or cancelled before this date in accordance with Reference (i).



R. C. BONO
VADM, MC, USN
Director

Enclosures

1. References
2. Responsibilities
3. Procedures

Glossary

ENCLOSURE 1

REFERENCES

- (a) DoD Directive 4715.1E, "Environmental, Safety, and Occupational Health (ESOH)," March 19, 2005, as amended
- (b) DoD Directive 5136.01, "Assistant Secretary of Defense for Health Affairs (ASD (HA))," September 30, 2013, as amended
- (c) DoD Instruction 6055.15, "DoD Laser Protection Program," May 4, 2007, as amended
- (d) DoD Directive 5136.13, "Defense Health Agency (DHA)," September 30, 2013
- (e) DoD Instruction 6055.01, "DoD Safety and Occupational Health (SOH) Program," October 14, 2014, as amended
- (f) DoD Instruction 6055.05, "Occupational and Environmental Health (OEH)," November 11, 2008, as amended
- (g) DoD Instruction 6055.11, "Protecting Personnel from Electromagnetic Fields," August 19, 2009, as amended
- (h) DHA-Administrative Instruction 087, "Radiation Safety Program (RSP) and Radiation Safety Committee (RSC)," January 17, 2017
- (i) DHA-Procedural Instruction 5025.01, "Publication System," August 24, 2018
- (j) Air Force Instruction 48-139, "Laser and Optical Radiation Protection Program," September 30, 2014
- (k) Air Force Instruction 48-109, "Electromagnetic Field Radiation (EMFR) Occupational and Environmental Health Program," August 1, 2014
- (l) American National Standards Institute Z136.1-2014, "Safe Use of Lasers," December 10, 2013
- (m) American National Standards Institute Z136.3-2018, "Safe Use of Lasers in Health Care," May 25, 2018
- (n) American National Standards Institute Z136.6-2015, "Safe Use of Lasers Outdoors," October 5, 2015
- (o) BUMEDINST 6470.19A, "Laser Safety at Military Facilities and Research Laboratories," May 23, 2005
- (p) BUMEDINST 6470.23, "Medical Management of Non-Ionizing Radiation Casualties," August 18, 1999
- (q) Department of the Army Pamphlet 40-506, "The Army Vision Conservation and Readiness Program," July 15, 2009
- (r) Army Regulation 385-10, "The Army Safety Program," August 23, 2007, as amended
- (s) DoD 6055.05-M, "Occupational and Medical Examinations and Surveillance Manual," May 2, 2007, as amended
- (t) Institute of Electrical and Electronics Engineers C95.1-2005, "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," April 19, 2006
- (u) Institute of Electrical and Electronics Engineers C95.7-2005, "IEEE Recommended Practice for Radio Frequency Safety Programs, 3 kHz to 300 GHz," September 2005
- (v) OPNAVINST 5100.23G, "Navy Safety and Occupational Health Program Manual," December 30, 2005

- (w) Technical Bulletin MED 524, "Occupational and Environmental Health, Control of Hazards to Health from Laser Radiation," January 31, 2006
- (x) Code of Federal Regulations, Title 21, Part 1040
- (y) Code of Federal Regulations, Title 29, Part 1910

ENCLOSURE 2

RESPONSIBILITIES

1. DIRECTOR, DHA. The Director, DHA will:

a. Oversee the RSP for DHA operational facilities and certify that appropriate DHA facilities will implement the RSP in accordance with Reference (h).

b. Appoint the DHA Radiation Safety Officer (RSO), serving as DHA RSO and Executive Secretary of the DHA RSC, to provide oversight for non-ionizing radiation activities at DHA subordinate organizations.

c. Proceed with necessary action(s) against those individuals who willfully and knowingly fail to comply with federal regulations and the DHA RSP.

d. Provide adequate resources (including space, training and travel budget, equipment, qualified personnel, and, if needed, contractors to fill critical skills), to the RSP, as deemed necessary by the DHA RSO, to ensure the public and staff are protected from radiation hazards and that meticulous compliance with federal and DHA regulations and policies are maintained.

2. DHA RSC CHAIR. The DHA RSC will manage and oversee the safe use of non-ionizing radiation within the DHA's subordinate organizations in accordance with DHA-AI 087 (Reference (h)).

