



Subject: Personnel Protection – Clothing and Equipment

Responsible Office: Safety and Mission Assurance Office

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PREFACE

P.1 PURPOSE

- a. This Langley Procedural Requirement (LPR) is published to establish the standards for the management of protective clothing and equipment for civil servant and contractor employees on Langley Research Center (LaRC).
- b. The management of the protective clothing and equipment process includes the responsibilities for the acquisition, issuance, control, and maintenance of these items.

P.2 APPLICABILITY

- a. These requirements apply to all persons performing work at LaRC, including civil servants, contractors, research associates, and others.
- b. Non-compliance with this LPR will result in appropriate disciplinary action that may include termination for a civil servant employee or exclusion from the Center for a contractor employee, research associate or others.

P.3 AUTHORITY

- a. NASA Procedural Requirements (NPR) 8715.1, NASA Occupational Safety and Health Programs
- b. Occupational Safety and Health Administration (OSHA), U.S. Department of Labor, Regulation 29 CFR 1910, Occupational Safety and Health Standards
- c. OSHA, U.S. Department of Labor, Regulation 29 CFR 1926, Safety and Health Regulations for Construction
- d. American National Standards Institute (ANSI)
- e. National Institute for Occupational Safety and Health

P.4 APPLICABLE DOCUMENTS

- a. NPR 8715.3, NASA General Safety Program Requirements
- b. Langley Policy Directive (LAPD) 1700.2, Safety Assignments and Responsibilities
- c. LPR 1710.5, Ionizing Radiation
- d. LPR 1710.8, Non-Ionizing Radiation

- e. LPR 2710.1, LaRC Noise Control and Hearing Conservation Program
- f. LPR 1710.12, Potentially Hazardous Materials-Hazard Communication Standard
- g. LPR 1710.6, Electrical Safety
- h. Langley Form (LF) 59, Certification for Industrial Grade Safety Glasses
- i. LF 73, Self-Contained Breathing Apparatus (SCBA) Inspection & Maintenance Report (Weekly/Monthly Log on Back)
- j. ANSI Z87.1- 2010, American National Standard for Occupational and Educational Personal Eye and Face Protection Devices
- k. ANSI Z87.1 – 1989, American National Standard Practice for Occupational and Educational Eye and Face Protection
- l. ANSI Z89.1-2009, American Standard for Personal Protection-Protective Headwear
- m. ASTM F-2412-2005, Standard Test Methods for Foot Protection
- n. ASTM F-2413-2005, Standard Specification for Performance Requirements for Protective Footwear
- o. OSHA 29 CFR 1910.134, Personal Protective Equipment

P.5 MEASUREMENT/VERIFICATION

None

P.6 CANCELLATION

LPR 1710.4 dated July 21, 2010.

/s/ Clayton P. Turner 10/11/2015
Center Deputy Director

Distribution:

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1. INTRODUCTION

1.1 GENERAL

1.1.1 Protective clothing and equipment shall be issued to civil service employees at Government expense and to contracting employees at the contracting company's expense in those situations where engineering controls, management controls, or other corrective actions have not reduced a hazard to an acceptable level or where use of engineering controls, management controls, or other techniques are not feasible.

1.1.2 Personal Protective Equipment (PPE) shall be provided and used or worn whenever employees encounter the following hazards in the work environment:

- a. Chemical hazards
- b. Radiological hazards
- c. Mechanical, particulate, or toxic irritants encountered in a manner capable of causing injury or impairment in the function of any part of body through absorption, inhalation, or physical contact.

1.1.1 Procurement

1.1.3.1 The purchase of protective clothing and equipment for civil service employees shall require the approval of the Safety and Facility Assurance Branch (SFAB), Safety and Mission Assurance Office (SMAO), prior to purchase to ensure the proper protective clothing and equipment is obtained for the task being performed.

1.1.3.2 The purchase of protective clothing and equipment for contractor employees shall require the approval of the contracting company safety representative, prior to purchase to ensure the proper protective clothing and equipment is obtained for the task being performed.

1.1.2 Issuance of Proper Clothing and Equipment

1.1.4.1 Protective clothing and equipment shall be provided, used, stored, and maintained in a serviceable condition at all times.

1.1.4.2 Protective clothing and equipment turned in by an employee or that has been worn by an employee shall be cleaned and sanitized prior to being reused or reissued to another employee.

1.1.4.3 Employees shall be trained in the proper use of provided protective clothing and equipment, in accordance with Federal and Agency regulations. Items, which may

be purchased and issued by LaRC or a contracting company include, but are not limited to, the following:

- a. Safety goggles and safety spectacles (prescription and nonprescription)
- b. Welding helmets and shields
- c. Safety shoes and/or boots
- d. Aprons, suits, and gloves (e.g., fire resistant materials, leather, rubber, cotton, and synthetics)
- e. Protective headgear (e.g., hard hats and caps, liners, helmets, and hoods)
- f. Face shields
- g. Fall protection
- h. Health-related protective clothing and equipment, such as respirators
- i. Hearing protection

NOTE: Requirements concerning shock and arc flash personal protective clothing and equipment are indicated in LPR 1710.6, "Electrical Safety."

