



**DUKE UNIVERSITY MEDICAL CENTER
ENGINEERING & OPERATIONS SAFETY MANUAL**

E&O Safety and Health Policy Statement

Recognizing that a safe work environment is essential to the health and well-being of all employees and directly contributes to quality service:

It is Duke University Medical Center (DUMC) Engineering and Operations Department (E&O) policy to provide a safe and healthful workplace.

It is our intent to evaluate and control all recognized hazards, and comply with all federal, state, and local safety and health laws and regulations.

Management at all levels are responsible for communicating and implementing programs to insure the safety and health of all employees while at work.

All employees have a responsibility to work in a manner that is safe and healthful for themselves and their co-workers.

By working safely together we cannot fail.

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INTRODUCTION

PURPOSE

This policy has been developed by the Engineering and Operations Department to promote and provide for the health and safety of all personnel, visitors, facilities and surrounding environment through the development and implementation of a comprehensive safety program. This safety program is designed to avoid and reduce on-the-job accidents and provide for a safer and more efficient workplace. This manual is not intended to be a procedure manual for every environment; rather it should be used for general guidance. Specific hazardous conditions require specific control procedures that must be prepared by those having ownership of the hazard. ***No employee at Duke is required to perform a task that he or she considers unsafe, nor is any employee to knowingly commit an unsafe act.*** No employee is expected to undertake a job until he/she has received adequate safety instructions, and is authorized to perform the task. It is understood that we have many diverse types of work environments.

This E&O Safety Program is an addition to the Duke University Medical Center Safety Program and provides specific procedures and responsibilities for E&O personnel.

REFERENCES

Duke University Policy Manual: <https://www.hr.duke.edu/policies/>

Duke University Safety Manual (Applies to all Duke University & Duke Medical facilities)
[http://www.safety.duke.edu/Safety Manuals/University/Default/htm](http://www.safety.duke.edu/Safety%20Manuals/University/Default/htm).

Duke Staff Handbook: https://www.hr.duke.edu/policies/staff_handbook.pdf

OSHA Health & Safety Regulations and Guidance Manual: <http://www.ehso.com/oshaguidance.phps>

Code of Federal Regulations,

Title 29 Part 1904 (OSHA), Recording and Reporting Occupational Injuries and Illnesses

Title 29, Part 1910. 132, Personal Protective Equipment, 1926 Subpart E, Personal Protective Equipment and Lifesaving Equipment.

http://www.osha.gov/pls/oshaweb/owasrch.search_form

SAFETY VIOLATIONS

Corrective Action for violations resulting in negligence of safety policies and procedures will be administered under the Workplace Expectations and Guidelines section of the Duke Staff Handbook.



RESPONSIBILITIES

The safety of each and every employee is the primary consideration in Engineering and Operation's continuous, measurable efforts to eliminate or reduce conditions and behaviors that could result in injuries or illnesses. Engineering and Operations is committed to the principle that such a safety culture will help maintain employee health, increase productivity, minimize lost work time and reduce costs.

Administrative responsibility and safety responsibility go hand in hand. Effective environmental, safety, and health performance can result only if all persons, from the Director down to the individual worker, are responsible and accountable for safety conditions. To ensure a management structure which fosters the culture of safety, the following responsibilities are assigned.

ALL EMPLOYEES, (full-time and part-time). Employees must conduct themselves and perform all work tasks in a safe manner. Duties and responsibilities are:

1. Learn, follow, and understand all safe practices, procedures, and policies.
2. Report all unsafe conditions, practices, and equipment observed immediately to supervision.
3. Report all work-related accidents, injuries, and near misses promptly to supervision.
(Refer to page 11 for reporting procedures.)
4. Use all safeguards and personal protective equipment provided.
5. Check self and co-workers for safe practices.
6. Practice good housekeeping.
7. Submit safety suggestions to supervision.

SUPERVISORS are closest to the performance of work tasks by employees. They should observe, on a day to day basis, performance factors which affect safety. Duties and responsibilities are:

1. Ensure and enforce compliance with all established safety procedures and policies with shop personnel.
2. Maintain effective housekeeping practices.
3. Set an example for all employees by wearing the designated personal protective equipment and following all safe work practices and procedures.
4. Monitor and observe work sites daily for unsafe practices and conditions.
5. Take prompt corrective action whenever unsafe acts and conditions are noted. Problems which cannot be easily corrected, or for which external resources are needed, shall be promptly reported to your Assistant Director.
6. Ensure timely completion and correction of periodic safety surveys.
7. Ensure that all on the job injuries are promptly referred to appropriate medical personnel when needed.

8. Promptly conduct an evaluation into the causative factors of all work-related injuries, illnesses and potentially serious near misses and complete the online supervisor report within the first 24 hours of occurrence. *(Refer to page 11 for reporting procedures.)*
9. Encourage all employees to submit safety-related suggestions, and that a timely response and attention. Ensure all concerns regarding safe work practices and work procedures are communicated timely to Assistant Directors.

ASSISTANT DIRECTORS because of the function of their positions, exercise considerable control over conditions or work practices which affect safety and health. Duties and responsibilities are:

1. Promote safety training.
2. Provide support to supervisors in the proper safety and training orientation of new and existing employees.
3. Review safety policies, rules and regulations and updates provided by E&O Safety Board, Safety Committees, Duke University Medical Center and Health Systems.
4. Coordinate and collaborate safety policies with OESO, EOHW, and Safety Board and Safety Committee.
5. Assist in the development and distribution of Safety Programs and Standard Operating Procedures to shops.
6. Promote timely completion and correction of periodic safety surveys.
7. Evaluate management accountability through safety survey results.
8. Ensure accident investigations are done according to specified guidelines.
9. Assist in determining the need for protective equipment and safety best practices in work areas.
10. Chair and coordinate Safety Committee meetings and activities, designated by the Safety Leaders.
11. Ensure safety topics and concerns are communicated through divisional staff and shop meetings.
12. Ensure all department safety files, and appropriate reports, are maintained completed and distributed properly.

DIRECTOR is responsible for the safety, health and well-being of employees. They shall:

1. Provide safety with the same emphasis and priority as production and quality.
2. Promote and provide sufficient resources for the functioning of an effective Engineering and Operations safety program.
3. Hold supervision responsible for the safety activities of their divisions.
4. Ensure full compliance with all federal, state, and local rules and regulations regarding safety.
5. Take an active interest in resolving safety, and compliance issues requiring corrective action.
6. Establish an Engineering and Operations Safety Board and Safety Committee.

SAFETY COMMITTEE

SAFETY BOARD AND SAFETY COMMITTEE

MISSION STATEMENT

It is the Mission of the Engineering and Operation's Safety Committee to promote a safe working environment, to assist in the overall effort to identify corrective measures, to eliminate or control recognized safety hazards and reduce the possibility of accidental occurrences that may result in injury or property damage. This objective should be accomplished through the cooperation of all employees by way of Engineering and Operation's Safety Board, Safety Committee, and Divisional Staff and Shop Meetings.

SAFETY BOARD MEMBERS

The Engineering and Operations Safety Board shall be represented by the Director, HR Manager, Safety Committee Chair, and Finance Manager.

Duties and responsibilities are:

- Actively promote health and safety.
- Meet quarterly. Additional meetings may occur where safety priorities dictate.
- Review and respond to safety committee minutes and recommendations for new safety rules, Job Hazard analysis changes or additions to personal protective equipment needs.
- Support and recommend corrective action to be delivered by safety committee and management.
- Participate in E&O safety activities.

SAFETY COMMITTEE CHAIRPERSON

The Director will appoint a chairperson to lead and direct the Safety Committee.

Duties and responsibilities are:

- Actively promote health and safety
- Schedule and hold safety meetings
- Record Attendance
- Develop and make available a written agenda for each meeting.
- Keep meeting minutes.
- Review previous meeting notes, safety board recommendations and follow-up on assigned responsibilities.
- Address new safety related opportunities/concerns and discuss recommended solutions.
- Act as communication liaison between the safety board and committee.
- Submit written recommendations to safety board for safety/health improvement/changes and response.
- Ensure the meeting minutes are recorded, completed, and distributed to safety committee members and safety board within two business days.

SAFETY COMMITTEE

The Engineering and Operations Safety Committee shall be represented by Safety Committee Chairperson, Assistant Directors, up to (2) Safety Representatives per division, HR Representative, and OESO Representative.

Duties and responsibilities are:

- Actively promote health and safety
- Attend scheduled Safety Committee meetings on a regular basis.
- Communicate safety meeting proceedings within their division.
- Act as a problem-solving group to recommend changes or additions to safety policies, procedures, or work practices when appropriate.
- Assist safety department personnel (OESO, EOHW), on surveys, audits and inspections.
- Promote the importance of safety and encourage the cooperation of employees to prevent accidents.
- Investigate near misses, minor and Lost Work Day accidents.
- Manage safety activities, emergency plan, and training.
- Ensure that employees receive a timely response to their issues.

DIVISIONAL SAFETY REPRESENTATIVES

Divisional Safety Representatives will be designated with the approval of each Assistant Director to participate, communicate and represent on the behalf of their division.

Duties and responsibilities are:

- Set the example! Committee members must be above average in their safe work habits and their positive attitude about safety.
- Promote the importance of safety and encourage the cooperation of employees to prevent accidents.
- Collect suggestions, hazards and other safety/compliance concerns to be reviewed or addressed in upcoming safety committee meeting.
- Present divisional safety/compliance concerns or ideas in the upcoming monthly Safety Committee Meeting. **Concerns needing immediate attention must be escalated immediately to the Assistant Director, HR, OESO, or EOHW. Any additional written or photographic documentation should be promptly forwarded to the before mentioned parties.**

DIVISIONAL STAFF MEETINGS

To ensure that safety is effectively promoted within each division, the Assistant Director will play a pivotal role in the commitment and communication of health and safety culture within their divisions. Requirement can be met through staff meeting or an optional divisional meeting dedicated specifically to safety.

Duties and responsibilities are:

- Actively promote health and safety
- Review any recent work-related incidents, near misses, and recommendations for possible corrective actions.
- Promote the importance of safety and encourage the cooperation of employees to prevent accidents.
- Collect suggestions, hazards and other safety/compliance concerns to be reviewed or addressed in upcoming safety committee meeting.
- Disseminate safety committee meeting notes for supervisors/safety representatives to deliver back to the shops.



REPORTING OF WORK-RELATED INJURIES AND ILLNESSES

PURPOSE

Engineering and Operations, in its effort to reduce workplace hazards, must develop data regarding work-related injuries and illness. Such data, when properly reported, is used for:

- Documenting the incident causing the injury or illness.
- Triggering investigation of the incident.
- Analyzing trends for targeting corrective action
- Planning for corrective action
- Preparing reports required by OSHA.
- Provide necessary documentation to OESO for further investigation where appropriate.

RESPONSIBILITIES

ALL EMPLOYEES shall:

- **Inform their supervisors or alternate supervisors of any work-related injuries or illnesses as soon as possible and also report before the end of the shift using the Report of Work-Related Injury or Illness link on the Duke Human Resources website.**
- Every injury that occurs on the job, even a slight cut or strain, must be reported to their supervisor and/or management as soon as possible. **Under no circumstances, except transport to the hospital emergency room, should an employee leave the work area without reporting an injury.**
- If the injury requires first aid, clinic or emergency room treatment, ensure the injury is appropriately treated in a timely manner.