3. DHA RSO. The DHA RSO will:

a. Be responsible for implementing a Non-Ionizing RSP at DHA which conforms to the requirements and procedures in accordance with References (c), (g), and (h).

b. Establish and maintain a laser safety review process to provide a systems safety review of all Class 1M, 2M, 3B, 3R, or 4 lasers at DHA facilities and activities.

c. Be responsible for the programmatic oversight of all medical non-ionizing radiation producing devices (ultrasound, magnetic resonance imaging ,laser systems) at DHA facilities and activities in accordance with Reference (h).

d. Ensure particular emphasis is placed on laser and RFR injury prevention education and on reporting non-ionizing radiation related incidents (e.g., injury or suspected exposure to laser or RF radiation greater than the maximum permissible exposure (MPE) limit or exposure reference level (ERL)), in accordance with References (c), (g), and (h).

- e. Serve, or appoint a designee to serve, as the DHA representative on the DoD Laser Systems Safety Working Group in accordance with Reference (c).
- f. Serve, or appoint a designee to serve, as the DHA representative on the DoD Transmitted Electromagnetic Field (EMF) Radiation Protection Working Group, in accordance with Reference (g).
- g. Provide an update of the DHA laser protection program to the Deputy Undersecretary of Defense for Installations and Environment in accordance with Reference (c), and as part of the DoD Safety and Occupational Health Program in-progress review requirements of Reference (e).
- h. Serve as the primary point of contact for DHA subordinate organizations for the safe use of lasers and RF sources.
- i. Provide updates on the Non-Ionizing RSP to the DHA RSC.

4. COMMANDING OFFICERS AND DIRECTORS OF DHA FACILITIES/ACTIVITIES USING NON-IONIZING RADIATION. The Commanding Officers and Directors of DHA facilities/activities using non-ionizing radiation and subordinate organizations which own and operate lasers and/or RFR-emitting devices will:

- a. Establish and maintain an effective RSP in accordance with Reference (h).
- b. Operate under conditions specified in applicable regulations, authorizations, applications, and correspondences and comply with instructions concerning safe receipt, possession, distribution, use, transportation, transfer, and disposal of Class 3B or 4 lasers and RF sources in accordance with References (c) and (g).
- c. Coordinate all questions or reports concerning non-ionizing radiation use with the DHA RSC.
- d. Appoint a site Laser Safety Officer (LSO) in writing, in coordination and consultation with the site RSO. The LSO may also be the RSO, Safety Officer, or other qualified individual (e.g., Laser Safety Nurse).
- e. Designate an alternate LSO to assist the LSO in performance of their duties.
- f. Ensure the site LSO and alternate LSO are trained to a level commensurate with the duties and responsibilities of the facility RSP, in accordance with References (l) through (n).
- g. Establish and employ written procedures for a Laser Safety Program in coordination with the site RSO and site LSO, if applicable, which follow the requirements of Reference (c).

h. Establish a DHA Laser Safety Committee in accordance with References (l) and (m) in coordination with the site RSO and/or site LSO to ensure compliance with local procedures and regulations. The local Laser Safety Committee will:

- (1) Serve as the approving body for new medical laser procurements.
- (2) Oversee laser medical suite surveys and safety assessments.
- (3) Mitigate safety issues.

(4) At a minimum, consist of the Director for Administration, RSO, occupational health physician, industrial hygiene officer or environmental hygiene officer, an ophthalmologist, dermatologist, and safety program manager. The DHA LSC will ensure a representative from each department that utilize class 3B or 4 lasers are present for committee meetings.

i. Ensure site personnel are identified as being enrolled in the Medical Surveillance Program for non-ionizing radiation protection and are trained to be familiar with potential laser exposure hazards and appropriate protective measures, including personal protective equipment (PPE) (e.g., laser eye protection).

j. Conduct a survey (internal or external), at least once every 3 years for compliance with applicable non-ionizing radiation safety guidance and regulations and provide written copies of the surveys to the DHA RSO and the site RSO.

k. Appoint a site Radio Frequency Safety Officer (RFSO) in writing, in coordination and consultation with the site RSO and provide a copy of the RFSO appointment letter to the site RSO and facility Commanding Officer/Director. Provide a copy of the RFSO appointment letter to the DHA RSC by April 30 each calendar year.

l. Initiate training and refresher training of users of lasers and RF sources in their safe use and control of hazards.

