

Document Number: GLM-QS-1700.1.32

Revision: Revision B

Effective Date: 10/31/2012

Expiration Date: 10/31/2017

Glenn Safety Manual – Chapter 32

Office Safety w/Change 2 (9/30/2015)

Approved by: QS/Chief, Safety and Health Division

Distribution: BMS Library

**NASA - Glenn Research Center
Cleveland, OH 44135**

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Change Record

Rev.	Effective Date	Expiration Date	GRC25, Change Request #	Description
B	10/31/2012	10/31/2017	05	Bi-annual review
Change 1	5/22/2014	10/31/2017	N/A	Administrative change to add front cover and change history log to comply with NPR 1400.1
Change 2	9/30/2015	10/31/2017	N/A	Administrative change to remove hyperlinks.

***Include all information for each revision. Do not remove old revision data. Add new rows to table when space runs out by pressing the tab key in the last row, far right column.*

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Chapter 32—Office Safety

NOTE: The current version of this chapter is maintained and approved by the Safety and Health Division (SHeD). The last revision date of this chapter was October 2012. The current version is located on the Glenn Research Center intranet within the BMS Library. Approved by Chief of Safety and Health Division.

1.0 PURPOSE

Office safety encompasses the responsibilities, regulation, and requirements that ensure a safe working environment for personnel in an office setting at the NASA Glenn Research Center (GRC). This chapter sets forth minimum safety requirements and guidelines to prevent accidents for all personnel performing administration-related tasks.

2.0 APPLICABILITY

The provisions of this chapter are applicable to all NASA employees and to all other agencies, organizations, and contractor personnel who perform administrative duties or work in an office setting within the confines of the Center at Lewis Field in Cleveland and at Plum Brook Station in Sandusky.

3.0 BACKGROUND

Changes have occurred in the American workplace because of the new office technology and the automation of office equipment. As with all new technology, these changes bring with them a set of health and safety concerns. In addition to obvious hazards such as slippery floors or an open file drawer, a modern office may contain hazards such as poor lighting, noise, poorly designed furniture, and equipment and machines that emit gases and vapors when not properly maintained. Even the nature of office work has produced a whole host of stress-related symptoms and musculoskeletal strains. For example, long hours at a poorly designed computer workstation can cause pain in the neck, back, shoulders, lower extremities, arms, wrists, and hands; eyestrain; and a general feeling of tension and irritability. The leading types of disabling accidents that occur in the office are the result of falls, strains and overexertion, falling objects, striking against objects, and being caught in or between objects.

4.0 POLICY

GRC will manage and conduct its operations in such a manner as to eliminate or minimize all potential hazards and to avoid accidents involving injury to personnel, damage to property, or loss of research or project operating time or effectiveness. GRC management and supervisors are responsible for ensuring that everyone is provided with a workplace free of recognized hazards, or one that has appropriately engineered protective systems, and that GRC complies with all applicable Federal, State, local, and contractual laws and regulations affecting the safety and health of Center employees. Everyone at GRC, including contractors, has an obligation and a responsibility to comply with laws, regulations, and practices affecting personnel and facility safety, including those set forth in the Glenn Safety Manual. Achieving and maintaining a safe work environment requires that everyone cooperates and proactively participates in the Glenn Safety Program.

5.0 RESPONSIBILITIES

5.1 Center Director

The Center Director is responsible for establishing a GRC safety and accident prevention program in accordance with Federal regulations, the NASA Safety Manual, NPR 8715.3, and other related guidelines set up by NASA Headquarters.

5.2 Chief of the Safety and Health Division

The Chief of the Safety and Health Division (SHeD) shall be responsible for the overall management, coordination, and documentation of the Glenn Safety Management System and, in conjunction with the Safety, Health and Environmental Board, for the implementation of Center safety policies and directives. The Chief of the Operational Safety Branch serves as the Center focal point of communications on all life safety matters and on functional safety

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relationships between the Center and NASA Headquarters. (See Chapter 1 of the Glenn Safety Manual for additional information.)

5.3 Supervisors

All organization supervisors have a prime responsibility for complying with pertinent safety requirements, (including those related to housekeeping), ensuring the effectiveness of the Glenn Safety Management System as it affects their specific activities, possessing knowledge of GRC safety regulations, safe operating procedures, and emergency response procedures, communicating that knowledge to their employees, and identifying and correcting potentially hazardous conditions.