ALL SUPERVISORS are key figures in the establishment and success of the E&O injury and illness prevention program and have primary responsibility for actually implementing the injury and illness prevention program, especially as it relates directly to the workplace. Supervisors are also responsible for being familiar with safety and health hazards to which employees are exposed, how to recognize them, the potential effects of these hazards, and rules and procedures for maintaining a safe workplace. Supervisors shall:

- Ensure that all employees promptly report injuries or illnesses that may be related to their work.
- Inform their employees of the availability of support for work related injuries and illnesses, as well as the proper way to report such occurrences.
- Conduct an investigation to address any workplace safety issues and determine an accurate account of what happened, where incident occurred, who saw the incident, etc. as part of the manager/supervisor section of the Report of Work Related Injury or Illness form, which must be submitted within 24 hours of the incident.
- If the injury requires first aid, clinic or emergency room treatment, ensure the injured party is appropriately treated in a timely manner.

- For any injury, investigate the events leading up to the accident and complete report using online form at www.hr.duke.edu/workcomp .
- Supervisors shall inform the Assistant Directors of the injuries as well as any recommended corrective action.
- Reporting – All serious accidents must be reported to OSHA via Duke University workers compensation office. In cases of hospitalization or death, a full investigation with copies to governmental authorities will be required. In less serious cases, the investigation report completed online at www.hr.duke.edu/workcomp, must be routed to workers compensation for corrective action.

REPORT A WORK-RELATED ACCIDENT, INJURY OR ILLNESS

A primary tool used by E&O to identify the areas responsible for accidents is a thorough and properly completed injury report form, located online at www.hr.duke.edu/workcomp.

For accidents involving non-Duke personnel, notes and diagrams should be made at the scene. Also, record the names and addresses and day and evening phone numbers of all eyewitnesses. All statements should include the time and date given, and the location where the statement was made.

ACCIDENT INVESTIGATIONS

The best method to establish a safer workplace is to study past accidents. By focusing on past injuries, E&O hopes to avoid similar problems in the future. Therefore, whenever there is an accident, and in many cases upon review of past accidents, you may be requested to participate in an investigation. During the interview, there will be questions concerning workplace safety related to the incident. Please answer these questions honestly and completely. Also, please volunteer any personal observations and/or suggestions for improved workplace safety.

Based upon the study of past accidents and industry recommendations, new methods to avoid similar accidents and injury situations experienced in the past. Work rules will be reviewed and may be modified based upon the study of the accidents.

In addition to historical information, workplace safety depends on workplace observation. Each day, before you begin work, inspect the area for any dangerous conditions. Inform your supervisor of anything significant, so other employees and guests are advised.

If the hazards cannot be corrected immediately, then all employees will be warned to take protective action so that the hazards will not result in any injuries.

You may also be given written communications regarding unsafe conditions or serious concealed danger or hazards. If you are unclear or unsure of the significance of this written communication, contact your supervisor and review your planned actions before starting to work.



MEDICAL CARE FOR WORK RELATED INJURY AND ILLNESS

If you have an accident, are injured at work, or develop an illness that you believe to be related to your job, report it by the end of your shift by completing the incident report at www.hr.duke.edu/benefits/medical/workcomp/report.php. Certainly seek medical treatment from one of the [approved medical providers](#) if the injury or illness is severe; but always follow up by filling out the incident report. Your information about the incident is important in helping Duke evaluate the circumstances of your incident and develop strategies for prevention of reoccurrences.

All medical care for work-related illnesses and injuries including exposure to infectious diseases must be obtained through one of the following clinics:

Duke Campus, Medical Center, and Hospital:
EOHW – Duke Clinic (South), room 04290 Red Zone,
Phone 919-684-3136, Fax: 919-681-0555

Durham Regional Hospital:
Employee/Occupational Health, 1st Level Watts Building,
Phone: 919-470-5350, Fax: 919-470-5370

Durham Raleigh Hospital:
Employee Health, Administrative Building, Suite 115,
Phone: 919-954-3275, Fax 919-954-3953

In the case of life-threatening major injuries or the need for off hour medical care for work-related injuries/illnesses, care should be obtained through:



Durham Hospital Emergency Department..... 919-684-2413
Durham Regional Hospital Emergency Department 919-470-5345
Durham Raleigh Hospital 919-954-3870

In the case of life-threatening major injuries or the need for off hour medical care for work-related injuries/illnesses, care should be obtained through:

Durham Urgent Care 919-572-1868
1901 Hillandale Rd, Suite D
Durham Urgent Care South 919-470-5345
5716 Fayetteville Rd

**Exposure to blood or body fluids must also be reported to the Exposure Hot Line.
Call 115 from a campus phone or 919-684-8115 from any other phone.**



SAFETY TRAINING POLICY

PURPOSE

The purpose of the Duke Safety Training Program is to provide employees with the knowledge and tools to reduce the risks associated with their work responsibilities to the lowest possible level. Safety training programs are developed in response to federal, state, and local regulations, accreditation agency requirements and institutional needs.

RESPONSIBILITIES

Assistant Directors are responsible for:

- Identifying departmental safety training needs, and assist supervisors on how to identify and request training for specific workplace hazards.
- Monitor departmental compliance with safety training requirements.
- Being trained and knowledgeable in the safety and health hazards to which employees and visitors under their direction may be exposed.
- Establishing, implementing and maintaining a system for communicating with employees, and visitors about health and safety matters.
- Requesting assistance with specialized training where needed.
- Ensuring that all employees and visitors under their supervision have completed all safety training requirements within established time frame.
- Use appropriate training forms and reporting to record all training. Copies of the form must be retained and delivered to the designated safety or health office (OESO and EOHW). Originals should be sent to Engineering and Operations Safety and Training Coordinator, to be placed in personnel file.
- Providing site-specific training for employees, students and visiting faculty to include the specific hazards present in their workplace.
- Training shall be provided to new employees and where there is a change in an employee job assignment, a change in machines, equipment or processes that present a new hazard, or when there is a change in safety procedures.
- Working with representatives of OESO and departmental supervisors to identify training needs of their departments.
- Retraining shall be provided when there is reason to believe either through practice or inspection, that there are deviations from or inadequacies in the employee's knowledge or use of safety procedures, or on a periodic basis.

Supervisors are responsible for:

- Monitoring employee and shop compliance with safety training requirements.
- Influence employees on how to identify and request training for specific workplace hazards.
- Working with representatives of OESO and departmental supervisors to identify training needs of their departments.
- Ensuring that all employees and visitors under their supervision have completed all safety training requirements within established time frame.
- Ensuring that all departmental training records are transmitted to OESO, EOWH and Training and Safety Coordinator as appropriate.
- Communicate to Training and Safety Coordinator, OESO and EOHW, where there is a change in an employee job assignment, a change in machines, equipment or processes that present a new hazard, or when there is a change in safety procedures.

SAFETY TRAINING PROGRAM

The Safety Training Program is implemented through a two-tier plan involving both general and site-specific training. General information regarding occupational hazards is presented in Tier 1 training, which is provided by OESO. Tier 1 training focus on “generic” information about the epidemiology, regulatory requirements, institutional policies and control measures for occupational hazards. This training is then enhanced by site-specific information, Tier 2, which is provided by supervisors and managers and expands on the foundation established in Tier 1. The details of the two-tier plan are as follows:

TIER ONE: TRAINING PROVIDED BY THE OCCUPATIONAL AND ENVIRONMENTAL SAFETY OFFICE (OESO)

DUKE ORIENTATION

Target Population	All new employees.
Training Requirements	Required within two weeks of employment for all employees or at the time of position or departmental transfers.
Training Availability	Engineering and Operations employees will be provided safety orientation training on-line at www.safety.duke.edu .
Training Topics	Information is provided at Orientation on Safety Culture at Duke and how to access on-line training. The following training modules satisfy both the JCAHO orientation requirements for the Environment of Care and the OSHA orientation requirements for Bloodborne Pathogens, TB Exposure Prevention, Fire Safety, Fire Extinguisher, and Hazard Communication Training. <ul style="list-style-type: none">• Environment of Care• Bloodborne Pathogens• TB• Ergonomics• Chemical Safety• Hazardous Materials• Security• Utilities• Emergency Preparedness• Medical Equipment and Fire and Interim Life Safety

Safety Update Training

Target Population	All new employees.
Training Requirements	Training requirements are determined by the specific standard under which the training is required. Most standards require training annually.
Training Availability	Employee update training is available on-line at www.safety.duke.edu/OnlineTraining/ .
Training Topics	Training requirements are based on work location and exposure determination. A list of required courses for an individual may be accessed the employee on-line at www.safety.duke.edu/OnlineTraining/ . Questions about training requirements should be directed to the Engineering and Operations Training and Safety Coordinator at 684-5540 or the OESO Training Coordinator at 684-2794.

EXPOSURE DETERMINATION

Safety training requirements for a position are determined through a risk assessment process referred to as exposure determination. The risk assessment may be performed by OESO and/or the supervisor. These exposure determinations identify the employee’s potential for exposure to hazardous materials or environments and determine the job specific safety training requirements.

DEFINITIONS

Annual – For the purpose of determining when retraining is required, annual means within the past 365 days.

DOCUMENTATION

Training will be documented at the time training is taken and documentation will be maintained in the OESO Safety Management Database.

TIER TWO: TRAINING PROVIDED BY DEPARTMENTS

Training Types

Site Specific Training

Target Population	All Employees, student and visiting faculty.
Training Requirements	Training is required as follows: <ul style="list-style-type: none">• When an employee begins work and before the individual may work without direct supervision.• When an employee is given a new assignment for which training has not previously been received• Whenever new categories of hazards are introduced by new substances, processes, or equipment.• Whenever the supervisor is made aware of a new or previously unrecognized hazard.
Training Availability	Employee update training is available on-line at www.safety.duke.edu/OnlineTraining/ .

Safety policies and training requirements for each work unit will be based on job-specific requirements. The supervisor must evaluate each position at the time the position is established to determine the exposure potential by hazard-type for each employee. The OESO is available to assist the supervisor in making the exposure determinations. Additional safety training requirements may be identified by OESO.

Supervisors must provide workplace-specific training to employees to include the specific hazards associated with each job. At a minimum, the following elements should be included in the training sessions:

- A review of the workplace-specific written safety policies.
- Specific training on the hazards associated with the materials and equipment used by the employee.
- Specific training on how employees are to protect themselves against the hazard in the workplace.
- Recognition and assessment of health and safety risks.
- Regulations applicable to their work.
- Basic information on the location of manuals safety devices and personal protective equipment.
- Basic procedures to follow in the event of emergencies, especially fires, chemical spills and medical emergencies.

DOCUMENTATION

Supervisors should forward all records of employees trained, the name of the trainer, when the training occurred, and the topics covered by the training to the Engineering and Operations Training and Safety Coordinator. Documentation should include safety meeting or training sessions, agendas, sign-up sheets with the Duke unique ID and signature of the attendees, and copies of any written communications.



