

## CHAPTER 9 – GENERAL WORKPLACE SAFETY

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# CHAPTER 9 – GENERAL WORKPLACE SAFETY

## A. INTRODUCTION

1. This Chapter provides an overview of six general areas of safety that affect most employees, regardless of the type of work performed, and apply to all Smithsonian Institution (SI) facilities and operations. These procedures are important in any public building, laboratory, office, warehouse, or other location where potential hazards exist. Topics discussed in this Chapter include:
  - a. Housekeeping
  - b. Walking/Working Surfaces and Areas
  - c. Illumination/Lighting
  - d. General Office Safety Considerations
  - e. Emergency Eyewash and Safety Showers
  - f. Warning and Informational Signage
2. Good housekeeping is a very basic and important part of accident and fire prevention. Housekeeping is not just cleanliness, it includes keeping work areas neat and orderly; maintaining halls and floors free of slip and trip hazards; and removal of waste materials (e.g., paper, cardboard) and other fire hazards from work areas.
3. It is important for all personnel to understand and respect the safety and health hazards associated with their workplace.

## B. CHAPTER-SPECIFIC ROLES AND RESPONSIBILITIES

1. Supervisors shall instruct employees on how to operate, and assist others in use of, emergency eyewashes and showers within their work area, if applicable.
2. Supervisors shall document a monthly inspection of emergency eyewashes and showers in their respective areas.

## C. HAZARD IDENTIFICATION AND CONTROL

1. **Housekeeping**
  - a. Keep work areas uncluttered, and clean work areas upon completion of operations or at the end of each workday. Regular cleaning is particularly important for areas with hazardous materials and equipment.
  - b. Keep floors in public access areas, employee access areas, passageways, storerooms, and service rooms clean, orderly, and in a sanitary condition.

- c. Keep electrical rooms, mechanical rooms, telephone closets, crawl spaces, and un-sprinkled attic spaces clean, free of combustible materials, and locked. Expendable materials that are directly associated with the operation or maintenance of equipment found within any of these spaces may be permitted (e.g., filters, light bulbs, refrigerant). The supply of these materials shall be kept to a minimum. Depending on the quantity of materials and degree of hazard associated with either the equipment or inherent to the materials themselves, the storage of these materials may be further restricted to specialized storage containers (i.e., metal cabinets), as required by OSHEM.

## 2. Walking/Working Surfaces and Areas

- a. Keep the floor of every workroom as clean and as dry as possible. All leaks shall be contained (bucket, drum, etc.) and repaired within 48 hours. If this time frame cannot be met, a notice shall be posted nearby identifying the employee or shop responsible for making repairs and the date correction will be made. Maintain adequate drainage where wet processes are used. Provide false floors, platforms, mats, or other dry standing places wherever practical.
- b. Prominently post wet floor caution signs when floors are wet due to cleaning, maintenance, leaks, or weather.
- c. Maintain floors free from tripping, slipping, and falling hazards (e.g. cords, cables, wires, equipment, tools). Keep every floor, work area, and passageway free from protruding nails, splinters, holes, and loose boards.
- d. Place floor mats or rugs so as not to create a tripping hazard (e.g., tape the edges securely to the floor).
- e. Replace defective flooring (carpeting and tile). Discard floor mats that are worn, torn, or warped.
- f. Refer to [Chapter 10, "Fall Protection"](#), of this *Manual*, for additional information on floor holes, openings, and wall openings (including chute wall openings).
- g. Refer to [Chapter 10, "Fall Protection"](#), of this *Manual*, for additional information on open-sided floors or platforms 4 feet or more above adjacent floor or ground level.
- h. Fall hazards greater than 6 feet are addressed in [Chapter 10, "Fall Protection"](#) of this *Manual*.
- i. Keep aisles and passageways clear and in good repair with no obstruction that could create a hazard.
- j. Maintain a clear width of at least 36 inches minimum for aisles and passageways in offices and general work areas. Reductions in width below 36 inches shall be reviewed by the OSHEM. Refer to [Chapter 37, "Life Safety Program"](#), of this *Manual*, for minimum requirements for exit corridors, etc.