1.1.3 Safety Planning for New Operations

1.1.5.1 Civil service and contractor research and engineering personnel shall coordinate in advance with Facility Coordinators (FCs), Facility Safety Heads (FSHs), and the LaRC Safety Manager or contracting company manager when planning new operations or tests.

1.1.5.2 Safety planning ensures a review of the operation or test is conducted and the appropriate protective clothing and equipment is identified and its required use explained in the operation or test procedures, to ensure the safety and health of personnel.

1.1.5.3 The planning process also ensures that personnel have received training in the use, limitations, and maintenance of required safety items.

1.2 RESPONSIBILITIES

The following paragraphs summarize responsibilities assigned to specific individuals on LaRC, ensuring the proper management and administration of personnel protection clothing and equipment.

1.2.1 LaRC Safety Manager

The LaRC Safety Manager is responsible for the issuance of protective clothing and equipment in accordance with LAPD 1700.2, "Safety Assignments," and LaRC procurement procedures. The LaRC Safety Manager shall:

- a. Provide advice to Research Project Engineers, FSHs, FCs or supervisors concerning the determination and designation of hazardous areas and/or occupations where protective clothing and equipment are required.
- b. Determine the appropriate protective clothing and equipment authorized for use by civil service employees while working around hazards.
- c. Provide advice concerning the selection of protective clothing and equipment for civil service employees.
- d. Approve purchase requests for NASA LaRC-furnished protective clothing and equipment.
- e. Consult with the proper medical authority, when professional medical advice is necessary, to determine specific requirements of protective clothing and equipment.
- f. Coordinate with radiation safety personnel to determine protective clothing and equipment requirements for items worn around ionizing and nonionizing radiation (see LPR 1710.5, "Ionizing Radiation," and LPR 1710.8, "Nonionizing Radiation").
- g. Ensure all applications for respiratory protective devices are specified.
- h. Ensure required respiratory protection equipment issued to civil service employees is fitted for use.
- i. Ensure civil service employees requiring respiratory protection equipment receive instruction from the SFAB Industrial Hygienist concerning the use of and limitations of respiratory protection.
- j. Ensure that other required protective devices, such as gloves, hearing protection, and eye protection are issued to civil service employees and instruction is provided concerning fitting and maintenance requirements.

1.2.2 Contract Manager

The Contract Manager or his/her designee is responsible for the issuance of protective clothing and equipment in accordance with the terms and conditions of their contract or agreement. The Contract Manager or his/her designee shall:

- a. Provide advice to contractor Research Project Engineers, FSHs, FCs, or supervisors concerning the determination and designation of hazardous areas and/or occupations where protective clothing and equipment are required.
- b. Determine the appropriate protective clothing and equipment authorized for use by contractor employees while working around hazards.
- c. Provide advice concerning the selection of protective clothing and equipment for contractor employees.
- d. Approve the purchase of contractor provided protective clothing and equipment.
- e. Consult with the proper medical authority, when professional medical advice is necessary, to determine specific requirements of protective clothing and equipment.
- f. Coordinate with radiation safety personnel to determine protective clothing and equipment requirements for items worn around ionizing and nonionizing radiation (see LPR 1710.5, "Ionizing Radiation," and LPR 1710.8, "Nonionizing Radiation").
- g. Ensure all applications for respiratory protective devices are specified.
- h. Ensure contractor employees issued respiratory protection equipment are fitted for use.
- i. Ensure contractor employees requiring respiratory protection equipment receive instruction from the contracting company's qualified individual concerning the use of and limitations of respiratory protection.
- j. Ensure that other required protective devices, such as gloves, hearing protection, and eye protection, are issued and instruction is provided concerning fitting and maintenance requirements.

1.2.3 Cognizant Line Supervisor (Civil Service and Contractor)

Line supervisors shall have the following responsibilities concerning the issuance of protective clothing and equipment:

- a. Surveying and identifying, for review by the LaRC Safety Manager/Contract Manager, all actual and potentially hazardous work areas, job operations, and working conditions where protective clothing or equipment may be essential for the safety and personal protection of employees.
- b. Ensuring that each employee under their jurisdiction is aware of the specific protective clothing and equipment requirements for work assignments and is trained in the use and safety limitations of those items.

1.3 ACCOUNTABILITY AND CONTROL

Protective clothing and equipment issued by LaRC or the contracting company shall be accounted for and controlled by applicable Agency, Center, or contracting company property control procedures.

1.4 FAIR WEAR AND TEAR, LOST, DAMAGED, OR DESTROYED ITEMS

1.4.1 Items that have served their purpose through normal wear and tear shall be turned in by the user to the cognizant supervisor for disposal.

1.4.2 Items that become lost, misplaced, damaged, or destroyed shall be reported to the cognizant supervisor prior to issuance of replacement.

1.4.2.1 The supervisor shall account for such items in accordance with applicable Agency, Center, or contracting company property control procedures.

1.5 CLEANING OF PROTECTIVE CLOTHING

Protective clothing, as defined in this LPR, shall be cleaned and decontaminated according to the processes and procedures established by each organization, or according to the manufacturer's recommendation.