GENERAL SAFE WORK PRACTICES

PURPOSE

It is the policy of E&O that accident prevention shall be considered of primary importance in all phases of operation and administration. It is the intention of E&O management to provide safe and healthy working conditions and to establish and insist upon safe practices at all times by all employees.

The prevention of accidents is an objective affecting all levels of E&O; it is therefore, a basic requirement that each supervisor make the safety of all employees an integral part of his or her regular management function. It is equally the duty of each employee to accept and follow established safety regulations and procedures.

Your cooperation in detecting hazards, reporting dangerous conditions and controlling workplace hazards is a condition of employment. Inform your supervisor immediately of any situation beyond your ability or authority to correct. Employees will not be disciplined or suffer any retaliation for reporting a safety violation in good faith.

E&O maintains a safety and health program conforming to the best practices of our field. To be successful, such a program must embody proper attitudes towards injury and illness prevention on the part of supervisors and employees. While no plan can guarantee an accident free workplace, following the safety procedures set forth in this manual will significantly reduce the risk of danger to you and your co-workers.

To the greatest degree possible, management will provide all mechanical and physical protection appropriate for personal safety and health, but our employees must bear primary responsibility for working safely. A little common sense and caution can prevent most accidents from occurring.

It requires the cooperation in all safety and health matters, not only of the employer and employees, but between the employee and all co-workers. Only through such a cooperative effort can a safety program in the best interest of all established and preserved. Safety is no choice, it's a chance!



SAFETY DO's AND DON'TS FOR ALL EMPLOYEES

DO follow the safe practices and rules contained in this manual including supplemental rules and practices communicated on the job. All employees shall report all unsafe conditions or practices to supervision.

DO practice good housekeeping in work areas at all times. Clean up all waste and eliminate serious hazards in your work area.

DO wear suitable clothing and footwear at all times. Personal protection equipment (steel toed boots or shoes, eye protection, gloves, etc.) should be worn whenever appropriate.

DO participate in safety meetings conducted by their supervisor.

DO ensure work is well planned and supervised to avoid injuries in the handling of heavy materials and while using equipment.

DO ensure all guards and other protective devices are adjusted and in proper place, and deficiencies are report promptly to supervisor.

DO report *all* injuries to the supervisor so that arrangements can be made for medical first aid treatment.

DO use the large muscles of the leg instead of the smaller muscles of the back. Avoid twisting while carrying a load when lifting heavy objects. Proper lifting techniques are to be used by employees to avoid over exertion and strain when carrying loads.

DO wear and maintain required personal protective equipment.

DON'T use chemicals without fully understanding their toxic properties and without the knowledge required to work with the chemicals safely.

DON'T throw things, especially material and equipment. Dispose of all waste properly and carefully.

DON'T work under the influence of intoxicating liquor or drugs, including prescription drugs which might impair motor skills and judgment, shall not be allowed on the job without approval from EOHS.

DON'T horseplay, or participate in acts that tend to have an adverse influence on safety or well-being of other employees.



GENERAL SAFETY

SAFETY EQUIPMENT

Proper use of safety equipment is necessary for your protection.

Use all safeguards, safety appliance, or devices furnished for your protection and comply with all regulations that may concern or affect your safety. All safety equipment shall be operated in accordance with manufacturer's instructions found in the operating manual.

Certain jobs require standard safety apparel and appliances for the protection of the employee. Your supervisor is aware of the requirements and will furnish you with the necessary approved protective appliances. These items shall be worn and effectively maintained as a condition of your continued employment and part of our mutual obligation to comply with the Occupational Safety and Health Act.

No loose or large jewelry shall be worn around power equipment.

Your supervisor will advise you as to what protective equipment is appropriate for your job. If you have questions or concerns about safety on the job, then contact your supervisor.

FIRE SAFETY

Be aware of the location of the closest fire extinguishers.

All fire doors and shutters must be maintained in good operating condition

Proper clearance must be maintained below sprinkler heads.

A Hot work Permit is required before performing hot work inside of buildings. Obtain blank permit forms from Fire Safety Division, 1411 Hull Street 684-5609.

Deliver the filled in Hot Work Permit form to Fire safety at least 48 hours before starting hot work. The completed permit must be faxed to Fire Safety Division at 684-8427.

Fire Suppression and Fire Alarm systems – contact the Fire Safety Division at 684-5609, 48 hours before working on or around these systems. Note: operations that create dust and particles, such as sanding or spray painting, may affect fire systems.

Also see the welding, cutting, brazing and soldering section.

WORK AREA CLEANLINESS AND WASTE CLEAN-UP

Work sites must be clean and orderly. All combustible scrap, debris and waste must be stored safely. The accumulated combustible dust must be removed routinely. Metallic or conductive dust must be prevented from entering or accumulating on or around electrical enclosure or equipment.

Oily and paint soaked rags are combustible and should be discarded in airtight metal containers only.

Paint spray booths, dip tanks and paint areas must be cleaned regularly.

All work sites must be clean and orderly. All work surfaces must be kept dry or appropriate means taken to assure that surfaces are slip-resistant. All spill materials or liquids should be cleaned up immediately and combustible scrap, debris and waste stored safely and removed from the work site promptly.

Equipment must be properly stored so that sharp edges do not protrude into walkways.

Changes in elevations or steps less than 4 inches must be clearly marked on the walking surface.

Fire extinguishers must remain accessible at all times. Means of egress should be kept unblocked, well lighted and unlocked during work hours. Excessive combustibles (paper) may not be stored in work areas.

Aisles and hallways must be kept clear at all times. Workplaces are to be kept free of debris, floor storage and electrical cords.

FLOORS

Workroom floors must be in a clean and, as much as possible, dry condition.

Drainage mats, platforms, or false floors should be used where wet processes are performed. Floors must be free from protruding nails, splinters, holes, and loose boards or tiles. Permanent aisles or passageways must be marked.

Covers that leave no openings more than one inch wide must be protect floor holes. Floor openings into which persons can accidentally walk must be guarded by standard railings and toe boards. Open-sided floors, platforms, and runways higher than four feet must be guarded by standard railings. Toe boards must be used wherever people can pass below or hazardous equipment or materials are below.

TOOL MAINTENANCE

Faulty or improperly used tools are a safety hazard. All employees shall be responsible for ensuring that tools and equipment (both company and employee-owned) used by them or other employees at their workplace are in good condition.

Portable power tools pose a special hazard to employees because they are deceptively small and light, yet they can do great bodily harm if used improperly or poorly maintained. These rules apply to all power tools, but are especially important when handling portable saws and drills.

Appropriate safety glasses, face shields, etc. must be worn while using hand tools or equipment which might produce flying materials or be subject to breakage. Eye and face protection must be worn when driving in tempered spuds or nails.



PERSONAL PROTECTIVE EQUIPMENT

PURPOSE

Personal Protective Equipment is provided to all employees to reduce the chance of on the job injuries, to enable employees to work in a safe manner, to reduce the risk of lost time injuries, and to protect employees from dangers inherent in working in a healthcare environment. Protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

WHO PROVIDES?

Engineering and Operations will provide Personal Protective Equipment and training to all E&O employees exposed to hazards requiring PPE. Where equipment is very personal in nature and is usable by workers off the job, departments have the flexibility to decide what portion of the cost they will bear. Examples of PPE that is personal in nature and often used away from the worksite include prescription safety glasses and safety shoes. Contract Companies will provide Personal Protective Equipment to their employees. The provided personal protected equipment will include compliance with OSHA Standard 1910 for PPE.

Departments shall:

- Conduct PPE Hazard Assessments that identify when, where and what PPE is required.
- Provide appropriate PPE and training to employees exposed to hazards requiring PPE.
- Ensure that employees use PPE appropriately when required.
- Post appropriate caution signs must be posted in areas requiring PPE. These areas include eye, face, head, hearing, and hand protection areas.

Supervisors shall:

- Ensure that PE hazard Assessments are conducted when appropriate.
- Ensure that appropriate PPE is available to employees.
- Ensure that PPE is used properly where it is required.

Employees shall:

- Use PPE in Accordance with instructions and training received.
- Care for their personal protective equipment properly and guard against damage and contamination.
- Report PPE malfunctions or problems to supervisory personnel.

PROCEDURES

General

PPE will be provided and used in the following circumstances:

- Where it has been determined that adequate engineering, and/or administrative controls do not reduce exposure potential to a safe level.
- Where development or installation of engineering controls are pending.
- Where it has been determined that PPE is necessary to protect the health and safety of employees.
- During short term, non-routine operations for which engineering controls are not practical.
- During emergency situations such as spills, ventilation malfunctions, damage control, activities, etc.

PPE TRAINING

PPE should be worn whenever personnel are on the job site and actively working. Engineering and Operations shall provide training and resources to each employee who is required to use PPE. Employees should be trained on when, and where PPE is necessary including how to properly don, duff, wear and make adjustments. Employees will be trained limitations of the PPE and the proper care maintenance, useful life and disposal of the PPE. Each affected employee shall demonstrate an understanding of the required training, and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE. If the supervisor has reason to believe that any affected employee who has already been trained does not have the understanding and skill required, the employee must retrain.

STORAGE OF PERSONAL PROTECTIVE EQUIPMENT

PPE shall be properly stored to protect against environmental conditions that might reduce the effectiveness of the equipment or result in contamination during storage. PPE having a shelf-life limitation shall be checked periodically to ensure compliance with the expiration date.

MAINTENANCE OF PERSONAL PROTECTIVE EQUIPMENT

PPE, including employee-owned PPE, shall be maintained in a sanitary and serviceable condition. PPE requiring specialized servicing as specified by the manufacturer shall be serviced by qualified personnel.

PPE issued for exclusive use by an individual employee shall be visually inspected for defect or wear by the employee before each use. Such PPE shall be inspected frequently by the supervisor to ensure its serviceability. Defective or damaged personal protective equipment shall not be used. Report any defective equipment immediately.

PPE subject to use by more than one individual, such as visitor's PPE or PPE used only occasionally, shall be cleaned and disinfected by the last individual to use it, before being made available for use by subsequent personnel. Where disinfection of PPE is not applicable (i.e., thermal gloves, leather gloves, etc.), it is recommended to wash hands or use hand sanitizer before and after use.

PPE intended for emergency use shall be cleaned, disinfected, and placed in an operable condition after each use by the last individual to use it. Such equipment shall be inspected monthly to ensure its serviceable condition. Records shall be kept of these inspections.

Food may not be eaten in places where there is a hazard of exposure to toxic materials or other health hazards. Ask your supervisor to identify safe eating places. During cleanup of toxic or hazardous materials, protective clothing must be worn.

HEARING PROTECTION

Feasible engineering or administrative controls shall be utilized to protect employees against sound levels in excess of those shown in Table D-2, OSHA Standard 1926.52. Hearing protection is required and will be available to every employee working in areas where consistent noise levels exceed 85 dB(A) or impact noise above 140 decibels. To be effective, ear protectors must be properly fitted and employees will be instructed in their use and care. Personnel frequently exposed to certain high noise levels will participate in the OESO hearing protection program.