- k. Maintain a safe clearance for aisles, at loading docks, through doorways, and at turns where mechanical material handling equipment is used. Mark permanent aisles and passageways.
- l. Emergency equipment (e.g., fire extinguishers, emergency eyewash/shower units, etc.) shall be unobstructed and identified with signs.
- m. Keep exit stairs clear of obstructions and do not use stairs to store materials.

### **3. Illumination/Lighting**

- a. Illumination shall be provided in all areas to prevent eye strain, permit inspection for cleanliness, and provide for safety.
- b. Lighting shall be suitable for the work being done. Suggested lighting levels ; Desk area 50 foot candles and work area 30 foot candles.
- c. Lighting fixtures 7 feet or less above normal working surfaces must be guarded to prevent accidental contact and breakage via diffusers, cages, sleeves, etc. Those fixtures more than 7 feet above normal working surfaces only require a guard if the operation in the general area use materials or equipment that are able to strike or otherwise break lights (i.e. ladders, planks, pipe routinely in the area).

### **4. General Safety Considerations**

- a. Ensure office machines with moving parts are guarded to prevent accidents. Do not remove these guards.
- b. Unplug defective office machines, and tag them with an "Accident Prevention" tag until it can be repaired. See section C7 for labeling requirements.
- c. Do not use any office machine that smokes, sparks, shocks, or appears defective.
- d. Close hand-operated paper cutters after each use and activate the guard.
- e. Unplug paper shredders before conducting maintenance, repair, or troubleshooting.
- f. Only open one file drawer at a time to keep cabinets from tipping over. Close drawers when they are not in use.
- g. Secure shelving units by bolting them to the floor, wall and or each other.
- h. Ensure there is at least 18 inches between the top shelf items and the ceiling sprinklers to allow sprinklers to function properly in a fire. See [Chapter 38, "Fire Prevention"](#), of this *Manual*, for more information on fire protection requirements.
- i. Electrical and data cords shall be placed so that chairs and other equipment won't roll over them.

- j. Data and electrical wires shall be kept out of aisle ways and other walking or working surfaces to prevent tripping.
- k. Always use a suitable ladder or stool to reach any item above your extended arm height. Never use a makeshift device, such as a chair, desktop, file cabinet, bookshelf, or box, as a substitute for a ladder. Rolling ladders and stands used for reaching high storage shall have brakes that operate automatically when weight is applied.
- l. Replace damaged, broken, or missing ceiling tiles. Openings in ceilings can delay activation of smoke detectors and sprinkler heads. See Chapter 35 for more information on fire protection requirements.
- m. Computer workstations shall, to the extent possible, be set up to minimize strain and stress to the employee. See [Attachment 1](#) for recommended workstation set up.
- n. For other ergonomic considerations use the following link:  
<http://www.cdc.gov/niosh/topics/ergonomics/>
- o. Know how to operate, and assist others in use of, the emergency eyewash and showers within your area, if applicable.

## 5. Emergency Eyewash and Safety Showers

- a. Whenever there is a possibility that eyes or body can be injured by corrosive, irritant or otherwise harmful chemicals, in a manner that overwhelms the primary protective devices described in Chapter 17, facilities for the emergency treatment of injured workers must be provided. These may be emergency eyewashes, safety showers, or a combination of both depending on the Hazard Assessment and control determination.
- b. Under no circumstance shall emergency eyewashes and/or safety showers be used as a substitute for proper primary protective devices against flying solid particles or splashing injurious liquids.
- c. Immediate use of approved eyewash and showers, for at least 15 minute irrigation, is critical. Medical assistance should also then be sought.
- d. Emergency eyewashes and showers can be either plumbed or self-contained but in either case must be designed and installed in accordance with ANSI Z358.1-2004, with these minimum design and performance considerations:
- e. Emergency eyewashes and showers must be located on the same building floor/level as the hazard, be readily accessible and be within a travel time of no more than 10 seconds (and no more than 55 feet) to reach the equipment, except for areas of strong acids or caustics in which

the eyewash/shower must be immediately adjacent to the hazard. (ANSI rule of thumb: 10 seconds is approximately 55 feet for the average person).

