Employee Safety Programs

Manual

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Programs

Biological Safety

In order to provide a safe working environment and compliance with all applicable federal, state, and local regulations concerning the use of biological agents, biological toxins, and recombinant deoxyribonucleic acid (rDNA), Towson University has established a Biological Safety Program. The Biological Safety Program is presently comprised of the Animal & Vivarium Safety Program, the Bloodborne Pathogens Program, and the Institutional Biosafety Committee which includes the Recombinant DNA Program.

Animal & Vivarium Safety Program

The Department of Environmental Health & Safety (EHS) encourages compliance with university policy regarding animals on campus and in their appropriate care and use in laboratories with respect to the TU Institutional Animal Care and Use Committee (IACUC) and TU Institutional Biosafety Committee (IBC). To assist in governing policy, EHS has developed two programs: the Occupational Health Program for Personnel with Substantial Laboratory Animal Contact (LAOHP) and Vivarium Safety Program, which are detailed below. See the TU Policy for animals on campus and Guidelines for Animals in University Buildings for additional information. See entries for the Institutional Animal Care and Use Committee (IACUC) under the Animal & Vivarium Safety Program header, and the Institutional Biosafety Committee further below as its own header under Biological Safety for specific information about those bodies.

Institutional Animal Care and Use Committee

The Institutional Animal Care and Use Committee (IACUC) oversees the animal care and use program on the Towson University campus by providing a humane and compliant environment for all animals in research and teaching. The IACUC's policies and procedures are governed by the Animal Welfare Act (AWA), the Public Health Service Policy on Humane Care and Use of Laboratory Animals (PHS Policy, 1985), and National Institutes of Health's (NIH) Office of Laboratory Animal Welfare's (OLAW) Guide for the Care and Use of Laboratory Animals. The IACUC meets on a semiannual basis to review research protocols, to discuss issues pertaining to campus vivaria, and to inspect animal research facilities (primarily vivaria) on campus. See IACUC Procedures to review additional information.

Occupational Health Program for Personnel with Substantial Laboratory Animal Contact

Working with laboratory animals can present risks to the health and well-being of research personnel and other individuals that may have animal contact or even casual exposure.

Examples of health risks may include:

- Zoonotic diseases (infectious agents shared by humans and animals)
- Allergies to laboratory animals, particularly rodents
- Bites, scratches, and other injuries
- Manipulation of hazardous materials in animals

Only a physician (e.g. PLHCP) or other medical professional may assess the health of laboratory personnel to do work. These care providers may also provide allergy monitoring, zoonosis surveillance, testing, and related medical care. EHS provides recommendations only, for seeking care and hazard reduction based on reported and observed data.

All personnel with contact or exposure to laboratory animals must enroll in the Occupational Health Program (LAOHP) via submission of the online LAOHP questionnaire. Submission of the form is mandatory; however, for those that prefer not to participate in the program, they may opt out of the health-related questions on the questionnaire*. All completed LAOHP questionnaires are reviewed by EHS, during which they make recommendations to prevent illness and/or recommend referrals for additional medical care based on the information provided.

Towson University is contracted with Concentra Occupational Health to provide immunizations/vaccinations, which may be recommended for work with laboratory animals. The appropriate forms for vaccination or declination must be submitted to EHS prior to work. Concentra Occupational Health also provides physical examinations, drug testing, urgent care, and workplace injury services for employees. Concentra has several locations in the State of Maryland; the closest to Towson University's main campus is 1830 York Road, Suite F, Timonium, MD 21093.

All individuals working with animals or listed on IACUC protocols must enroll* in the LAOHP. This includes:

- Anyone listed on an IACUC protocol as research personnel.
- Anyone working with animals for research, testing, or teaching purposes.
- Anyone having contact or exposure to laboratory animals (including casual exposure); and
- Anyone entering Vivarium facilities

***Note: Enrollment consists of annual submission of the LAOHP questionnaire, but you do not have to provide personal health information if you do not wish to do so.**

Everyone involved with laboratory animals must submit a new LAOHP form:

- Before being added to or listed on an IACUC protocol.
- Before first contact with laboratory animals.
- Whenever there is a change in health status (e.g., worsening allergies, pregnancy, diagnosis of an immune disorder, etc.).
- Whenever exposure information changes (e.g., a new animal model is introduced in the lab).
- At least once per year.

Individuals shall report injuries, illnesses, allergic reactions, or other exposures related to animal work to assist in medical surveillance.