EYE AND FACE PROTECTION

Employees are required to wear safety glasses at all times in areas where there is a risk of eye injuries such as flying particles or dust. Where there is a danger of large flying particles or corrosive materials, employees must wear protective goggles and/or face shields.

Safety goggles, glasses and face shields shall correspond to the degree of hazard, i.e., chemical splashes, welding flashes, impact hazard, dust, etc. and shall meet the requirements of ANSI Z87.1-1991, "Practice for Occupational and Educational Eye and Face Protection." Do not alter or replace an approved appliance without permission from your supervisor.

Employees involved in welding operations shall be furnished with filter lenses or plates of at least the proper shade number.

Employees exposed to laser beams shall be furnished suitable laser safety goggles that will protect for the specific wavelength of the laser and be optical density adequate for laser involved.

Safety Glasses

Safety glasses shall meet the impact requirements of ANSI Z87.1 or equivalent. Lenses and frames shall be marked with the manufacturer's symbol to indicate compliance with ANSI Z87.1. The use of approved lenses in approved frames is not acceptable. Tinted lenses in safety glasses for minimizing solar glare are permissible only when used outdoors during daylight hours. Prescription safety glasses can be worn by personnel whose vision requires the use of corrective lenses.

Side Shields

Side Shields are required on safety glasses worn in eye-hazard areas and operations, unless it has been specifically determined for a particular operation that it is not possible for injuries objects or energies to enter the wearer's eyes from the side or that the reduced peripheral vision would pose a greater hazard to the employee. Side shields shall not be easily detachable from the frames; snap-on or slip-on types of side shields are not acceptable unless secure.

Goggles

Goggles or eyecups shall be worn to protect against dust particles, liquids, splashes, mists, spray, and injurious radiation. They shall be designed to protect the eye sockets and the facial area around the eyes, thus protecting the wearer from side exposure. They can be worn over corrective lenses can be incorporated into the goggle by mounting behind the protective lens.

Laser Protection

Eye protection for laser operations must be in compliance with ANSI Z136.1-2007 Safe Use of Lasers, or equivalent.

Welding Shades

Shades in the form of spectacles, goggles, hand-held shields, or helmets are necessary when you are welding, brazing or torch-cutting, or when such work is being performed near you. Hazard assessment for the operation will determine the appropriate shade value. Filter lenses must meet the requirements for shade designations in OSHA 1910.133(a)(5) and be identified as such.

NECK AND FACE PROTECTION

Head, neck and face protection must be worn when employees are exposed to working environments where they might be struck on the head, strike their head against an overhead hazard, entangle their hair or be exposed to flying debris (e.g., chips, particles, sand, molten metal, etc.), or to chemical splashing, high voltage, electric shock or a combination of these hazards.

Face Shields

Face shields shall be worn to protect the face and front of the neck from flying particles and sprays or splashes of hazardous liquids.

Hair Protection

Long hair, including long facial hair, which is susceptible to becoming entangled in moving machinery or drawn into such machinery by the generation of static electricity, shall be controlled by caps or hair nets.

Welding Helmets

Welding helmets are designed to protect the welder from particles of hot metal and their eyes from arc radiation. Hand held shields are available for those standing nearby and observing. When selecting a helmet, be sure the helmet, be sure the helmet packaging and product advertises either "ANSI Z87.1-2003" or "Z87+."

STEEL TOED SHOES

Appropriate footwear including steel-toed shoes must be worn in areas where there is a risk of foot injuries due to falling, rolling, or puncture from objects; slips, trips and falls from slippery or wet surfaces; and exposure to electrical or chemical hazards. Canvas material type shoes are not permitted in foot hazard areas. Closed toe and heel shoes must be worn in areas where hot, corrosive, or poisonous substances are used.

All safety shoes must meet ANSI Standard Z41.1 and the shoe must be stamped as such.

HEAD PROTECTION

Head protective equipment (hard hats/helmets) shall be worn in areas where there is a possible danger of head injuries from impact, flying or falling objects, or electrical shock and burns. Hard hats/helmets shall meet the performance requirements of ANSI Z89.1, "Standard for Industrial Protective Helmets."

In general, protective helmets or hard hats should do the following:

Resist penetration by objects.

Absorb the shock of a blow.

1. Be water-resistant and slow burning.
2. Have clear instructions explaining proper adjustment and replacement of the suspension and headband.
3. Must have a hard outer shell and a shock-absorbing lining that incorporates a headband and straps that suspend the shell from 1 to 1¼ inches (2.54 cm to 3.18 cm) away from the head and must meet ANSI Standard Z89.1-1986 or provide an equivalent level of protection.
4. Must be replaced if signs of perforation, cracking, or deformity of shell.
5. Must be replaced if indication of exposure of the brim or shell to heat, chemicals or ultra-violet light and other radiation (in addition to a loss of surface gloss, such signs include chalking or flaking).
6. ***Hard hats must be worn with the bill forward to protect employees properly.***

HAND PROTECTION

Suitable hand and lower arm protection shall be provided and used where machinery, equipment or operations present the hazards of mechanical injury, extreme heat or cold exposure, chemical exposure, blood and body fluids (BBF), hazardous drugs, radiation, electrical shock, vibration, or a combination of these hazards.

Gloves

- ***Thermal Gloves***
 - A variety of gloves are designed to protect workers' hands and arms from the extremes of hot or cold when working with autoclaves, cryogenics, kitchen equipment, food, welding, or laboratory equipment. Gloves should be chosen based on the extreme of temperatures expected along with conditions of wet, dry, and abrasives.
- ***Cut-Resistant Gloves***
 - Kevlar or Dyneema fiber knit gloves, gloves containing metal fibers, or metal mesh gloves are used when workers are at risk of being cut by equipment or the products they are handling.
- ***Chemical Resistant Gloves***
 - These gloves can be disposable or re-usable and generally do not protect against all chemical hazards. The appropriate glove material must be selected that provides resistance to the specific chemical hazard that will be encountered such as acids, alcohols, oils, corrosive, and solvents.
- ***Electrical Gloves***
 - Rubber and leather insulating gloves, mittens, and sleeves are designed to protect the worker from electrical hazards such as fire ignition, electric shock, arc flash and blast. The proper gloves shall be chosen in accordance with the NFPA 70E (2009) *Standard for Electrical Safety in the Workplace* and tested to appropriate voltage meeting ASTM D120-09 *Standard Specification for Rubber Insulating Gloves*.

- ***Anti-Vibration Gloves***

Padded gloves are used to prevent hand-arm vibration syndrome (HAVS) that often occurs from repeat exposure to vibration. Highly specialized tasks such as operating chain saws, grinders, nail guns, sanders and any machinery that produces high levels of vibration would put employees at risk for HAVS.

- ***General Purpose Gloves***

These gloves are available in jersey, canvas or string knits, leather, or as leather palm work gloves. They protect against abrasion and can be unlined or lined for cold weather.

- ***Finger Cots***

Made of latex, nitrile rubber, vinyl, cotton, or leather, these individual finger covers can be used in the healthcare industry, food processing and when handling rough, sharp, and hot surfaces.

RESPIRATORY PROTECTION

Employees may be exposed to respiratory hazards that require the use of respirators, such as during emergency response, handling animals, working with hazardous chemicals, disturbing asbestos, welding, painting, etc.

Respirators will be used as part of the OESO respiratory protection program. This program requires annual fit testing and periodic medical physicals.

1. When engineering or administrative controls are not effective in controlling toxic substances, appropriate respiratory protective equipment will be provided and shall be used.
2. Respiratory protective devices approved by the Mine Safety and Health Administration/National Institute for Occupational Safety and Health for the specific contaminant to which the employee is exposed shall be used.
3. Respiratory protective devices provided by supervisors shall be appropriate for the hazardous material involved and the extent and nature of the work requirements and conditions.
4. Employees required to use respiratory protective devices shall be thoroughly trained in their use.
5. Contractors should have a written respirator protection program that includes respirator training, fit-testing and medical qualification documentation.

PPE EXAMPLES

Source of Hazard	Affected Body Part	Recommended PPE
Chemical and Splashing Liquid (e.g., acid and chemical handling, hazardous drug preparation and administration, biological substances, food processing, painting, cleaning products, pesticide and herbicide use, etc.)	EYES	Goggles, safety glasses with side shield (not for chemical protection)
	HEAD, NECK, FACE	Chem-resistant Tyvek hood, face shield, chemical/liquid resistant hoods/caps, fluid-resistant surgical mask/face shield combinations (generally not for chemical protection)
	FEET and TOES	Slip-resistant shoes, chemical/liquid resistant overshoes
	HAND	Chosen based on specific hazard: Nitrile, butyl rubber, neoprene, Silver Shield, or other chemical resistant gloves or mittens, chemotherapy gloves
	Body: torso, arms, legs	Chemical/liquid resistant clothing
High Heat (dry) (e.g., Burns from hot surfaces, sparks, Bunsen burners, welding, kitchen equipment, furnace operations, etc.)	EYES	Goggles, safety glasses with side shields, insulated helmet, cap or hood
	HEAD, NECK, FACE	Face shield, flame retardant/insulated helmet, cap or hood
	FEET and TOES	Leather shoes, foundry shoes
	HANDS	Hand protection made from insulated or flame resistant materials such as Nomex, Kevlar, leather, terry, cotton, etc.
	BODY: torso, arms, legs	Clothing made from flame resistant or insulated material such as Nomex or leather
High Heat (liquid) (e.g., Burns from hot liquids, molten metal, steam, food preparation, etc.)	EYES	Goggles, Safety glasses w/side shields
	HEAD, NECK, FACE	Face shields, protective hoods/helmets
	FEET and TOES	Leather shoes. Foundry shoes
	HANDS	Insulated gloves with added liquid resistant properties when necessary
	BODY: torso, arms, legs	Clothing made from treated wool or cotton, leather or specialty fabrics such as Nomex
Cryogenics/Extreme Cold (e.g., cryo-burns, frostbite, permanent eye damage from liquid nitrogen, CO2 non-insulated equipment, etc.)	EYES	Goggles
	HEAD, NECK, FACE	Face Shield
	FEET and TOES	Appropriate safety shoes
	HANDS	Cryo-gloves
	BODY: torso, arms, legs	Lab coat, long pants, aprons, insulated cotton or synthetic fabrics
Dust/Flying Debris (e.g., Chipping, grinding, sanding, chiseling, woodworking, grounds keeping, coal handling, buffing, general dusty conditions, etc.)	EYES	Goggles, safety glasses w/side protection
	HEAD, NECK, FACE	Face Shield, hard hat, helmet, hood
	FEET and TOES	Safety shoes if appropriate
	HANDS	Appropriate protective gloves
	BODY: torso, arms, legs	Protective clothing made from synthetic or natural fabrics such as Kevlar or treated cotton/wool or cotton duck