- f. There shall be no obstructions in traveling to the equipment (one door between hazard and eyewash/shower may be permissible as long as the door swings in the direction of travel and does not have a locking mechanism that will prevent travel).
- g. Emergency eyewashes are to be plumbed unless approved by OSHEM. If self contained are allowed they are to provide a minimum of 6 gallons of fluid per minute for at least 15 minutes of continuous flushing. The fluid flow is to be controlled at a velocity low enough to be non-injurious to the user.
- h. Emergency showers (plumbed or self-contained) are to provide a minimum of 20 gallons of fluid per minute for at least 15 minutes of continuous flushing. The fluid flow is to be controlled at a velocity low enough to be non-injurious to the user.
- i. The temperature of the flushing fluid must be tepid (lukewarm), but in no case greater than 100 degrees F or less than 60 degrees F, in accordance with ANSI.
- j. Flushing fluid must be potable water for plumbed equipment, and (for self-contained units) preserved water, preserved buffered saline solution or other medically acceptable solution (approved by OSHEM/OHSD).
- k. Units must be visible with highly visible signage, in well-lit locations, and protected from freezing.
- l. The on/off flow valve, once activated by the user, must be able to remain on without additional force from the user.
- m. Eyewash jets must be covered when not in use to prevent contamination. Most units have loose-fitting plastic covers on chains that easily pop off when flow is activated.
- n. Plumbed drench hoses must be replaced with an approved unit per this chapter, as they are supplemental devices whose single nozzle is incapable of providing complete flushing coverage of both eyes at the same time, or face/whole body flushing at the same time.

## **6. Emergency Eyewash and Shower Maintenance and Inspection .**

- a. Plumbed eyewashes and showers must be activated weekly, and self-contained eyewash units must be checked weekly. Activated units must run for a period long enough to ensure that flushing fluid is available and completely clear, that the nozzles are free of debris and obstruction, and to ensure proper operation:
  - (1) Eye wash jets must supply a water stream to both eyes evenly and simultaneously.
  - (2) On/off valve activates jets within 1 second and stays on without use of operator's hands until intentionally closed.
  - (3) Showers that have drains located under the shower head shall be activated weekly.
  - (4) Showers with no drains under the head shall be activated monthly.
- b. Approved self-contained eyewash units must be drained and fluid replaced before the manufacturer's expiration date or whenever the fluid does not appear completely clear during weekly inspections, whichever comes first. Eye wash jets must supply a water stream to both eyes evenly and simultaneously.
- c. Manufacturers instructions for operation, inspection and maintenance for all units must be provided to the users and to the Building Manager.
- d. All types of equipment (plumbed and self-contained) are to be inspected and performance tested annually to certify conformance with ANSI 358.1-2004 requirements for flow rate over minimum 15-minute duration, and other requirements of the "Performance Testing Procedures" sections of the ANSI standard.

## **7. Accident Prevention Signs and Tags**

- a. Accident prevention tags and signs shall be used to prevent accidental injury and illness to employees who would be exposed to hazardous conditions and/or substandard equipment or operations. If the identified hazardous condition can be immediately corrected, then no accident prevention tag or sign is required. If the hazardous condition cannot be immediately corrected, then an accident prevention tag or sign is required until the hazardous condition is corrected. All employees must comply with posted warnings, tags and instructions.
  - (1) The word "tag" as used here refers to a surface (usually card, paper, pasteboard, or some temporary material) on which letters, markings, or both provide a warning or safety instruction to employees who might be exposed to hazards. A tag is to be affixed to the device in question by such things as string, wire, or adhesive.