1.6 LOAN OF PROTECTIVE CLOTHING AND EQUIPMENT

Protective clothing and equipment is not normally issued to contractor personnel by the Government; however, the Contracting Officer Representative (COR) or on-site supervisor shall contact the LaRC Safety Manager, who can authorize the issuance or loan of appropriate protective devices, in an emergency or when such issuance is beneficial to the Government.

2. EYE AND FACE PROTECTION

2.1 PURPOSE

This chapter contains specific instructions for the authorization, issuance, and use of eye and face protective devices, including goggles, spectacles, face shields, and welding helmets.

2.2 PROTECTIVE EYEGLASSES (SAFETY GLASSES)

2.2.1 Nonprescription and prescription safety glasses (lenses and frames) shall be manufactured to meet the requirements of ANSI Z87.1-1989, "American National Standard Practice for Occupational and Educational Eye and Face Protection."

2.2.2 For safety purposes, there shall be no deviation from prescribed manufacturing standards when providing eye protection.

2.2.3 The use of photochromic lenses (lenses that darken when exposed to sunlight and fade when removed from sunlight) should be reviewed prior to use in a hazardous work environment. The Safety Manager or designee shall ensure that an evaluation is conducted to determine when these type lenses can be used based on workplace conditions. The safety representative of on-site contractors are responsible for conducting evaluations for their employees to determine the appropriate use of the photochromic lenses.

2.2.4 Wearers of contact lenses shall be required to wear appropriate eye protection in LaRC hazardous work environments.

2.3 Nonprescription Safety Glasses

2.3.1 Nonprescription protective eyeglasses (safety glasses) shall be provided to civil service employees by the Government and to contractor employees by their contracting company when they are engaged in work operations or in work environments where there is inherent danger to workers' eyes or a high probability of incurring an eye injury.

2.3.2 When the danger is high, protective eyeglasses shall be provided at no cost to employees engaged in operations where they are exposed to hazards from flying particles; molten metal; liquid chemicals; acids or caustic liquids; chemical gases or vapors; potentially injurious light radiation such as cutting, grinding, machining, soldering, filing, fabricating and major maintenance work; employees performing frequent survey, audit, inspection, or overview functions in eye hazardous areas; or any other work environments deemed by the LaRC Safety Manager/Contract Manager to present eye hazard elements.

- 2.3.2.1 This requirement also includes employees who are required to wear prescription eyeglasses in the normal course of their duties.
- 2.3.2.2 The cost of the eye examination to obtain a prescription for safety glasses shall be borne by the employee.

2.4 Prescription Safety Glasses

- 2.4.1 Civil service employees who are eligible for government-provided prescription safety glasses shall obtain them by requesting authorization from the SFAB.
- 2.4.2 The civil service employee shall submit a prescription less than 2 years old when initiating a request for safety glasses.
- 2.4.3 Upon SFAB verification of eligibility and need, the SFAB shall issue NASA Langley Form 59, "Certification for Industrial Grade Safety Glasses," authorizing the employee to obtain prescription safety glasses through the Safety and Mission Assurance Office (SMAO) contracted optical services company.
- 2.4.4 Upon receipt of authorization from the SFAB and prescription from the employee, the SMAO contracted optical services company shall arrange for the prescription safety glasses.
- 2.4.5 The repair or replacement of civil service supplied prescription safety glasses shall be borne by the Government, provided such repair or replacement is a result of normal wear and usage, or accidental damage while performing work functions.
- 2.4.6 The cost of prescription safety glasses for civil servants shall be covered by the employee's organization.
- 2.4.7 Civil service employees desiring a second pair of safety glasses may elect to procure them through the SMAO contracted optical services company at the employee's own cost.
 - 2.4.7.1 The cost of the second pair of safety glasses shall be borne by the employee.
 - 2.4.7.2 Contractor employees shall be provided prescription safety glasses through an equivalent process by their contracted company.

2.5 PROTECTIVE EQUIPMENT

- 2.5.1 Protective equipment shall be required in work operations and work environments having the capacity to produce an injury to an employee's eyes or face.

2.5.2 The Selection Chart (Figure 2-1) provides the following information:

- a. Illustrates and identifies the protective equipment, which is available for use on LaRC.
- b. Contains recommended applications of the equipment to optimize eye and face protection while performing hazardous work.
- c. Serves as a guide to employees and supervisors in selecting eye and face protectors consistent with prevalent working conditions.

2.5.3 Requisitioning Protective Equipment

- 2.5.3.1 Face and eye protective equipment and devices required by civil service employees for normal operations shall be obtained through the employee's supervisor/organization with approval by SFAB.
- 2.5.3.2 When work efforts require special devices, such as laser goggles, foundry devices, or newly developed devices, the required equipment shall be requisitioned through a Government Purchase Request and processed through the LaRC Safety Manager for approval.
- 2.5.3.3 Contractor companies shall have a process equivalent to the requirements of civil servant employees to provide the required equipment for contractor employees.

2.5.4 Maintaining an Adequate Supply of Protective Equipment

- 2.5.4.1 Supervisors and/or FSHs shall ensure that their respective facilities maintain an adequate supply of protective equipment and devices, including appropriate protective devices for personnel who visit their facilities.
- 2.5.4.2 Supervisors and/or FSHs shall ensure that employees and visiting personnel wear required protective equipment and devices while working in or visiting hazardous areas.