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Impact/Compression (e.g., Crushing or penetration from machinery, rotating equipment, materials handling, carpentry, construction, etc.)	EYES	Goggles, safety glasses w/side shields
	HEAD, NECK, FACE	Class G, E, or C helmets
	FEET and TOES	Safety toes, and metatarsal guards
	HANDS	Leather, Kevlar or other specialty material
	BODY: torso, arms, legs	Leather, Kevlar or cotton duck clothing
UV/IR Radiation (e.g., Optical radiation from welding, cutting torch brazing or soldering, glare, laser, working outdoors, etc.)	EYES	Spectacles, welding face shield, goggles, or helmets with appropriate shaded or special purpose lenses.
	HEAD, NECK, FACE	Same as above
	FEET and TOES	Closed-toe shoes
	HANDS	Sunscreen
	BODY: torso, arms, legs	Sunscreen; clothing with SPF rating
Electrical Hazards (e.g., Open circuits, energized electrical equipment or utilities, electrical arcs, etc.)	EYES	Safety glasses
	HEAD, NECK, FACE	Hard hat, Class E
	FEET and TOES	Electrical hazard footwear
	HANDS	Rubber gloves and insulating sleeves, Class 00-4 based on max voltage exposure
	BODY: torso, arms, legs	Garments made from Protera synthetic material, flame retardant clothing
Puncture/Cuts/Abrasions (e.g., Sharp edges from tools and machines, food preparation, surgical equipment, syringes, etc.)	EYES	Safety glasses w/side shields
	HEAD, NECK, FACE	Face shield
	FEET and TOES	Safety toed and puncture resistant soles
	HANDS	Material depends on specific hazard and severity, but can include leather, rubber, cotton, Kevlar, metal mesh, etc.
	BODY: torso, arms, legs	Clothing made from Kevlar, treated wool or cotton, duck or leather.
Slippery/Wet Surfaces (e.g., Oil, water, soaps, wax, chemicals, food handling areas, etc.)	FEET and TOES	Slip resistant safety shoes
Fall Hazards (e.g., Unprotected elevated working surfaces)	BODY	Personal fit arrest system
Noise (e.g., Mechanical rooms, machining, grinding, sanding, cage washing, dish washing, pneumatic equip., grounds equipment, generators, chillers, motors saws, jackhammers, etc.)	HEAD, NECK, FACE	Ear plugs, ear muffs, or canal caps
Respiratory (e.g., Emergency response, hazardous chemicals, powders, mists, vapors, smoke or gases, painting, welding, cutting, brazing, distribution asbestos, lead, silica, or other particulate hazards, working with animals entering fume hood plenums, grounds equipment, etc.)	RESPIRATORY	Appropriate respirator can be a filtering face piece such as an N-95). PAPR half mask air-purifying, full-face air-purifying, or supplied air (including SCBA) depending on the hazard, must be approved by OESO

PROTECTIVE CLOTHING

Protective clothing includes coveralls, aprons, sleeves, leggings, and garments that cover the body. These items are intended to protect the wearer against heat, cold, moisture, toxic chemical, acids, corrosives, electricity, biological and physical hazards such as sharp objects, flying objects, excessive dust, grease, etc.

When specific items of personal attire are judged to be hazardous to an operation or work environment, their use shall be prohibited. Some examples: The wearing of long sleeves, jewelry, and loose-fitting or dangling clothing shall not be permitted around rotating machinery; silk, wool, rayon, nylon, and other synthetic fiber garments shall not be worn in any question in which the generation of static electricity would create a hazard.

Suitable attire, including appropriate shoes, normally worn by prudent individuals to avoid unnecessary risk, is the responsibility of the employee and is considered a condition of employment.

SPECIAL CLOTHING

Where employees are required to wear special protective clothing that necessitates changing from street clothes, a designated location for changing clothes and suitable clothing lockers will be provided.

Special protective clothing worn on the job shall not be worn or taken away from the premises by employees, since this may expose other persons to unnecessary risk caused by contaminated clothing. The Department will be responsible for cleaning and drying special clothing contaminated with or exposed to hazardous materials or for proper disposal in the event contaminated clothing needs to be discarded.

Special clothing for *biological hazards* is covered under Section VI of the Duke University Safety Manual.

Paperlike Fiber

Disposable suits made of this material provide protection against dusts.

Tyvek[®]

Garments of differing formulations provide a variety of protection ranging from non-hazardous dusts to dry particulate hazards such as lead dust, mold, asbestos, and other aerosol hazards.

Tychem[®]

These garments protect against a wide range of chemical hazards ranging from light to moderate liquid splash to higher levels of protection for hazmat applications

Kevlar[®]

Kevlar is a synthetic fiber which is highly resistant to cuts and punctures.

Treated Wool and Cotton

Protective clothing made from treated wool and cotton adapts well to changing workplace temperatures and is comfortable as well as fire resistant. Treated cotton and wool clothing protects against dust, abrasions, and rough and irritating surfaces.

Duck

Duck is a closely woven cotton fabric which protects against cuts and bruises during the handling of heavy, sharp, or rough materials.

Leather

Leather gloves protect against dry heat flame, cuts, and abrasion.

Rubber, Rubberized Fabrics, Neoprene and Plastics

Protective clothing made from these materials protects against certain acids and other chemicals.

Clothing for protection from *electrical hazards* shall conform to the NFPA 70E Table 130.7 © (8), Standards on Protective Equipment.

Protera™

Protera garments meet the NFPA 70E Category 2 requirements for protection from electric arc hazards.

Nomex®

This is a flame resistant synthetic fiber that will not melt, drip or support combustion and is combined with high break strength, tear resistance and abrasion resistance properties.

HIGH VISIBILITY CLOTHING

When employees are performing work in the road or in the right-of-way, they shall wear high-visibility clothing that conforms to ANSI/ISEA 107-2004 *High-Visibility Safety Apparel and Headwear*, Class 2 requirements at a minimum.

INFECTION CONTROL

Bunny suits, coveralls, and gowns will be provided all E&O employees where appropriate.

PPE HAZARD ASSESSMENT CERTIFICATION

REQUIRMENTS

PPE Hazard Assessments are necessary to determine if hazards are likely to be present in the workplace which necessitates the use of PPE. Appropriate PPE is then selected and required for use by each affected employee as protection from the identified hazards. This process must be verified through a written certification that identifies the workplace evaluated, the person certifying that the evaluation has been performed, the date(s) of the hazard assessment, and the document as a certification of hazard assessment. The workplace will be reassessed as necessary.

CONDUCTING A PPE HAZARD ASSESSMENT

A PPE Hazard Assessment Certificate can be filled out for a specific worksite area, job position or an individual. Such a certificate (with instructions) is available on the OESO website (www.safety.duke.edu) and can be found in the supplement to this manual entitled "PPE Hazard Assessment Certificate". Input from affected employees is recommended when identifying the hazards. This form is for the purpose of identifying workplace hazards and the correct PPE to be worn.

If a more comprehensive Job Hazard Analysis (JHA) has been done or is planned, which will cover PPE requirements that process can serve as the PPE Hazard Assessment.



VEHICLE SAFETY

This policy has been developed to promote a proactive approach to safe driving practice, to provide adequate training for those who operate Duke vehicles and to combine the various vehicle safety practices and procedures into a comprehensive standard with the goal of reducing the number of vehicle accidents.

DEFINITIONS

Duke Vehicles: Vehicles owned or leased by Duke University by which persons or property may be transported. These include some specially equipped vehicles that may not be licensed for road use to include, but not limited to, golf carts, forklifts grounds equipment and others.

Duke Driver: A person who is authorized to operate a Duke vehicle including employees, students, volunteers and contract employees.

Commercial Motor Vehicles: Vehicles owned or leased by Duke University which meet the following criteria in accordance with Part 383 of the Federal Motor Carrier Safety Regulations:

- Vehicles whose gross vehicle weight or gross combined vehicle weight exceeds 26,000 pounds.
- Vehicles designed to carry 16 or more people (including the driver).
- Vehicles that carry hazardous materials required by Federal law to be identified with hazmat placards.

Commercial Driver's License (CDL): A license issued by a state to an individual who resides in the state that authorizes the individual to drive a class of commercial motor vehicle.

Low-Speed Vehicle (LSV): A Low-Speed Vehicle is a motor vehicle that:

- Is 4-wheeled
- Has an attainable speed of at least 20 mph and not more than 25 mph
- Has a GVWR of less than 3,000 pounds.
- Is registered for road use by the State of North Carolina

Utility Vehicle: A vehicle designed and manufactured for general maintenance, security, recreational, and landscaping purposes, but does not include vehicles designed and used primarily for the transportation of persons or property on a street or highway.

RESPONSIBILITY

Departments shall:

- Designate to Engineering and Operations Human Resources/Training Coordinator those positions where driving is required.
- Identify to Employee Occupational Health and Wellness (EOHW) all drivers who are required to have a Commercial Driver's License (CDL).
- Orient all new Duke drivers upon assignment to driving positions. Orientation shall include discussion of this policy, specific Departmental policies, and any additional vehicle-specific requirements. This orientation will be documented on the Vehicle Safety Policy Review Checklist (Supplement E of this Safety Manual) and maintained by the Engineering and Operations Human Resources/Training Coordinator.
- All new Engineering and Operation's drivers are required to complete an approved Defensive Driving Course as well as an orientation to Duke Vehicle Operation within sixty (60) days of their assignment date to a driving position.
- Additional training will be offered to ensure the safe operation of specially equipped vehicles.
- Appropriate action will be taken against Duke drivers who fail to comply with the Vehicle Safety Policy.
- Human Resources will routinely monitor E&O drivers for revocation of driver's license.
- Department vehicles must be managed to ensure compliance with specific requirements of this policy.

REQUIREMENTS

Only authorized Engineering and Operations employees are approved to drive Duke vehicles. Vehicle specific determinations will be made based on job responsibilities and license requirements.

All new Duke drivers will complete the approved Defensive Driving Course as well as an orientation to Duke Vehicle Operation within sixty (60) days of their assignment date to a driving position.

Appropriate action will be taken against Duke drivers who fail to comply with the Vehicle Safety Policy.

All Duke drivers must be evaluated upon reporting a change in medical condition that may affect their ability to drive.

Corporate Risk Management will review accidents involving a Duke vehicle in which the Duke driver has been cited by the investigation police officer, and each incident where a Duke driver has been cited for a violation of the NC Motor Vehicle Law, or the Duke Vehicle Safety Policy, while operating a Duke vehicle.

Additional training will be offered as required to ensure the safe operation of specially equipped vehicles.

All Department vehicles must be managed to ensure specific compliance requirements are maintained in conjunction with the OESO Vehicle Safety Policy.

DUKE DRIVER RESPONSIBILITIES

- Maintain a valid driver's license.
- Comply with all appropriate sections of this policy, including reporting procedures.
- Be at least 18 years old. **Exception:** Duke drivers operating passenger vans carrying more than 11 people (1 driver and more than 10 passengers) must be at least 21 years old.
- Have at least 3 years of driving experience if operating vehicles for the specific purpose of transporting passengers.
- Operate Duke vehicles in a safe manner as outlined in the policy and required state law.
- Report to their supervisor any changes in medical condition that may affect their driving.
- Report any loss of driver's license to their supervisor no later than the next business day.
- No decals, bumper stickers, signs, emblems or logos other than those associated with Duke University, Duke University Health System, the Duke Medicine or those required by city or state ordinance are permitted on Duke vehicles.

PROCEDURES

The following are general procedures which apply to all Duke vehicles and Duke drivers. However, in addition to these procedures, more stringent regulations may apply to particular operations or specially equipped vehicles and are covered under specific policies. Duke drivers are required to familiarize themselves with all policies governing their duties and function as vehicle operators.