- (2) When an employee discovers a piece of equipment that the employee perceives to be substandard (unsafe), two (2) options are open to the employee:
- (a) If it is a piece of equipment for which the employee is responsible, it should be disabled and removed from service as soon as possible by using an accident prevention tag. The employee's supervisor should be notified immediately.
  - (b) If the equipment is in an area outside the authority of the employee who used the accident prevention tag, the employee should notify their supervisor along with immediately notifying the person in authority for the area.
  - (c) Once placed, the accident prevention tag can only be removed by:
    - i the employee who placed the tag,
    - ii the employee's supervisor,
    - iii if outside the authority of the employee, the supervisor responsible for the area and/or equipment, (if applicable), or maintenance department personnel.
  - (d) Locks can also be used in addition to the accident prevention tag. If locks are used, the locks should be distinctively different than the locks associated with "lockout/tagout".)
- b. Signs shall have rounded or blunt corners, and free from sharp edges, burrs, splinters, or other sharp projections. The ends or heads of bolts or other fastening devices shall be located so they do not constitute a hazard.
  - c. Place signs to alert and inform employees of hazards in sufficient time to avoid the hazard and take appropriate action. Employees should not be in harm's way before seeing the sign.
  - d. Place signs so they are legible, do not create a distraction, and are not hazards in themselves.
  - e. Signs must not be placed on moveable objects or adjacent to moveable objects like doors, windows etc., if movement will obscure the sign.
  - f. Where illumination may be necessary under emergency conditions, the signs must be equipped with emergency (battery-operated) illumination or be reflective or both.

## **D. TRAINING**

New employee safety orientation training shall cover the safety topics discussed in this Chapter. Employees shall be provided with specific safety training concerning hazards they will be exposed to as part of their jobs per [Chapter 6, "Training"](#), of this *Manual*.



## E. RECORDS AND REPORTS

1. Hazard identification and inspections are required per [Chapter 4, "Safety Risk Management Program"](#) and [Chapter 5, "Safety Assessments, Log of Deficiencies and Corrective Action Plans"](#), of this *Manual*.
2. A monthly documented inspection and a weekly flushing of emergency eyewashes and appropriate showers are required by this chapter in section 6.
3. Building Managers shall retain copies of all annual performance testing on emergency eyewash and shower units for a minimum of 5 years; they shall also retain a copy of the manufacturers operation, inspection and maintenance instructions.

## F. REFERENCES

1. [1910 Subpart D - Walking-Working Surfaces](#)
2. [1910 Subpart E - Exit Routes, Emergency Action Plans, and Fire Prevention Plans](#)
  - a. [1910.35 - Compliance with NFPA 101-2000, Life Safety Code.](#)
  - b. [1910.36 - Design and construction requirements for exit routes.](#)
  - c. [1910.37 - Maintenance, safeguards, and operational features for exit routes.](#)
  - d. [1910.38 - Emergency action plans.](#)
  - e. [1910.39 - Fire prevention plans.](#)
3. ANSI/IES RP1-1982. American National Standard Office Lighting
4. ANSI Z53.1-1967, Safety Color Code for Marking Physical Hazards and the Identification of Certain Equipment
5. Executive Order 12196, "Occupational Safety and Health Programs for Federal Employees," February 26, 1980
6. Occupational Safety and Health Administration (OSHA), Department of Labor, "Basic Program Elements for Federal Employees Occupational Safety and Health Programs and Related Matters," October 21, 1980 (29 CFR 1960)
7. Public Law 104-113, "National Institute of Standards and Technology Act," March 7, 1996: [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=104\\_cong\\_public\\_laws&docid=f:publ113.104.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=104_cong_public_laws&docid=f:publ113.104.pdf)
8. Title 29, Code of Federal Regulations, Subtitle B – "Regulations Relating to Labor (Continued)," Chapter XVII, Occupational Safety and Health Administration, Department of Labor, Part 1900, et seq
9. [1910.144 - Safety color code for marking physical hazards.](#)
10. [1910.145 - Specifications for accident prevention signs and tags.](#)

- a. [1910.145\(f\) App A - Recommended color coding](#)
  - b. [1910.145\(f\) App B - References for further information](#)
11. ANSI Z535.1-2002, Safety Color Code
  12. ANSI Z535.2-2002, Environmental and Facility Safety Signs
  13. ANSI Z535.3-2002, Criteria for Safety Symbols and Labels
  14. ANSI Z535.4-2002, Product Safety Signs and Labels
  15. ANSI Z53.1-1967. Safety Color Coding for Marking Physical Hazards
  16. NFPA 70, National Electrical Code (NEC)
  17. NFPA 70E, Standard for Electrical Safety in the Workplace
  18. ANSI Standard 358.1-2004 "American National Standard for Emergency Eyewash and Shower Equipment"