5.4 Employees

Each GRC and contractor employee is responsible for

- Exercising reasonable care and caution in the safe performance of his or her work by reducing potential hazards while performing his or her assignments and in the conduct of any activity at the Center.
- Possessing knowledge of GRC safety regulations, safe operating procedures, and emergency response procedures affecting his or her individual work area and work assignments, and complying therewith.
- Reporting the development or appearance of any potentially hazardous condition to his or her supervisor and/or to the NASA Incident Reporting Information System (IRIS).

6.0 REQUIREMENTS

6.1 Housekeeping

All NASA employees and contractor personnel are responsible for reducing potential hazards and keeping their work areas safe and clutter free. **Many office accidents are caused by poor housekeeping practices.** Good housekeeping guidelines include keeping aisles and stairways free from clutter, cleaning spills, minimizing combustibles in workplace and storage areas, and keeping all exits free from obstructions. By keeping the office floor neat and clean, personnel can eliminate most slip, trip, and fall hazards. Other good housekeeping practices to follow:

- Maintain walkways so that everyone can enter and exit without tripping over items.
- Ensure that office lighting is adequate.
- Quickly clean or barricade spills to prevent slips, trips, and falls; never walk on wet floors.
- Report any loose or worn flooring to the Work Control Office at 216-433-4948 at Lewis Field or at 419-621-3200 at Plum Brook Station. Repair requests can also be generated by the requester at the MAXIMO Web site.
- Maintain emergency egress paths at a minimum of 32 in. per the National Fire Protection Association (NFPA 101, Life Safety Code) and the Ohio Department of Commerce:

“Exit access aisles and passageways shall provide a minimum of 32 inches (813 mm) of clear width. Exceptions may be made where approved in writing by the Authority Having Jurisdiction for exit access aisles and passageways serving less than 20 people based upon guidance from NFPA 101 and the Ohio Fire Code.”

- Ensure that loose paper (which increases the fire load and the fire potential in the office area) does not accumulate to an excessive amount. Loose paper is defined as any paper sitting open on desktops, cabinets, and shelving. Instead, paper should be stored inside approved file cabinets, bookcases, or cabinets designed for that purpose, (such as Laterals). Also, paper and/or cardboard boxes should not be stored on the floor in office areas.

6.1- The SHed verification procedure which ensures compliance with the requirement listed in this section is accomplished by regularly scheduled Facilities Safety and Health Inspections performed by SHed.

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6.2 Material Storage

Improperly stored office materials can lead to objects falling on workers, poor visibility, and fire hazards. Improper storage includes disorderly piling; piling materials too high; and obstructing doors, aisles, fire exits, and fire-fighting equipment. A good housekeeping program will reduce or eliminate the hazards associated with the improper storage of materials. The following are good storage practices:

- The egress route must be accessible, with no storage of materials in aisles, corners, stairwells, or passageways.
- Books should be kept on shelving or neatly stored.
- No loose storage should be placed above 6 ft or on top of cabinets.
- Heavy (hard to lift or move) objects should be located on low shelving.
- Cardboard boxes shall not be used for permanent storage.
- No laboratory chemical storage is permitted in office areas. For additional information, consult the HAZCOM Program.

6.2 The SHeD verification procedure which ensures compliance with the requirement listed in this section is accomplished by regularly scheduled Facilities Safety & Health Inspections, Chemical Management Inspections performed by SHeD.

6.3 Slips, Trips, and Falls

Falls are the leading type of disabling accidents that occur in the office. The disabling injury rate of falls among office workers is 2 to 2.5 times higher than the rate for non-office employees. A fall occurs when you lose your balance and footing. One of the most common causes of office falls is tripping over an open desk or file drawer. Bending while seated in an unstable chair and tripping over electrical cords or wires are other common hazards. Office falls are frequently caused by using a chair or stack of boxes in place of a ladder and by slipping on wet floors. Loose carpeting, objects stored in halls or walkways, and inadequate lighting are other hazards that invite accidental falls. Fortunately, all of these fall hazards are preventable. The following checklist can help stop a fall before it happens:

- Quickly clean or barricade spills.
- Never walk on wet floors.
- Keep carpeting in good condition to prevent trip hazards. Report any loose or worn flooring to the GRC Work Control Office at 216-433-4948 at Lewis Field or 419-621-3200 at Plum Brook Station. Any repair request can be accommodated by accessing the MAXIMO Web site.
- Be sure the pathway is clear before you walk.
- Avoid excessive bending, twisting, and leaning backward while seated.
- Always use a stepladder for overhead reaching. Never use a chair as a ladder.
- Pick up loose objects on the floor.
- Do not obstruct your view when carrying objects along walkways or when ascending or descending stairways.
- Wear footwear appropriate for your duties. High heels and sandals, or other open-toe shoes, are not permitted in shop or lab areas and are discouraged in office areas.
- File cabinet safety
 - Store the heaviest materials in the bottom drawer.
 - Never leave the upper drawers of a file cabinet open.
 - Open only one drawer at a time.
 - Never open a drawer if someone is crouched below it.

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- Shut a file drawer immediately after removing files.
- Use the handle when closing a drawer to help reduce pinch-point injuries.

If you find yourself heading for a fall, remember to roll, not reach. By letting your body crumple and roll, you are more likely to absorb the impact and momentum of a fall without injury. Reaching an arm or leg out to break your fall may result in a broken limb.

6.3 The SHed verification procedure which ensures compliance with the requirement listed in this section is accomplished by regularly scheduled Facilities Safety & Health Inspections and Ergonomic follow-ups performed by SHed, and Work Practice Controls utilized by the Maintenance sector of the Facilities Division.

6.4 Strains and Overexertion

Although a typical office job may not involve lifting large or especially heavy objects, it is important to follow the principles of safe lifting. Small, light loads, (e.g., stacks of files, boxes of computer paper, or books), can wreak havoc on your back, neck, and shoulders if you use your body incorrectly when you lift them. Backs are especially vulnerable; most back injuries result from improper lifting. Before you pick up a carton or load, ask yourself these questions:

- Is this too heavy for me to lift and carry alone?
- How high do I have to lift it?
- Is there enough room to safely lift and maneuver it?
- How far do I have to carry it?
- Am I trying to impress anyone by lifting this?

If you feel that the lift is beyond your ability, contact your supervisor, use appropriate material-handling equipment, or ask another employee to assist you.

6.4 - The SHed verification procedure which ensures compliance with the requirement listed in this section is found in the NIOSH Work Practices Guide.

6.4.1 Safe Lifting Practices

Use the following steps to safely lift an object:

1. Take a balanced stance, with feet placed shoulder-width apart. When lifting something from the floor, squat close to the load. Do not manually lift over 50 lb by yourself.
2. Keep your back in its neutral or straight position. Tuck in your chin so your head and neck continue the straight back line.
3. Grip the object with your whole hand, rather than only with your fingers. Draw the object close to your body to keep the load and your body weight centered.
4. Lift by straightening your legs. Let your leg muscles, not your back muscles, do the work. Tighten your stomach muscles to help support your back. Maintain your neutral back position as you lift.
5. Never twist when lifting. When you must turn with a load, turn your whole body, feet first.
6. Never carry a load that blocks your vision.
7. To set something down, use the same body mechanics designed for lifting.

6.4.1 - The SHed verification procedure which ensures compliance with the requirement listed in this section is found in the NIOSH Work Practices Guide for manual lifting.

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6.5 Caught in or Between Objects

Disabling incidents can occur when office workers get their fingers or articles of clothing caught in or between objects:

- Fingers caught in a drawer, door, or window
- Fingers, hair, or articles of clothing and jewelry caught in office machines
- Fingers caught under the knife edge of a paper cutter

Office machines often have moving parts and "nip" points. It is critical to watch your fingers and to secure loose items, such as hair, clothing, badge lanyards, and jewelry. Office equipment should have proper covers or guards in place and must not be operated if the guards have been removed. Also, paper cutter blades should be locked in the down position after use.

6.5 - The SHeD verification procedure which ensures compliance with the requirement listed in this section is found in the NIOSH Work Practices Guide.