AUTHORIZATION TO OPERATE DUKE VEHICLES:

DRIVING HISTORY

Prior to assignment to a position that requires a driver's license and the routine operation of a Duke vehicle, the assigning department shall obtain and review the assignee's driving history (past 3 years) from the assignee's resident state Department of Motor Vehicles. Duke Human Resources can provide this service for new employees or arrange for this service for non-employees upon request from the department.

All Engineering and Operations employees will be subject to driver's license routinely monitored for revocation. E&O may choose to check motor vehicle records more frequently in the case of Duke Drivers with concerning changes in their motor vehicle record.

The DMV history check will initiate every two years for each active Duke driver and at least annually for Duke Drivers who are required to have a CDL. E&O may choose to check motor vehicle records more frequently in the case of Duke Drivers with concerning changes in their motor vehicle record.

Any person applying for new employment in a driving position, or contracted employee who will be assigned to a driving position, whose state driving history or Duke Driving Record reveals any of the following conditions will not be allowed to operate a Duke vehicle.

- A conviction for driving while impaired (DWI), or a conviction for reckless/careless driving within a three year period from the date of the conviction to the date of employment/assignment.

Note (1): For persons having a DWI conviction prior to the three year limitation, the state driving history must show no Motor Vehicle Points for at least one year prior to the date of employment or, in the case of non-employees, the date of assignment to a driving position.

Note (2): Employees must be cleared by Employee Occupational Health and Wellness (EOHW) personnel before they may be hired into a driving position.

- A revocation or suspension of license due to Motor Vehicle Points within a three year period from the date of the suspension/revocation to the date of employment/assignment.

Note: Employees who have received a revocation/suspension not due to driver related convictions (such as failure to pay out-of-state fines) must resolve the matter at the Court having jurisdiction, and provide proof of the resolution to Duke Human Resources.

- Convictions for traffic offences totaling more than seven (7) Motor Vehicle Points, passing a school bus, or speeding within a school zone in excess of 10 mph within a two year period from the date of the initial conviction to the date of employment/assignment.
- Each case involving a current E&O employee's application for transfer or promotion, whose state driving history or Duke Driving Record reveal any of the above conditions will be referred back to E&O Human Resources. E&O Human Resources will confer with the appropriate department: Staff and Labor Relations, EOHW, and /or Corporate Risk Management. E&O Human Resources' decision concerning approval or disapproval of the transfer/promotion will be final. If the referral was based on a conviction of DWI and the transfer/promotion is approved the individual must also be cleared by EOHW prior to assuming driving duties.

DUKE DRIVING PRIVILEGES

Corporate Risk Management administers the insurance program for all Duke-owned and leased vehicles and is the final authority in determining eligibility to operate Duke vehicles. Corporate Risk Management shall notify by letter any Duke driver who has had an accident, and shall suspend or revoke a current Duke driver's driving privileges under certain conditions as outlined below.

A Duke driver's driving privileges will be suspended or revoked if the Duke driver is convicted of any of the following offenses WHILE DRIVING A DUKE VEHICLE:

- Driving while impaired; or
- Careless/reckless driving; or
- Leaving the scene of an accident resulting in bodily injury.

Note: Employees convicted of any of these violations shall be referred to EOHW for mandatory assessment.

Additionally, Corporate Risk Management shall suspend or revoke a Duke driver's driving privileges if the Duke driver is involved in three or more contributable accidents within a three-year period while driving a Duke vehicle; consistently exhibits behavior which might negatively impact on his/her ability to drive safely; or fails to adhere to Duke-wide or departmental safety policies and procedures, including this policy.

DRIVER'S LICENSE:

State Driver's License:

- All Duke drivers permanently residing in North Carolina shall have in their possession a valid North Carolina driver's license while operating Duke vehicle. Prior to obtaining a North Carolina license, new employees may operate a Duke vehicle for a grace period not to exceed thirty (30) days, if they possess a valid driver's license from another state.
- Duke drivers who permanently reside outside of North Carolina may operate a Duke vehicle with a valid driver's license from the state in which they reside in their possession.

Commercial Driver's License (CDL):

Duke driver's whose position requires operation of a commercial motor vehicle will adhere to the following requirements:

- Possess an appropriately endorsed CDL for the vehicles that they will operate.
- Be subject to the requirements for random drug and alcohol testing in order to comply with Federal Motor Carrier Safety Administration (FMCSA) regulations.
- Possess a valid medical examiner's certificate. This certificate will be provided after completing an EOHW pre-placement physical exam or after a biennial EOHW physical exam.

Loss of Driver's License:

- Duke driving privileges are immediately revoked following loss of a driver's license.
- Duke drivers covered by this policy are required to report to their supervisor (no later than the next work day) any loss of their ability to drive for any reason.
- Employees whose primary duties require a Duke vehicle (such as couriers, mail carriers, etc.) are subject to immediate termination should their license be revoked or suspended. Departments may (but are not required to) assign employees to other non-driving duties within their Department until driving privileges are restored.
- Employees who have lost their driving privileges and are unable to be accommodated by their departments will have two weeks after notifying their supervisor of loss of license to regain the ability to drive or find alternate employment by following applicable policies and procedures. If they have not regained their license or have not found alternate work after two weeks may apply for a 90-day personal leave of absence without pay.
- Employees who have lost their license for disability, but have regained their license must be cleared by EOHW prior to the operation of a Duke vehicle.
- Employees who have been charged with DWI while operating their privately owned vehicles, but have had their license until cleared by EOHW. IF cleared by written authorization from EOHW, employees may continue to operate Duke vehicles until the judicial process has been completed.
- **Note: This exemption does not apply to individuals required to have a CDL.**
- Employees who have been convicted of DWI, but have received a "restricted license" authorizing operation of their vehicles during work hours may, upon approval of their limited basis until full driving privileges are restored.
- **Note: This exemption does not apply to individuals required to have a CDL.**
- E&O Human Resources shall notify Corporate Risk Management if a Duke driver's license has been suspended or revoked and provide all relevant information.

INSPECTION OF DUKE VEHICLES

For vehicles requiring a CDL, a complete vehicle safety inspection shall be conducted by the vehicle operator prior to the operation of the vehicle (daily or before each shift). If the vehicle is shared by two or more employees, the Department will appoint a responsible person to conduct the vehicle safety inspection. The inspection will include such safety equipment as: lights, turn signals, brakes, horn, tires steering mechanism, mirrors, windshield wipers, and seatbelts. Any defect that would prevent the safe operation of the vehicle will be corrected immediately or the vehicle will be put "out of service" and not operated until such repairs are made.

OTHER DUKE VEHICLES

Departments shall ensure that:

- Preventative maintenance is performed as necessary or required by manufacturer's recommendations for each department vehicle and all deficiencies are corrected.
- The North Carolina Vehicle Inspection is performed annually in the month that it is required.
- No decal, bumper sticker, sign, emblem or logo other than those associated with Duke University, Duke University Health System, the Duke Medicine or those required by city or state ordinances is permitted on Duke vehicles.

USE OF DUKE VEHICLES

GENERAL

Departments are responsible for ensuring that Duke vehicles are operated only by Duke drivers who are fully compliant with this policy and only for approved by Corporate Risk Management:

- Transporting personal items to or from University property (other than University authorized van pools).
- Transporting family, friends or other passengers not affiliated with Duke University.
- Transporting students not employed by the University or other "hitch-hikers".
- Using a Duke vehicle to conduct any activity on or outside of Duke University other than that which is related to the nature of employment or the assignment.

PERSONAL VEHICLES USED FOR DUKE BUSINESS

Engineering and Operations does not endorse nor advocate the use of personal vehicles (i.e. not Duke-owned or Duke-leased) to conduct University business since personal vehicles are not covered by the University's auto liability insurance. Although there may be times when this practice is necessary, it is the employees responsibility to inform Supervisors to understand risks involved, ensure that proper records are kept and mileage reimbursement made according to proper procedures.

OPERATION

Departments shall ensure the safe operation of vehicles during adverse weather conditions by providing ancillary equipment such as mud/snow tires, chains, extra lights, ice scrapers or other safety equipment designed for a particular vehicle. It is the responsibility of all vehicle operators to drive in a safe manner and to conform to all

applicable laws and regulations. In addition, vehicle operators are responsible for the conduct and actions of all passengers riding in the vehicle. Vehicle operators will:

- While in a moving vehicle, seat belts and shoulder harnesses are to be worn at all times. Drive defensively and at safe speeds.
- Motorized vehicles and mechanized equipment will be inspected daily or prior to use.
- Trucks and trailers will be secured from movement during loading and unloading operations.
- Obey all traffic signs, speed limits and other warning devices.
- Not pass a Duke Transit bus unless the bus is parked in a designated bus stop and out of the lane of travel.
- Not engage in any activity involving the use of hands other than those actions necessary to operate the vehicle or necessary for required communication. This includes, but is not limited to: using a cell phone, eating, drinking, smoking, reading, etc.
- Not wear radio headsets, ear buds, earphones or similar devices or listen to audio equipment above a minimum volume that would prevent them from hearing traffic warning devices or distract them from their driving duties.
- Use proper directional signals when turning
- Ensure visibility by scraping and/or defrosting windows and mirrors as necessary.
- Adhere to the Duke University Parking & Transportation signs & policies when parking a Duke Vehicle. Duke vehicles may park only where authorized. Duke vehicles may not park on yellow markings, in fire lanes, reserved spaces, handicapped spaces or on the landscape or sidewalks.
- Ensure that the vehicle is secured when parked by:
 1. Turning the ignition switch off.
 2. Removing the key.
 3. Engaging the hand brake or the parking brake.
 4. Using wheels chocks if provided, or “curbing” the wheels of the vehicle when parked on an incline.
 5. Locking the vehicle if left unattended.
- Adhere to the following rules while engaged in backing a vehicle:
 1. Before attempting to move, determine that backing will not endanger pedestrians, other vehicles, other objects or the vehicle being moved.
 2. If backing where space is limited, seek additional outside-the-vehicle help if available.
 3. Back slowly.
 4. Use both interior and exterior mirrors, checking both sides as the vehicle backs up.
- Ensure the safe transport of materials and goods by:
 1. Securely fastening all loads, regardless of weight or height to prevent rolling, pitching, shifting or falling. No one will be allowed to physically “steady” the load while riding in the back of the vehicle.
 2. Securely fastening all doors while the vehicle is in operation.
 3. Securely tailgate in an upright position while the vehicle is moving except when the load exceeds the length of the bed of the vehicle.
 4. Affixing a red flag to the end of any load that extends four feet or more beyond the end of the vehicle or loads that extend beyond the width of the vehicle.
 5. Utilizing a tarpaulin or other cover to cover loads of loose materials such as sand, gravel, or trash.
 6. Ensuring that Duke vehicles with an overall height of more than 11’0” do not travel that section of Campus Drive which requires passing beneath the East Campus bridge.