2.5.5 Identifying Hazardous Areas

- 2.5.5.1 Hazardous areas shall be designated and prominently identified by special signs and designators.
- 2.5.5.2 Where necessary, the SFAB/contractor company shall inspect and verify the locations of areas that present hazards to employees' eyes and faces.
- 2.5.5.3 This inspection shall ensure that hazardous areas are properly designated and that protective devices and equipment are being used while performing work functions.
- 2.5.5.4 The SFAB/contract company shall make recommendations concerning the type of devices including goggles, spectacles, and face shields that are most suitable to the working conditions in that work area.

AMERICAN NATIONAL STANDARD INSTITUTE (ANSI) Z87.1-1989		SELECTION CHART		PROTECTORS		
		Assessment See Note (1)	Protector Type	Protectors	Limitations	No Recommended
IMPACT	Chipping, grinding machining, masonry work, riveting and sanding	Flying fragments, objects, large chips, particles, sand, dirt, etc.	B,C,D, E,F,G, H,I,J, K,L,N	Spectacles, goggles, face shields SEE NOTES (1) (3) (5) (6) (10) for severe exposure add N	Protective devices do not provide unlimited protection. SEE NOTE (7)	Protectors that do not provide protection from side exposure (SEE NOTE (10)) Filter or tinted lenses that restrict light, transmittance, unless it is determined that a glare hazard exists. Refer to OPTICAL RADIATION.
HEAT	Furnace operations, pouring, casting not dipping, gas cutting, and welding.	Hot Sparks	B,C,D, E,F,G, H,I,J, K,L,N	Face shields, goggles, spectacles. *For severe exposure add N SEE NOTES (2) (3) *Face shields worn over goggles H, K SEE NOTES (2) (3) Screen face shields, Reflective face shields SEE NOTES (2) (3)	Spectacles, cup and cover type goggles do not provide unlimited facial protection. SEE NOTE (2)	Protectors that do not provide protection from side exposure
		Splash from molten metals	N			
		High temperature exposure	N			
CHEMICAL	Acid and chemicals handling, decreasing	Splash	G,H,K N	Goggles, eyecup and cover types *For sever exposure, add N	Ventilation should be adequate but well protected from splash entry	Spectacles, welding helmets, hand shields
		Irritating mists	G	Special purpose goggles	SEE NOTE (3)	
	Woodworking, buffing, general dusty conditions	Nuisance dust	G,H,K	Goggles, eyecup and cover types	Atmospheric conditions and the restricted ventilation of the protector can cause lenses to fog. Frequent cleaning may be required.	

		Assessment See Note (1)	Protector Type		Protectors		Limitations	No Recommended
	WELDING: Electric Arc		O,P,Q		TYPICAL FILTER LENS SHADE PROTECTORS		Protection from optical radiation is directly related to filter lens density. SEE NOTE (4). Select the darkest shade that allows adequate task performance.	Protectors that do not provide protection from optical radiation SEE NOTE (4)
					SEE NOTE (9) 10-14	Welding Helmets Or Welding Shields		
OPTICAL RADIATION	WELDING GAS	J,K,L, M,N,O P,Q	SEE NOTE (9) 4-6	Welding Goggles Or Welding Face - shields				
	CUTTING		3-6					
	TORCH BRAZING		3-4	SEE NOTE (3)				
	TORCH SOLDERING	B,C,D. E.F.N	1.5-3	Spectacles Or Welding Face- shields	Shaded or special Purpose, lenses, as suitable.			
	GLARE	A,B	Spectacle SEE NOTES (9) (10)		SEE NOTE (8)			

Figure 2-1 American National Standard Z87.1-1989 – Selection Chart

NOTES:

- 1) Care shall be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. Adequate protection against the highest level of each of the hazards must be provided.
- 2) Operations involving heat may also involve optical radiation. Protection from both hazards shall be provided.
- 3) Face shields shall only be worn over primary eye protection.
- 4) Filter lenses shall meet the requirements for shade designates in Table 1 of ANSI Standard Z87.1.
- 5) Persons whose vision requires the use of prescription lenses shall wear either protective devices fitted with prescription lenses or protective devices designed to be worn over regular prescription eyewear.
- 6) Wearers of contact lenses shall also be required to wear appropriate covering eye and face protection devices in a hazardous environment. It should be recognized that dusty and/or chemical environments may represent an additional hazard to contact lens wearers.
- 7) Caution should be exercised in the use of metal frame protective devices in electrical hazard areas.
- 8) Refer to Section 6.5, Special Purpose Lens, of ANSI Standard Z87.1.
- 9) Welding helmets or hand shields shall be used only over primary eye protection.
- 10) Non-side shield spectacles are available for frontal protection only.