6.6 Office Ergonomics

Ergonomics is the science of designing the job, equipment, and workplace to fit the worker. It involves modifying or redesigning the job, workstation, tool, or environment. Proper ergonomic design is necessary to prevent repetitive strain injuries, which can develop over time and can lead to long-term disability. There are many warning signs that should alert an employee to a potential health problem. However, nothing replaces a physician's diagnosis.

Computer use has increased dramatically over the past decade with over 50 million personal computers in use. Unfortunately, speed comes with a price—no breaks. When you think of office work, you think of upper-extremity Cumulative Trauma Disorders. However, eye strain is the most frequent physical symptom suffered by computer users, and an office worker is 40 times more likely to experience back pain than pain in an upper extremity. Although there has been an increase of severity and lost work days, the incidence for back pain has not changed significantly. Using ergonomics for workstation design can have a big impact on an office worker's health and well-being.

6.6 - The SHeD verification procedure which ensures compliance with the requirement listed in this section is found in the Glenn Safety Manual, Chapter 15 – Ergonomics 5.3: Ergonomics Assessment Team.

6.7 Office Electrical Safety

Electricity is an essential power source for the operations of a modern automated office. The electrical equipment in the office is potentially hazardous and can cause serious shock and burn injuries if improperly used or maintained.

Electricity travels through any electrical conductor, which may be a wire or a part of the human body. Most metals and moist skin offer very little resistance to the flow of electrical current. Dry wood, porcelain, and pottery offer a high resistance and can be used to prevent the flow of electrical current. If a part of the body encounters an electrical circuit, a shock will occur. The electrical current will enter the body at one point and leave at another. The passage of electricity through the body can cause great pain; burns; destruction of tissue, nerves, and muscles; and even death.

Factors influencing the effects of electrical shock include the type of current, voltage, resistance, amperage, pathway through the body, and duration of contact. The longer the current flows through the body, the more serious the injury. Injuries are less severe when the current does not pass through or near nerve centers and vital organs. Electrical accidents usually occur because of faulty or defective equipment, unsafe installation, or misuse of equipment by office workers.

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6.7 - The SHeD verification procedure which ensures compliance with the requirement listed in this section is accomplished by regularly scheduled Facilities Safety & Health Inspections performed by SHeD.

6.7.1 – Ungrounded Equipment

Grounding is a method of protecting employees from electric shock. Grounding an electrical system intentionally creates a low-resistance path to the earth through a ground connection. When properly done, this path offers sufficiently low resistance and has sufficient current-carrying capacity to prevent the buildup of hazardous voltages.

Most fixed equipment such as large, stationary machines must be grounded. Cord- and plug-connected equipment must be grounded if it is located in hazardous or wet locations, if it is operated at more than 150 V to ground, or if it is of a certain type of equipment (such as refrigerators and air conditioners).

Smaller office equipment, such as coffee pots and refrigerators would generally not fall into these categories and therefore would not have to be grounded. However, much of the newer office equipment is manufactured with grounded plugs as a precaution. In such cases, the equipment shall be used in accordance with the manufacturer’s instructions. In any case, never remove the third (grounding) prong from any three-prong piece of equipment.

6.7.1 - The SHeD verification procedure which ensures compliance with the requirement listed in this section is accomplished by regularly scheduled Facilities Safety & Health Inspections performed by SHeD, and NESC 123.

6.7.1 Overloaded Outlets

Insufficient, or overloaded, electrical outlets shall be avoided. A sufficient number of outlets will eliminate the need for extension cords. Overloading electrical circuits and extension cords can result in a fire. Floor-mounted outlets should be carefully placed to prevent tripping hazards. Most power strips are approved for providing power to a maximum of four or six individual items. When multiple power strips are interconnected, the strip directly connected to the building outlet is often supplying power to far more than the approved number of items.

- Routinely check your electrical appliances and wiring.
- Frayed wires can cause fires. Replace all worn, old, or damaged cords immediately.
- Never overload extension cords or wall sockets.
- Never string multiple extension cords together.

If an appliance has a three-prong plug, use it only in a three-slot outlet. Never force it to fit into a two-slot outlet or extension cord.