m. Provide an inventory of all Class 3B, 3R, and 4 lasers and RF sources which could exceed MPE (or ERL), limits to the site RSO and facility commanding officer/director annually by May 31 of each calendar year, or more frequently if necessitated by inventory changes. Ensure inventory identifies critical care areas where medical equipment is susceptible to electromagnetic interference (EMI).

n. Implement a medical surveillance program for all personnel who are clearly at risk of exceeding MPE levels, including laser workers routinely working with Class 3B, 3R, or 4 lasers or laser systems and incidental laser workers as defined in Reference (s).

o. Implement a medical surveillance program for all personnel who are clearly at risk of exceeding MPE levels, including RF workers as defined in Reference (s).

p. Investigate, document, and report results of laser and RFR overexposure incidents to the site RSO and to the appropriate injury hotline and repository (i.e., the Tri-Service Laser Injury Hotline/Laser Accident and Injury Registry or the DoD EMF Injury Hotline/EMF Overexposure Repository).

q. Perform inspection and testing of PPE annually by May 31st of each calendar year to ensure it is in proper working order.

r. Ensure appropriate warning signs are available and posted where required, in accordance with References (l) and (m). These should include signs restricting use of wireless RF sources in locations designated as critical care areas.

5. DHA PERSONNEL. The DHA Personnel and Staff Members of DHA subordinate organizations which own and operate lasers and RF sources will:

a. Follow safe procedures and adhere to all federal, DoD, DHA, and Service instructions and regulations when operating lasers or RF sources.

b. Inspect all PPE before each use and notify the site LSO/RFSO if it is not in proper working order.

c. Report any inventory changes to the site LSO or RFSO as they occur.

d. Notify the site LSO/RFSO and/or RSO, of any incidents involving lasers or RF sources and follow subsequent instructions.

ENCLOSURE 3

PROCEDURES

1. STANDARDS

a. All activities involving lasers, laser systems, and RF sources should comply with federal, DoD, DHA, and Service instructions and regulations, including but not limited to References (c), (g), and (h), and in accordance with References (x) and (y).

b. MPE limits for laser radiation are specified in References (c), (l) through (n), and in accordance with Reference (x). MPE limits for RFR are specified in References (g) and (t) to limit exposures to personnel, review and determine DoD mission compatibility with all MPE updates and modifications.

2. EVALUATION

a. Medical Surveillance. Maintain an operational medical surveillance program for laser personnel who are clearly at risk of exceeding MPE levels in accordance with Reference (s) and local instructions and regulations and for RF personnel who are clearly at risk of exceeding MPE levels in accordance with local instructions and regulations. This should include visual examinations before placement and at termination.

b. Hazard evaluation

(1) Maintain a Service capability to conduct evaluations to assess the hazards from lasers, laser systems, and RF sources in accordance with References (c) and (g), and local instructions.

(2) Incorporate procedures into each facility laser review process to notify the DoD Laser Systems Safety Working Group Joint Services Evaluation Subgroup and the DHA RSO of any laser system being considered for procurement or development which is intended for joint Service use in accordance with Reference (c).

(3) Use product performance standards in Reference (l), for commercially procured common use lasers such as laboratory lasers, lasers embedded in equipment, and other lasers not procured for military-specific uses in accordance with Reference (c).

(4) Consult the DoD Transmitted EMF Radiation Protection Working Group to evaluate RF sources intended for joint Service use in accordance with Reference (g).

c. Inventory. Maintain an inventory of all Class 3B, 3R, and 4 lasers and RF sources that can exceed MPEs. Inventories must be updated annually by May 31 of each calendar year or more often if required by local procedures. A copy of the inventory will be furnished to the site RSO.

d. Records Maintenance

(1) Maintain records of surveys, reports, calculations, and control measures imposed for each laser, laser system, and RF source capable of exceeding MPEs in reference to References (c), (g), (l) through (n), (r) and (u), and in accordance with References (c), (f), and (g).

(2) Maintain a record of surgical procedures using lasers, consisting of name of the provider, name of the patient, PPE used, and safety check compliance in accordance with References (l) and (m).

3. CONTROLS

a. Establish and maintain control over areas where laser or RFR exposures above the MPE could occur in accordance with References (c) and (g).

b. Mitigate the risk from laser and RF radiation to an acceptable level using engineering design, PPE, administrative controls, or a combination thereof under the guidance of References (l) through (n), (u), and in accordance with (c), (g), and local instructions.