ANSI (Z87.1 – 1989) Recommended Eye and Face Protectors for Use in Industry, Schools and Colleges

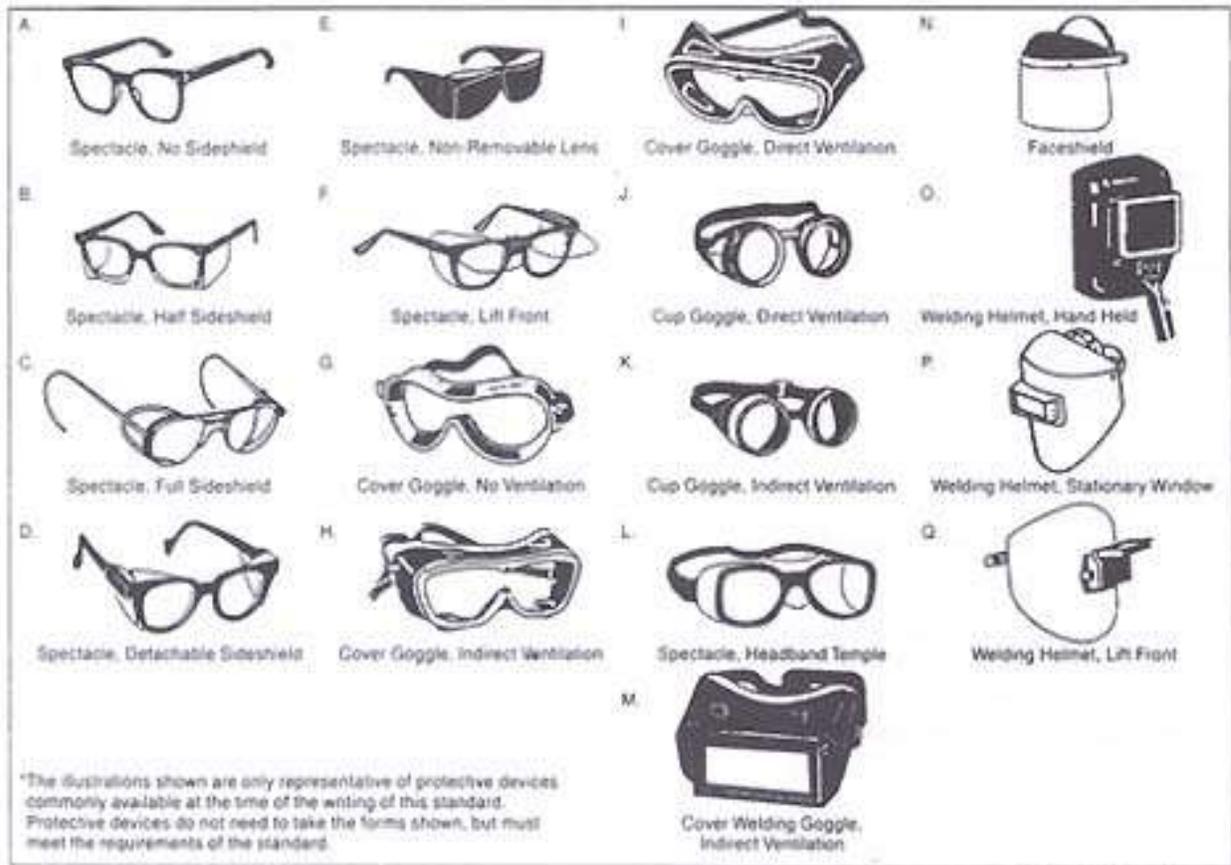


Figure 2-2, American National Standard Institute Z87.1 – 1989 – Protective Devices

3. PROTECTIVE FOOTWEAR

3.1 POLICY

- 3.1.1 Protective footwear shall be provided to employees engaged in work operations where there is a danger of foot injuries due to falling or rolling objects or objects piercing the sole, and where such employees' feet are exposed to electrical hazards.
- 3.1.2 Civil service employees engaged in continuous work situations where foot hazards are present shall be furnished appropriate protective footwear at no cost to the employee by the Government. Contractor employees will be furnished footwear by their contractor company.
- 3.1.3 The cost to repair/replace required protective footwear for civil service employees shall be borne by the Government. For contractor employees, the cost shall be borne by the contractor company.
- 3.1.4 All protective footwear shall meet the requirements of ASTM F-2412-2005, "Standard Test Methods for Foot Protection," and ASTM F-2413-2005, "Standard Specification for Performance Requirements for Protective Footwear."

3.2 RESPONSIBILITIES

Responsibilities concerning the use of protective footwear are discussed in the following paragraphs:

3.2.1 Safety and Facility Assurance Branch shall:

- a. Implement and maintain a protective footwear program, including authorizing the procurement and issuance of protective footwear to designated civil service employees.
- b. Determine the areas of operation and work environments where the use of protective footwear is required.

3.2.2 Contractor Company shall:

- a. Implement and maintain a protective footwear program, including authorizing the procurement of and issuance of protective footwear to designated contractor employees.
- b. Determine the areas of operation and work environments where the use of protective footwear is required.

3.2.3 Line Supervisors

3.2.3.1 Civil servant line supervisors shall:

- a. Initiate requests to purchase protective footwear for civil service employees through their organization.
- b. Obtain approval for the purchase of protective footwear from the SFAB for civil service employees.
- c. Ensure that the furnished protective footwear is worn by employees in designated foot hazard areas.

3.2.4 Contractor line supervisors shall:

- a. Initiate requests to purchase protective footwear for contract employees through their organization.
- b. Obtain approval for the purchase of protective footwear from the SFAB for contract employees.
- c. Ensure that the furnished protective footwear is worn by employees in designated foot hazard areas.