6.7.2 Unsafe and Unapproved Equipment

Fans, surge protectors, coffee pots, cup warmers, radios, personal heaters, and other personal electrical devices shall be Underwriters Laboratories, Inc. (UL) listed and used in accordance with the manufacturers’ recommendations. When the outer jacket of a cord is damaged, the cord may no longer be water resistant. The insulation can absorb moisture, which could result in a short circuit or excessive current leakage to ground. If wires are exposed, they may shock a worker who contacts them. Defective cords shall be replaced. Electric cords should be examined on a routine basis for fraying and exposed wiring. For portable electric heaters, buy a unit with a tip-over safety switch, which automatically shuts off the heater if the unit is tipped over.

6.7.3 Improper Placement of Cords

An electrical cord shall not be pulled or dragged over nails, hooks, or other sharp objects that may cause cuts in the insulation. In addition, cords shall never be placed on radiators, steam pipes, walls, or windows. Particular attention should be placed on connections behind furniture, since files and bookcases may be pushed tightly against electric outlets, severely bending the cord at the plug. Cords also become tripping hazards when strung across walkways.

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6.7.4 Extension Cords

Extension cords shall not be used in place of fixed wiring.

6.7.5 Unguarded Live Parts

Wall receptacles shall be designed and installed so that no current-carrying parts will be exposed. Outlet plates should be kept tight to eliminate the possibility of shock.

6.7.6 Power Control Switches

All office equipment shall be provided with on/off switches to control the electrical power.

6.7.2 – 6.7.7: The SHeD verification procedure which ensures compliance with requirements 6.7.2 through 6.7.7 listed in this section is accomplished by regularly scheduled Facilities Safety & Health Inspections performed by SHeD.

6.8 Office Fire Prevention

The best time to think about fire safety is before a fire starts. Learn the location of fire escape routes and how to activate the fire alarm. Participate in practice fire drills on a regular basis, and become familiar with stairway exits.

Heat-producing equipment, such as copiers, word processors, microwave ovens, refrigerators, electrical space heaters, and coffee makers are often overlooked as potential fire hazards. Keep them away from anything that might burn.

Electrical appliances can be fire hazards. Be sure to turn off all appliances at the end of the day. Use only UL-listed appliances plugged into grounded outlets (three-prong plugs).

If electrical equipment malfunctions or gives off a strange odor, disconnect it and call the appropriate maintenance personnel. Promptly disconnect and replace cracked, frayed, or broken electrical cords.

Do not allow combustible material, such as boxes or paper, to build up in inappropriate storage locations (near sources heat or ignition).

6.8 - The SHeD verification procedure which ensures compliance with the requirement listed in this section is accomplished by regularly scheduled Facilities Safety & Health Inspections performed by SHeD.

7.0 RECORDS

Inspections are compiled and maintained by SHeD via SHEtrak. .

8.0 REFERENCES

Document number	Document name
NPR 8715.3	NASA General Safety Program Requirements GRC at Lewis Field and Plum Brook Station, Environmental, Health, and Safety Pocket Guide Office of Health and Safety, Centers for Disease Control and Prevention
NFPA 101	National Fire Protection Association Life Safety Code 2007 Ohio Fire Code
GLM-QS-1800.1	Occupational Health Programs Manual

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The Facility Safety and Health Inspection Program for LF and PBS is led by SHeD. It consists of quarterly or annual inspections of office buildings, test cells, laboratories, substations, cooling towers, and areas of potentially high hazard. The specific Inspections performed, (concerning this Chapter), are: Facilities Safety and Health, Chemical Management, and Environmental. Construction Inspections are also performed. Inspections are conducted by safety specialists trained to OSHA 30-hour general industry level or equivalent and fully conform to 29 (Code of Federal Regulations (CFR) 1960.2 standards. All findings are recorded into the SHEtrak program, and followed up to closure. This activity conforms to the inspection standards required by NPR 8715.1 Chapter 4, Inspection and Abatement.

DEFINITIONS OF ACRONYMS

Incident Reporting Information System (IRIS)

Glenn Research Center (GRC)

NASA Procedural Requirement (NPR)

National Fire Protection Association (NFPA)

Safety and Health Division (SHeD)

Underwriters Laboratories, Inc. (UL)

Safety, Health, and Environmental track, (SHEtrak)