4. TRAINING AND EDUCATION

a. Assess continuing education and training needs and monitor licensing, credentialing and certification of providers and provider support staff in accordance with Reference (m).

b. Provide laser safety training to site LSOs, laser users, laser operators, technical support staff, and nurses and allied health personnel in accordance with Reference (m).

c. Educate site LSOs via a minimum 10-hour course in areas including but not limited to the following:

- (1) Laser classification
- (2) Laser bio effects
- (3) Specular and diffuse reflections
- (4) Control measures
- (5) Nominal hazard zones

- (6) Laser eye protection and optical density
- (7) Non-beam hazards
- (8) Medical surveillance program requirements
- (9) Accident and incident reporting procedures

d. Educate site RFSOs via a minimum 10-hour course in areas including but not limited to the following:

- (1) EMF radiation
- (2) Terminology
- (3) RF bio effects
- (4) Exposure control measures
- (5) RF shock hazards
- (6) Potential impact of RF on tissue, medical electronics, and communications (e.g., EMI).

e. Train personnel in laser and RF hazards and specific operational and safety procedures commensurate with their duties prior to operations in which exposure incidents could occur, and once annually each calendar year. This should include but not be limited to EMI awareness training.

5. ACCIDENTS AND INCIDENTS

a. Develop and implement procedures to investigate, document, and report incidents involving personnel exposure which may exceed the MPEs in References (c), (g), (l) through (n), (r), (u), and in accordance with References (c), (f), and (g) and local instructions.

b. To determine exposure levels, include measurements of analysis, appropriate medical examination, a detailed description of the circumstances surrounding the incident to determine root cause, and recommendations for preventing recurrence of similar incidents, in accordance with References (c) and (g). Assistance with determining exposure levels can be obtained by contacting the Tri-Service Laser Injury Hotline; the DoD EMF Injury Hotline; or the Tri-Service Research Lab, Fort Sam Houston, San Antonio, Texas.

c. For accidents or incidents involving lasers or laser systems:

(1) Immediately evacuate personnel suspected of experiencing potentially damaging eye exposure from laser radiation to the nearest medical facility for an eye examination.

(2) Call the Tri-Service Laser Injury Hotline (1-800-473-3549 or DSN 240-4784), for additional medical assistance and report the incident to the relevant Service component.

(3) Submit accident and incident reports to the Laser Accident and Incident Registry, the DHA RSC, site RSC, and to other appropriate authorities per local instructions.

d. For accidents or incidents involving RF sources:

(1) Immediately remove personnel suspected of RFR overexposure to the nearest medical facility for care.

(2) Call the DoD EMF Injury Hotline (1-888-232-3764/210-536-6007 or DSN 204-6007/240-5454), for additional medical assistance, and report the incident to the relevant Service component.

(3) Submit accident and incident reports to the EMF Overexposure Repository, the DHA RSC, site RSC, and to other authorities per local instructions.

GLOSSARY

PART I. ABBREVIATIONS AND ACRONYMS

DHA	Defense Health Agency
DHA-AI	Defense Health Agency-Administrative Instruction
EMF	Electromagnetic Field
EMI	electromagnetic interference
ERL	exposure reference level
LSO	Laser Safety Officer
MPE	maximum permissible exposure
PPE	personal protective equipment
RF	radio frequency
RFR	radio frequency radiation
RFSO	Radio Frequency Safety Officer
RSC	Radiation Safety Committee
RSO	Radiation Safety Officer
RSP	Radiation Safety Program

PART II. DEFINITIONS

These terms and definitions are for the purposes of the DHA-AI.

ERL. The highest level of an electric field, magnetic field, EMF, induced current or contact current voltage to which the standard permits exposure, and which provides an adequate margin of safety against established health effects.

Laser. An acronym for light amplification by stimulated emission of radiation. Any device that can be made to produce or amplify electromagnetic radiation at wavelengths of 180 to 1×10^6 nanometers primarily by the process of controlled stimulated emission.

Laser or RF incident. An unplanned or unexpected event resulting in material loss/damage or causing personnel injury from laser or RF use.

Laser system. A laser in combination with an appropriate laser energy source with or without additional incorporated components.

MPE. The level of laser radiation to which a person may be exposed without known hazardous effects or adverse biological changes in the eye or skin in accordance with American National Standards Institute Z136.1-2014 (Reference (1)).

RF radiation. Non-ionizing electromagnetic radiation in the frequency range between 3 kilohertz and 300 gigahertz.