3.2.5 Employees

- a. Employees shall be responsible for the normal care and appropriate use of protective footwear.
- b. Employees shall return used footwear for replacement or repair when required.
- c. Employees shall be restricted from wearing defective or worn-out protective footwear, which could contribute to a foot injury.

4. HEARING PROTECTION DEVICES

4.1 PURPOSE

- 4.1.1 This chapter provides instructions for the issuance and use of hearing protection devices on LaRC.
- 4.1.2 Issues concerning the LaRC Noise Control and Hearing Conservation Program are referred to in LPR 2710.1, "LaRC Noise Control and Hearing Conservation Program."
- 4.1.3 Uncontrolled noise can cause numerous hazards in the work place. Employees shall protect themselves from excessive noise levels to prevent:
 - a. Being annoyed by noise in the workplace.
 - b. Having their concentration disrupted when working on assigned tasks.
 - c. Suffering from ear pain.
 - d. Suffering from nausea.
 - e. Incurring a permanent noise-induced hearing loss.
 - f. In extreme cases, incurring other health complications.

4.2 GENERAL REQUIREMENTS

- 4.2.1 Generally, whenever noise levels exceed an eight-hour time-weighted average (TWA) of 90 decibels, OSHA requires that administrative and engineering controls be utilized to limit employees' exposure to noise.
- 4.2.2 When administrative and engineering controls cannot reduce noise to an acceptable level, personal protective equipment (PPE) shall be required.
- 4.2.3 The use of hearing protection devices is required on LaRC whenever personnel are exposed to sound pressure levels in excess of:
 - a. 85 dBA for steady sound pressure and/or intermittent noise, or
 - b. 140 dB peak sound pressure or greater for impact/impulse noise.

4.3 PROTECTION AGAINST NOISE HAZARDS

- 4.3.1 Hearing protection devices such as earplugs and/or earmuffs are the primary methods used to protect the hearing of employees who work in noise hazardous areas.
- 4.3.2 These protective devices are designed to reduce hazardous noise while allowing passage of sounds that fall in the speech frequency range. This allows workers to safely communicate with each other while working.
- 4.3.3 Earplugs and/or earmuffs allow employees to work in a high noise area without developing hearing loss.
- 4.3.4 In most situations, either earplugs or earmuffs will provide adequate protection; however, some noise conditions require earplugs and earmuffs to be worn at the same time.

4.4 TYPES OF PERSONAL PROTECTIVE EQUIPMENT

- 4.4.1 Hearing protection devices provided to workers on LaRC shall be either earplugs or earmuffs.
 - 4.4.1.1 Earplugs shall be individually available at hazardous noise areas, while earmuffs shall be issued on an individual basis through the SFAB Industrial Hygienist for civil service employees and through the contractor company Industrial Hygienist for contractor employees.
- 4.4.2 Hearing protection devices shall possess a Noise Reduction Rating of at least 27 dB as defined by the Environmental Protection Agency.
 - 4.4.2.1 Communications headsets may be worn in noise hazardous areas as a hearing protection device if they provide the required amount of hearing protection.
- 4.4.3 Both earplugs and earmuffs shall be worn when personnel are exposed to steady and/or intermittent sound pressure levels of 110 dBA or above.

4.4.4 Disposable Earplugs

- 4.4.4.1 Disposable earplugs shall be provided to employees to be used one time and then thrown away.
- 4.4.4.2 Disposable earplugs are made of an expandable foam material designed to be inserted into the ear canal to block out noise hazards.
- 4.4.4.3 Personnel shall wash their hands before using these earplugs and should keep them free from grease and dirt.

4.4.5 Earmuffs

- 4.4.5.1 Earmuffs cover the external ear to provide a barrier against hazardous noise.
- 4.4.5.2 Earmuffs shall be equipped with soft plastic cushions, which are filled with either foam or liquid.
- 4.4.5.3 Earmuffs must form a perfect seal around the ear to be effective.
- 4.4.5.4 Earmuffs shall be kept clean by regularly wiping them with a damp cloth, and the cushions shall be replaced when they become worn, stiff or torn.

NOTE: *Glasses, long sideburns, long hair, and facial movements, such as chewing, can reduce the protective qualities of earmuffs.*

4.5 EXAMPLES OF NOISE LEVELS:

The "A" weighted network is the relative frequency response of the average ear when sound pressure levels of about 20 to 30 dB are heard. Examples of approximate decibel levels for selected situations are as follows in Figure 4-1:

SITUATION	DECIBEL LEVEL
Soft whisper	30 decibels
Conversational Speech	60 decibels
Printing press plant	90 decibels
Pneumatic drill	100 decibels
Jackhammer	125 decibels
Jet plane	140 decibels
Rocket launching pad	180 decibels

Figure 4-1. Examples Of Noise Levels

4.5.1 Responsibilities

- 4.5.1.1 Line supervisors shall have day-to-day responsibility for ensuring hearing protection devices are worn in noise hazardous areas.
- 4.5.1.2 Users shall be instructed in the limitations of hearing devices and in proper procedures for their use, maintenance and storage.
- 4.5.1.3 A record of employees who use hearing protection devices shall be maintained, and an entry shall be made in the medical records of each user.
- 4.5.1.4 Additionally, the medical status of employees who work in noise hazards shall be reviewed by the medical staff, in regard to the use of the hearing protection device.
- 4.5.1.5 A supply of hearing protection devices, including disposable earplugs, shall be maintained at hazardous noise areas for visitors, transients and personnel who do not have individually issued earmuffs in their possession.