7. Dock plates and loading ramps will be constructed and maintained with sufficient strength to support imposed loading.
 8. Utilizing the proper loading docks or areas at each building. If dock boards (bridge plates) are used when loading or unloading operations are taking place between vehicles and docks, precautions must be observed.
 9. Ensuring that barriers installed in all enclosed vans to separate the cargo and passenger areas are secured and will protect the driver and passengers from injury should the load shift during transport.
 10. Pallets must be inspected before loaded or moved.
 11. Hooks with safety latches or other arrangement will be used when hoisting materials, so that slings or load attachments won't accidentally slip off the hoist hooks.
 12. Securing chains, ropes, chocks or slings must be adequate for the job to be performed.
 13. When hoisting material or equipment, provisions or barricades must be made to assure no one will be under the suspended loads.
- Ensure the safe transport of hazardous materials. Containers of combustibles or flammables, when stacked or while being moved, must be supported to provide stability.

Note: The US Department of Transportation classifies hazardous materials into the following groups: Explosives, Flammable Materials, Compressed Gases, Oxidizers, Poisonous Materials, Corrosive Materials and Radioactive Materials. Transportation of these materials is strictly regulated to protect people, property and the environment by minimizing the possibility of a hazardous materials release. Anyone transporting these materials for Duke Medical should contact the OESO- Environmental Programs Division at 684-2794 prior to transport to ensure compliance with the applicable regulations.

- Ensure the safe transport of all occupants by requiring all occupants to be secured with a seat belt installed by the manufacturer. This requirement does not apply to Duke Transit buses.

PROHIBITED PRACTICES

- Allowing any passenger to ride in the bed of the vehicle or to sit on the tailgate or sides of the vehicle, or allowing passengers to extend their arms or legs beyond the vehicle while it is moving.
- Allowing any passenger to ride in a trailer while it is being towed.
- Allowing the number of passengers to exceed the number of seat belts (except for buses).
- Allowing any passenger to ride between bucket-type seats, on the engine cowling or on a chair placed between the seats and not affixed to the floor.

HAND-HELD ELECTRONIC DEVICES

These devices include, but are not limited to, cell phones, computers, pagers, PDAs, and any other similar device. Duke drivers are prohibited from using a hand-held electronic device while operating a Duke vehicle except when making an emergency voice call to Duke Police or 911 for a situation such as a traffic accident, fire, medical emergency, severe road hazard, etc.

In such cases, drivers should attempt to pull off the road prior to initiating the call. If it is not possible to stop, the conversation should be as short as necessary to communicate the nature of the emergency.

Specific exemptions may be authorized by Corporate Risk Management when such devices are essential to the operation. **Note: This restriction does not apply to law enforcement or ambulance operators while in the performance of their official duties.**

PASSENGER VANS

In addition to the requirements already outlined in this policy, departments shall ensure that the following requirements are followed when using passenger vans carrying more than 11 people (1 driver and more than 10 passengers):

- All drivers of passenger vans carrying more than 11 people shall be at least 21 years old and meet the other requirements of Duke drivers as previously outlined in this policy.
- Duke drivers who will operate passenger vans carrying more than 11 people must attend training on the safe operation of passenger vans.
- Department leasing passenger vans shall carry (at the Department's expense) supplemental liability insurance offered by leasing agency.
- On trips where a driver may be required to operate a passenger van for more than four hours consecutively, a trained relief driver shall be required. The two shall alternate as necessary to ensure that neither operates the van while being fatigued.
- The use of passenger vans with cargo stored on the roof shall be prohibited.

Note: This portion of the policy applies to passenger van use only. This does not apply to cargo vans used by any department for any purpose.

LOW SPEED VEHICLES (LSVs)

Properly registered LSVs may be operated on all streets and road under the following conditions:

- The operator possesses a valid driver's license and is designated as a Duke driver.
- The vehicle is equipped with all safety equipment required by Code of Federal Regulations, Title 49, 581.500. These include:
 - **Head Lamps**
 - **Stop Lamps**
 - **Turn Signals**
 - **Tail Lamps**
 - **Parking Brakes**
 - **Rearview mirrors**
 - **Windshield Wipers**
 - **Speedometer**
 - **Seat Belts**
 - **Reflex Reflectors, one red on each side as far to the rear as practicable, and one red on the rear.**
- The vehicle has a valid North Carolina registration.
- The street upon which the LSV is operated has a posted speed limit of no more than 35 mph. LSV's are permitted to cross a street with a higher posted speed limit.

UTILITY VEHICLES

Utility vehicles may be operated as follows.

ALL USES

- The operator possesses a valid driver's license and is designated as a Duke driver.
- The vehicle is equipped with the following required equipment:
 - **Operable brakes**
 - **Identification on sides (Duke vehicle number)**
 - **Seat belts, if provided by the manufacturer**
- The number of passengers shall not exceed design capacity.
- The load shall not exceed design capacity
- All body parts shall be kept inside vehicle when in motion.

USE ON DUKE UNIVERSITY STREETS AND ROADS

- Utility vehicles may be operated on streets owned and maintained by Duke University (see map) when equipped with the following additional equipment:
 - **Reflective , DOT approved slow moving vehicle sign visible from rear.**
 - **Lights if operated in low light conditions from dusk to dawn.**
 - **Functional horn**

USE ON OTHER STREETS AND ROADS

- Operation of utility vehicles on other roadways is prohibited except to cross. Crossing is authorized under the following conditions:
 - **Crossing shall be from one piece of Duke-owned property to another (i.e., property would be contiguous if not for the roadway.**
 - **Driver must bring the vehicle to a complete stop before crossing.**
 - **Crossing the roadway must be as close to perpendicular as possible to the roadway.**
- Operation of utility vehicles along the shoulder of a roadway is prohibited expect when active work is being performed.

OFF ROAD USE

- Utility vehicles may be operated on sidewalks/paths in such a manner that they do not impede or interfere with normal pedestrian traffic. Speed limited to 5 mph.
- Operators shall exercise caution and avoid unsuitable terrain.

ACCIDENT REPORTING

It is the responsibility of all Duke drivers to report all accidents that involve Duke vehicles **regardless of damage**. Accidents that occur on Duke property will be reported immediately to Duke University Police Department by calling 684-2444. Vehicle accidents that occur outside Duke property will be immediately reported to the nearest law enforcement agency having jurisdiction, and to Corporate Risk Management as soon as possible. Duke drivers will follow these guidelines should an accident occur on Duke property:

1. Call or have someone call the Duke University Police Department and give all pertinent information, but do not leave the scene or move the vehicle.
2. Contact your supervisor as soon as possible.
3. Set out warning devices and aid in directing traffic until a police officer arrives on the scene.
4. Assist injured persons but do not attempt to move them unless there is a clear and immediate danger to life.
5. Obtain the names of witnesses, insurance information and other pertinent facts and forward those to Corporate Risk Management as soon as possible.
6. Notify the Duke University Police Department if you strike an unattended vehicle or object, but do not leave the scene until given permission by a police officer.

ENFORCEMENT:

Departments will follow procedures as outlined in the Human Resources Policy Manual and applicable bargaining unit provisions. A copy of the disciplinary action form will be forwarded to Corporate Risk Management for attachment to the Duke Driving Record.

TRAFFIC SAFETY

An employee posted to an assignment on a road where there is heavy traffic must be given the designated protective clothing, including a bright colored traffic orange warning vest.

TRAINING

GENERAL TRAINING

All new Duke drivers are required to complete a Defensive Driving Course approved by Corporate Risk Management. This will be a one-time requirement, except that in the case where a Duke Driver is involved in a contributable accident, has concerning changes in their driving record, or demonstrates other concerning motor vehicle operation practices, repeat or additional training may be required at the discretion of Corporate Risk Management. This National Safety Council training is available online through the OESO website at a small cost to the Duke driver's department. Note: Duke drivers who only operate golf cars or utility vehicles or powered industrial trucks are not required to take the Defensive Course.

All new Duke drivers are also required to complete an online Vehicle Safety Policy training to ensure that they are aware of the requirements of this policy. This will be a triennial requirement.

SPECIALTY VEHICLE TRAINING

See the Powered Industrial Truck Safety Policy (Supplement I) for forklift, motorized pallet jack, and order picker operator's training requirements.

PASSENGER VAN TRAINING

Drivers who are assigned to drive vans carrying more than 11 people (1 driver and more than 10 passengers), shall receive additional training as required by Corporate Risk Management. This training will be coordinated through OESO at a cost to the Duke driver's department.

REFERENCES

Motor Vehicle Laws of North Carolina
Duke University Parking and Traffic Regulations
Occupational Safety and Health Administration Regulations
Federal Motor Carrier Safety Regulations
General Safety and Health Vehicle Safety Chapter



MRI SAFETY

PURPOSE

The purpose of the MRI Safety Policy and Procedures is to maintain safety awareness and proper entry into the Magnetic Resonance Imaging (MRI) areas for Engineering & Operations employees that have been identified as likely to work in an MRI area. Failure to follow established safety guidelines could potentially result in MRI related injuries, fatalities, and/or equipment damage.

MRI LOCATIONS

Duke Clinic Orange Zone – Level SB – Room 00349 [Radiation/Oncology] (1 MRI)
Duke Clinic Morris Bldg. – Level SB – Room 005110B [Cardiology] (1 MRI)
Duke Hospital North – Level 7 – Cath Lab / EP Lab Areas Room 7613C (1 MRI)
Duke Hospital North – Level 1 – MRI Area Rooms 1836, 1832A, 1820E, 1827, 1823, and 1821 (6 MRIs)
Duke Medicine Pavilion – Level 1 – Rooms 1W44 and 1W45 (2 MRIs)
Duke Medicine Pavilion – Level 3 – ORs #42 and #43 [MRI Garage 3W29, 3W31, 3W33]
Duke Cancer Center – Level 1 – Rooms 1S27, 1S30, and 1S31 (3 MRIs)
Sands Building – Level 1 – Room 171 (1 MRI)
Bryan Building – Level 1 – Rooms 141B, 150, 135, 138, 145A, and 145 (7MRIs)
Lenox Baker – MRI Area -Trailers 1, 2, and 3
Southpoint Imaging Center - Herndon Rd.
French Science -Rooms 2307, and 1241, (4MRIs)
LSRC - Rooms B141, B142, B129, and B208

E&O POSITIONS

The recognized E&O positions that are likely to work regularly in an MRI area are listed below:

<i>Zone Mechanic</i>	<i>Carpenter</i>	<i>Plumber</i>
<i>Electrician</i>	<i>HVAC Mechanic</i>	<i>Maintenance Mechanic</i>

PROCEDURES

The above listed positions do not have access to Zone 3 or Zone 4 areas. They are not to enter those areas without appropriate supervision by the MRI technical staff. Employees must be screened for safety risks through a level 2 screener prior to working in an MRI area. The screener will provide "just-in-time" training as needed for the work to be performed.

SAFETY TRAINING

Specified E&O positions will be required to take the following online MRI Safety training to understand and avoid potential hazards:

Upon Hire/Transfer

Individuals designated to work within the magnetic environment must complete the required MRI Safety Training prior to conducting any work in those areas.