## Recommended Computer Workstation Set Up



1. **Feet rested flat on the floor**  
In order to be at the correct height in relation to the work surface, a footrest is recommended for shorter users.
2. **Hips slightly higher than knees**
3. **Seated as far back in the chair as possible**
4. **Armrests** Keep elbows close to your body, and shoulders relaxed down.
5. **Monitor** Top most line of monitor display at approximately eye level.
6. **Viewing distance** As far as possible while still seeing the screen clearly
7. **Keyboard** Keep the keyboard in close proximity; keep your shoulders relaxed, and your wrists in line with your forearm
8. **Mouse** Keep the mouse in close proximity and alongside the keyboard

## Ergonomic Workstation Set Up Tips

1. Head and neck to be upright or in-line with the torso (not bent down/back).
2. Head, neck, and trunk to face forward (not twisted).
3. Trunk to be perpendicular to floor (may lean back into backrest but not forward).
4. Shoulders and upper arms to be in-line with the torso, generally about perpendicular to the floor and relaxed (not elevated or stretched forward).
5. Upper arms and elbows to be close to the body (not extended outward).
6. Forearms, wrists, and hands to be straight and in-line (forearm at about 90 degrees to the upper arm).
7. Wrists and hands to be straight (not bent up/down or sideways toward the little finger).
8. Thighs to be parallel to the floor and the lower legs to be perpendicular to floor (thighs may be slightly elevated above knees).
9. Feet rest flat on the floor or are supported by a stable footrest.

### Seating

Consider these points when evaluating the chair:

10. Backrest provides support for your lower back (lumbar area).
11. Seat width and depth accommodate the specific user (seat pan not too big/small).
12. Seat front does not press against the back of your knees and lower legs (seat pan not too long).
13. Seat has cushioning and is rounded with a "waterfall" front (no sharp edge).
14. Armrests, if used, support both forearms while you perform computer tasks and they do not interfere with movement.

### Keyboard/Input Device

Consider these points when evaluating the keyboard or pointing device.

15. Keyboard/input device platform(s) is stable and large enough to hold a keyboard and an input device.
16. Input device (mouse or trackball) is located right next to your keyboard so it can be operated without reaching.
17. Input device is easy to activate and the shape/size fits your hand (not too big/small).
18. Wrists and hands do not rest on sharp or hard edges.

### Monitor

Consider these points when evaluating the monitor.

19. Top of the screen is at or below eye level so you can read it without bending your head or neck down/back.
20. User with bifocals/trifocals can read the screen without bending the head or neck backward.
21. Monitor distance allows you to read the screen without leaning your head, neck or trunk forward/backward.
22. Monitor position is directly in front of you so you don't have to twist your head or neck.
23. Glare (for example, from windows, lights) is not reflected on your screen which can cause you to assume an awkward posture to clearly see information on your screen.

### Work Area

Consider these points when evaluating the desk and workstation.

24. Thighs have sufficient clearance space between the top of the thighs and your computer table/keyboard platform (thighs are not trapped).
25. Legs and feet have sufficient clearance space under the work surface so you are able to get close enough to the keyboard/input device.

### Accessories

26. Document holder, if provided, is stable and large enough to hold documents.
27. Document holder, if provided, is placed at about the same height and distance as the monitor screen so there is little head movement, or need to re-focus, when you look from the document to the screen.
28. Wrist/palm rest, if provided, is padded and free of sharp or square edges that push on your wrists.
29. Wrist/palm rest, if provided, allows you to keep your forearms, wrists, and hands straight and in-line when using the keyboard/input device.
30. Telephone can be used with your head upright (not bent) and your shoulders relaxed (not elevated) if you do computer tasks at the same time.

### General

31. Workstation and equipment have sufficient adjustability so you are in a safe working posture and can make occasional changes in posture while performing computer tasks.
32. Computer workstation, components and accessories are maintained in serviceable condition and function properly.
33. Computer tasks are organized in a way that allows you to vary tasks with other work activities, or to take micro-breaks or recovery pauses while at the computer workstation.

Any deficiencies in these areas should prompt a change in your computer workstation to improve your current work setting.