4.6 LaRC NOISE CONTROL AND HEARING CONSERVATION PROGRAM

- 4.6.1 Government employees who are exposed to noise levels above the NASA Action level shall be placed in the LaRC Noise and Control Hearing Conservation Program (NCHCP).
- 4.6.2 The LaRC NCHCP is used to measure any change in an employee's hearing from year to year while working in a high noise area.
- 4.6.3 Employees placed in the LaRC NCHCP shall undergo medical surveillance and receive annual training.
- 4.6.4 Contractor companies shall have an equivalent Noise and Control Hearing Conservation Program.
- 4.6.5 **Medical Surveillance**
 - 4.6.5.1 Individuals in the LaRC NCHCP shall undergo precertification, annual, and termination physical examinations, in compliance with LaRC Occupational Medical Examination Protocols (OMEPS).
 - 4.6.5.2 Contractor companies shall provide individuals with an equivalent pre-certification, annual, and termination physical examination in compliance with LaRC OMEPS.

4.6.6 Training Requirements

- 4.6.6.1 There shall be an annual training program for employees who are in the LaRC NCHCP.
- 4.6.6.2 This annual training is provided by the LaRC Occupational Health Clinic for civil service employees and the contracting company for contractor employees.

5. PROTECTIVE HEADWEAR

5.1 POLICY

- 5.1.1 Protective headwear shall be provided to employees engaged in work operations where there is a potential for injury to the head from falling objects and when near exposed electrical conductors which could contact the head.
- 5.1.2 Civil service employees engaged in continuous work situations where hazards to the head are present shall be furnished appropriate protective headwear at no cost to the employee by the Government. Contractor employees shall be furnished headwear by their contractor company.
- 5.1.3 The cost to repair/replace required protective headwear for civil service employees shall be borne by the Government. For contractor employees, the cost will be borne by the contractor company.

5.2 GENERAL REQUIREMENTS

- 5.2.1 All protective headwear shall meet the requirements of ANSI Standard Z89.1-2009, "American Standard for Personal Protection-Protective Headwear."
- 5.2.2 Protective helmets are classified according to the specific impact and electrical performance requirements they are designed to meet.
- 5.2.3 All protective helmets in accordance with ANSI Standard Z89.1-2009, shall meet either Type I or Type II impact requirements.
- 5.2.4 All helmets are further classified as meeting Class G, E, or C electrical requirements (i.e., Type I, Class G, or Type II, Class E).
- 5.2.5 **Impact Types:**
 - a. Type 1 - Helmets intended to reduce the force of impact resulting from a blow only to the top of the head.
 - b. Type 2 - Helmets intended to reduce the force of impact resulting from a blow, which may be received off center or to the top of the head.
- 5.2.6 **Electrical Classes:**
 - a. Class G (General) - Helmets intended to reduce the danger of contact exposure to low voltage conductors.
 - b. Class E (Electrical) - Helmets intended to reduce the danger of exposure to high voltage conductors.

- c. Class C (Conductive) - Helmets intended to provide protection against contact with electrical conductors.

5.2.7 Helmet Accessories

Helmet accessories, as indicated below, are permissible if manufactured and used in accordance with the requirements of ANSI Standard Z89.1- 2009:

- a. Sweatbands of the removable/replaceable type or that are integral with the headband.
 - (1) Sweatbands shall cover at the forehead portion of the headband.
- b. Winter liners made of suitable materials that do not affect the protective capabilities of the helmet.
 - (1) There shall be no metal parts in winter liners intended for use with helmets labeled as meeting Class E requirements.

5.3 RESPONSIBILITIES

Responsibilities concerning the use of protective headwear are discussed in the following paragraphs:

5.3.1 Line supervisors shall:

- a. Determine the appropriate type of protective headwear (Type and Class) required to perform tasks.
- b. Obtain required protective headwear for employees in designated protective headwear hazard areas.
- c. Ensure that the furnished protective headwear is worn by employees in designated protective headwear hazard areas.

5.3.2 Employees

- 5.3.2.1 Employees shall be responsible for the normal care and appropriate use of protective headwear.
- 5.3.2.2 Employees shall return used headwear for replacement or repair when required.
- 5.3.2.3 Employees shall be restricted from wearing defective or worn-out protective headwear, which could contribute to a head injury.

6. PROTECTIVE HAND WEAR

6.1 POLICY

6.1.1 Protective hand wear shall be provided to employees engaged in work operations where the employees' hands are exposed to hazards, such as:

- a. Skin absorption of harmful substances
- b. Severe cuts or lacerations
- c. Severe abrasions
- d. Punctures
- e. Chemical burns
- f. Thermal burns
- g. Harmful temperature extremes

6.1.2 The appropriate protective hand wear shall be determined by an evaluation of the tasks (hazard analysis) to be performed, including the conditions present, duration of the task, and the hazards and potential hazards identified during the evaluation.