Annual Update

Individuals must renew the MRI Safety Training on an annual basis



AEROSOL CAN MANAGEMENT

PURPOSE

According to EPA standards, Engineering and Operations produce a variety of aerosol cans that may be subject to regulatory management standards and, if improperly managed in the department, could pose a safety risk to Duke Personnel and the environment. Aerosol cans contain both the product (i.e. paint, adhesive) and propellant (i.e. propane, butane) which may have hazardous properties (i.e. ignitable, toxic).

This procedure applies to all departments within Engineering and Operations who generate aerosol can waste.

DISPOSAL

Used, unused or unwanted aerosol cans used in a commercial/industrial setting are considered to be a hazardous waste under 40 CFR 261.1 unless the following criteria are met:

- The aerosol products have been used for their intended purposes so that when holding the cans upright and pressing down on their nozzles, not enough product comes for them to be useful anymore;
- No more than 3% of the original net content weight remains in the cans, or no more than one inch of liquid remains in the bottom of the cans (40 CFR 261.7(b)(1)(1) and (111));
- Although the aerosol can meets the above criteria and could be considered non-hazardous, the propellant left in the can may still be reactive under heat or pressure, which requires the can be handled as a hazardous waste. However, puncturing and draining the can would meet the definition of scrap metal (40 CFR 261.1(c)(6)) and the can could then be recycled as an exempt waste (non-regulated).

*The liquid drained from the can from puncturing must be collected and managed as a chemical waste.

- The cans did not hold chemical formulations with sole active ingredients identified in the F027 (used and unused formulations for wood preserving) or P-list hazardous waste.

PROCEDURES

Aerosol cans that are still in use are not considered waste. Once the user decides they no longer need the can, they must:

1. Dispose of the empty can in an Aerosol Waste Disposal Container at any of the designated locations.
2. In the event a disposal container becomes full, a supervisor must arrange pickup through MRO Storeroom personnel (684-1600)
3. An aerosol depressurization system has been installed within the MRO Storeroom loading dock area for sorting, puncturing and recycling.
4. The system should *only* be operated and maintained by trained OESO and Storeroom personnel. The aerosol can recycling system (AeroVent 3) is designed to puncture the can, capture any liquid left in the can in a 55 gal drum (provided by OESO). Empty cans must then be disposed as scrap metal.

5. In the event the drum becomes full, Storeroom personnel must submit the drum to OESO Environmental Programs for proper management as a regulated waste in accordance with the Chemical Waste Management Practice.

DESIGNATED DISPOSAL LOCATIONS

Medical Center Maintenance - MS1C Maintenance shop (Basement of Jones)

West Main Street Construction - Corridor outside of the Electrical Shop

Duke Clinic – Communication (Fire Alarm) Shop, Purple Zone Loading Dock (bulb collection area)

Duke Hospital – Plumbing Shop, HVAC Shop, Elevator Shop, Carpentry Shop, Communication Shop and Electrical Shop

Duke Medical Pavilion – E&O Shop

E&O Facility Bldg. Construction/Instrument Shop/Storeroom - Storeroom Loading Dock (Aerosol Puncturing Station)

Elder St. – Mail/Copy Room



DUMC ENGINEERING & OPERATIONS ENERGIZED ELECTRICAL WORK POLICY

General Policy on Energized Electrical Work greater than 50 volts:

As a matter of policy unless specifically approved, work on energized electrical equipment or circuits greater than 50 volts **shall not be allowed**. When such work is necessary to maintain equipment essential for the well-being of patients, employees and visitors it shall be conducted in a manner to reduce the risk of injury and in accordance with all applicable policies and guidelines. A risk assessment shall be completed and approved before any energized electrical work is permitted.

PURPOSE/SCOPE

1.1 **Purpose:** To provide guidance when working on or near electrically energized equipment greater than 50 volts.

1.2. **Scope:** The requirements of this document **shall** apply to all Duke University Medical Center employees and contractors.

2. Definitions

2.1. **Energized Electrical Work** – Work on equipment that has not been de-energized and greater than 50 volts

2.2. **Exposed Fixed Circuit Part** – Means that the bare conductor or other circuit part is stationary and will not move. This is the most common Limited Approach Boundary value used.

2.3. **Exposed Movable Conductor** – Means that the bare conductor can move (e.g., an overhead transmission line conductor).

2.4. **Flash Hazard Analysis** – Determination of the Flash Protection Boundary and the PPE necessary for personnel working within the boundary **shall** use.

2.5. **Flash Protection Boundary** – A distance from exposed live parts within which a person could receive a second degree burn if an electrical arc flash were to occur.

- At voltage levels above 600 volts the Flash Protection Boundary is physical limits of the equipment room, inside of which ALL personnel shall be protected.
- At voltage levels of 600 volts and less the Flash Protection Boundary shall be 4.0 feet

2.6. **Person Protective Equipment (PPE)** – Equipment designed to protect an individual from serious injuries or illnesses resulting from contact with chemical, radiological, physical, electrical, mechanical, or other hazards.

2.7. **Qualified Person** – A person(s) designated by DUMC E&O; possess a current North Carolina general electricians' license or has the skill and knowledge related to the operation of electrical equipment and who has received safety training on the hazards involved.

2.8. **Shock Hazard** – A dangerous condition associated with the possible release of energy caused by contact or approach to live parts.

2.9. **Shock Hazard Analysis** – Determination of the voltage to which personnel will be exposed, boundary requirements and the personal protective equipment (PPE) necessary to minimize the possibility of electric shock.

2.10. **Shock Protection Boundaries** – Identified as Limited, Restricted and Prohibited and are applicable to the situation in which approaching personnel are exposed to live parts. (NFPA 70E Table 130.2(C))

- **Limited Approach Boundary** – A distance from an exposed live part within which a shock hazard exists.
- **Restricted Approach Boundary** – a distance from an exposed live part, within which there is an increased risk of shock due to electrical arc, for personnel working in close proximity to the live part.
- **Prohibited Approach Boundary** – a distance from and exposed live part within which work is considered the same as making contact with the live part.

3. Exemptions/Exclusions

3.1. Exemptions from Energized Electrical Work Permit

Qualified persons conducting tasks such as: testing, trouble shooting and voltage measuring (typically diagnostic work) may use Alternate Energized Work Procedures including the utilization of Flash Hazard analysis, safe work practices and with the appropriate PPE.

4. Responsibilities

4.1. Directors, Division Leaders and Foreman

- Establish and update the written Energized Electrical Work Program
- Provide consultation and training to departments who fall within the Program
- Assist departments in determining how the program applies to their areas.
- Following the Energized Work program and notifying their Supervisor of any unsafe conditions or issues of non-compliance to the program.
- Ensure Electrical Contractors and those contractors who may be working near energized equipment have a National Fire Protection Agency (NFPA) Electrical Safety in the Workplace (70E) compliant program.

4.2. Electrical Contractors

- Prior to initiating any work on the DUMC electrical infrastructure and every time work will be performed on electrically energized equipment the Contractor and applicable (Electric Shop) will conduct an in person "Job Briefing" to review the job ensuring DUMC E&O Energized Electrical Work Policies and NFPA 70E compliant procedures are in place.

5. Training

5.1. DUMC E&O Employees

- E&O employees, excluding office and administration shall receive a basic awareness level training on the Energized Electrical Work policy. The awareness training shall provide an overview of the Energized Electrical program.

5.2. **Qualified Person** - Employee must have the following training and skills to be considered a Qualified Person

- Designated by DUMC E&O
- National Fire Protection Agency (NFPA) 70E - Standard for Electrical Safety in the Workplace
- CPR/AED Training
- DUMC E&O - Lock Out / Tag Out Program
- Personal Protective Equipment
 - NFPA 70E Article 130.7

6. Forms Used:

6.1. Energized Electrical Work Permit Form - available on E&O website

6.2. Energized Electrical Work Permit Process Flow - included with EEWP Form

6.3. Energized Electrical Work Risk Assessment

7. Guidelines/Rules:

DUMC E&O energized work program is designed to provide a safe work environment for employees who work on electrically energized equipment, employees who are in the immediate area assisting those working on energized equipment and employees who may be in the general vicinity where energized work is being conducted.

The two main hazards of energized electrical work are electrical shock and arc flashes. These hazards are primarily managed through administrative controls that specify:

- Safe distances
- Protection boundaries
- Personal protective equipment when working on electrically energized equipment

7.1. Energized Work Permit – Section Descriptions

SECTION I - Description and Justification for Energized Work

Written justification when an employee may be exposed to live or energized parts greater than 50 volts to ground.

SECTION II – Approval to Perform Energized Electrical Work

SECTION III – Results of Shock Hazard Analysis (VOLTAGE, BOUNDARIES)

Voltage is the criteria used to determine the Flash Protection Boundary inside of which personnel could receive second degree burns in the event of an arc flash

- 600 volts and less the Flash Protection Boundary shall be 4.0 feet
- ELECTRICAL ENERGY - Voltage is the criteria used criteria to determine the shock protection boundaries and areas they define.

SECTION IV - PROTECTIVE CLOTHING AND EQUIPMENT FOR HAZARD / RISK CATERGORIES

- Combination of voltage and the type of energized task(s) are used to assign hazard and risk classifications for the tasks. The PPE to be used within the Flash Protection boundary and within the shock hazard restricted and prohibited areas is determined by a numbered protective system for a given hazard/risk classification as listed in the NFPA.
- Hazard Risk categories and PPE required

SECTION V – Documentation of Safety Checklist

SECTION V – Job Debriefing

8. PROCEDURES

8.1. Approval of Work

- All activities that may involve exposure to energized systems or equipment shall be reviewed and approved by **Director DUMC E&O, Division Asst. Directors and Electrical Foreman**
- Activities which require exposure to energized systems shall be conducted only after less hazardous alternatives have been considered. Alternatives include, but are not limited to:
 - Not performing the work on the energized system
 - De-energizing the system through a shut down
 - De-energizing the system through the use of lock out / tag out methods
 - Energized Work Permit

8.2. Energized Work Procedures

Equipment with less than 50 volts to ground and less than 5 mA may be serviced energized by Qualified Employees at the discretion of the Electric Shop Foreman.

- Description and Justification for the Energized Electrical Work

Describe the work that will be done and the reasons and justification why this work cannot be done with the equipment de-energized.

- Equipment Information
Determine the equipment name, identification and location including building name and room number.

Description of the circuit and from where the power is fed

- Flash Hazard Analysis

Identify the Fault Clearing Device, the manufacturer's model and the clearing time in seconds

Establish the Flash Protection boundaries as listed in form SF 9005.01, Flash Protection Boundaries

- Shock Hazard Analysis
- PPE and tools

Examine all PPE equipment, specialty and voltage rated tools to ensure they are in good condition and the inspections and certifications are current.

- Energized Electrical Work Permit
 - Contact the Divisional Electric Shop and complete Energized Electrical Work Permit with either the Electric Shop Foreman.
 - Review the Energized Electrical Work Permit with everyone who will be on the job and have each person print and sign their names in Section II, of the Energized Electrical Work Permit
 - At the work site place the barriers noted in Section III, of the Energized Electrical Work Permit.
 - Prior to starting the job contact the Engineer Services and request the Manager of Engineering Services or his designee to go to the job site to review the Energized Electrical Work Permit

9. RELATED DOCUMENTS / REFERENCES

9.1. NFPA 70E

9.2. Building Shut Down Procedure