6.1.3 Civil service employees engaged in work situations where hand hazards are present shall be furnished appropriate protective hand wear at no cost to the employee by the Government. Contractor employees will be provided protective hand wear by their contractor company.

6.1.4 The cost to repair/replace required protective hand wear for civil service employees shall be borne by the Government. The cost for contractor employees shall be borne by the contractor company.

6.1.5 Direct requirements on protective hand wear shall be obtained through:

- a. LPR 1710.12, "Potentially Hazardous Materials."
- b. LPR 1710.6, "Electrical Safety."
- c. SFAB Industrial Hygienist for civil service employees or contractor company's qualified individual for contractor employees.

6.2 RESPONSIBILITIES

Responsibilities concerning the use of protective hand wear are discussed in the following paragraphs:

6.2.1 Safety and Facility Assurance Branch shall:

- a. Provide assistance in determining the areas of operation and work environments where the use of protective hand wear is required for civil service employees.
- b. Provide guidance in the selection and issuance of protective hand wear to civil service employees.

6.2.2 Contractor Company shall:

- a. Provide assistance in determining the areas of operation and work environments where the use of protective hand wear is required for contractor employees.
- b. Providing guidance in the selection and issuance of protective hand wear to contractor employees.

6.2.3 Line Supervisors shall:

- a. Evaluate work areas and tasks to determine if protective hand wear is required.
- b. Obtain required protective hand wear for employees in designated protective hand wear hazard areas.
- c. Ensure that the furnished protective hand wear is worn by employees in designated protective hand wear hazard areas.

6.2.4 Employees:

- a. Employees shall be responsible for the normal care and appropriate use of protective hand wear.
- b. Employees shall return used hand wear for replacement, or repair when required.
- c. Employees shall be restricted from wearing defective or worn-out protective hand wear, which could contribute to a hand injury.

7. FALL PROTECTION

7.1 PURPOSE

This chapter provides instruction governing the procurement and inspection of fall protection on LaRC for civil service and contractor employees.

7.2 FALL PROTECTION EQUIPMENT

- 7.2.1 All personal fall arrest equipment used shall meet the requirements of ANSI Z359 Fall Protection Code/Standards.
- 7.2.2 Equipment that does not meet ANSI Z359 Fall Protection Code/Standard shall be reviewed and approved by the LaRC Fall Protection Program Administrator.
- 7.2.3 All fall protection equipment shall be initially inspected by a competent person before being placed into service at the Center.
- 7.2.4 Fall protection equipment shall be inspected by a competent person at intervals of no more than one year or as prescribed by the manufacturer of the equipment.
- 7.2.5 Inspection of the equipment by the competent person shall be documented or the tag on the equipment shall be checked and dated by the competent person on the date of inspection.

7.3 FALL PROTECTION REQUIREMENTS

Requirements regarding the need for and the proper use of fall protection equipment are detailed in LPR 1740.2, Facility Safety Requirements.

APPENDIX A - DEFINITIONS

Competent Person – One who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Decibel (dB) – The basic unit of level in acoustics.

Level – In acoustics, the term used to designate that the quantity is referred to some reference value, either stated or implied.

Normal Clothing – An item of clothing furnished by employees at their own expense as a condition of employment. Typical items of normal clothing are: dress or street shoes, boots, raincoats, standard work gloves, winter clothing for outdoor jobs, and wide-brimmed hats or tinted sunglasses for sun protection. Certain items of normal clothing may be unacceptable in industrial work places and thus restricted from use. These items include sandals, tennis shoes, shorts, and extremely loose clothing.

Protective Clothing – An article of clothing furnished to an employee at Government or contracting company expense that, when worn properly, will protect part or all of the body from foreseeable risks of injury or disease in the workplace. Protective clothing shall be worn when performing work assignments in a potentially hazardous work environment or performing work under hazardous conditions. Typical items of protective clothing are protective footwear, headwear, or gloves.

Protective Equipment – A device or item provided to an employee at Government or contracting company expense that, when used correctly, will protect part or all of the body from foreseeable risks of injury or disease in the workplace. Protective equipment shall be utilized when entering or performing work assignments in hazardous work environments or during hazardous conditions. Protective equipment includes hearing protection, eye protection respirators, barricades, warning cones, lights, alarms, full body harnesses and lanyards.

Qualified Person – One who, by possession of a recognized degree, certificate, or professional standing, or who, by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.

Weighting Networks – The letter following dB, (i.e., A, B, or C) which represents frequency characteristics of the average human ear for various sound intensities.

APPENDIX B – ACRONYMS

ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
dB	Decibel
CFR	Code of Federal Regulations
COR	Contracting Officer's Representative
FC	Facility Coordinator
FSH	Facility Safety Head
LAPD	Langley Policy Directives
LaRC	Langley Research Center
LF	Langley Form
LPR	Langley Procedural Requirements
NASA	National Aeronautics and Space Administration
NCHCP	Noise and Control Hearing Conservation Program
OMEP	Occupational Medical Examination Protocols
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
SCBA	Self-Contained Breathing Apparatus
SFAB	Safety and Facility Assurance Branch
SMAO	Safety and Mission Assurance Office
TWA	Time-Weighted Average