Personnel must enroll in appropriate training for their performed tasks. Individuals will also use general precautions, engineering controls, other administrative controls, and personal protective equipment to reduce their risk of exposure to illness, injury, or other incidents. In case of emergency, individuals will follow instructions for first aid and reporting contained in the LAOHP. See the full Occupational Health Program for specific hazards and more information.

Vivarium Safety Program

The Vivarium Safety Program pertains to laboratory safety within vivarium facilities on campus and animal holding laboratories and is based on the procedures found in the broader Chemical Hygiene Program/Laboratory Safety. Procedures and safe practices regarding facilities, personnel, equipment, tools, and animals are contained within the program and it is governed by EHS and other institutional bodies (IACUC, IBC). In laboratories, personnel are exposed to hazards that depend upon the substance or subject with which they are working, but also the equipment and tools they use to do their work. In a vivarium or animal laboratory, hazards may be biological, chemical, ergonomic, physical, and psychological (which is harder to quantify and mitigate), or some combination of these. The impact of the hazard and mitigation techniques will vary based on duration, frequency, and intensity of potential exposure to the hazard.

Biological risks exist for those who handle animals and their tissues. Working with animals involves planning, appropriate facilities, safe work practices, training, and the right tools and equipment, including personal protective equipment. Before understanding what is required for hazard control, one must understand the hazards involved. The hazards associated with handling animals are physical injuries, allergic reactions, and zoonotic diseases. There may be additional biological hazards from infectious agents intentionally introduced to the animals for research purposes or those that exist outdoors in field research.

Chemicals are another risk class that involves chemical products, such as those used for cleaning and maintenance of the facility, in animal care, or for research purposes. Such chemicals include biocides, buffers, cleaners, compressed gases, controlled substances (drugs), and water treatment chemicals. These chemicals present hazards such as asphyxiation, corrosive, flammable, irritant, oxidizing, toxic, or otherwise dangerous to the environment. Some chemicals may have a combination of these hazards or also present physical hazards as compressed gases that may act as projectiles or release high pressure. Other hazards in vivarium laboratories may include ergonomic, physical (due to slips, fire, electrical, cuts, or other physical contact), and radiation.

It is key to use engineering controls, administrative controls, proper work practices and hygiene, and personal protective equipment to reduce the incidence of vivarium injuries or their potential causes. The program provides general safety methods for reducing or isolating hazards in the vivarium, and how to respond to them. Proper planning of the facility and in the research may also eliminate hazards. Communication and training will also work to reduce hazards encountered in this type of environment. See the full Vivarium Safety Program.

Bloodborne Pathogens Program

Maryland Occupational Safety and Health (MOSH) adopted the Occupational Safety and Health Administration's (OSHA) regulatory standard dealing with occupational exposure to bloodborne pathogens (29 CFR 1910.1030) on May 31, 1992. The purpose of the standard is to eliminate or to minimize an employee's risk of an occupational exposure to blood or other potentially infectious materials as defined by OSHA. As the greatest risk of exposure is by needlestick, the Needlestick Safety and Prevention Act was incorporated into OSHA's standard effective April 18, 2001. This Act requires employers to use needleless systems and sharps with engineered sharps protection, maintain a sharps injury log and involve workers in the needle selection process.

Towson University has established the Bloodborne Pathogens (BBP) Program to comply with this standard. The BBP Program is dedicated to reducing the possibility of occupational exposure to pathogens that are found in human blood and can cause disease in humans. Examples of the involved pathogens include, but are not limited to, Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV), and Hepatitis C Virus (HCV). The BBP program is jointly administered through EHS and the TU Health Center. An Exposure Control Plan has been compiled to provide the specific regulatory compliance information. This Plan is available for review to all employees, employee representatives and regulatory agencies.

Initial and annual refresher training is provided by EHS or an approved departmental instructor. Employees requiring this training provide health care and/or emergency medical assistance on campus. Building maintenance personnel are also included. The training provides an overview of the applicable regulations, general information regarding bloodborne pathogens, modes of transmission, recognition of tasks with the potential for occupational exposure, universal precautions, engineering and work practice controls, personal protective equipment, procedures for reporting an exposure incident, availability of post-exposure medical evaluation and counseling, availability of vaccines, spill response, and the disposal of special medical wastes (SMW).

Institutional Biosafety Committee

Towson University has established an Institutional Biosafety Committee (IBC). The IBC is responsible for reviewing, approving, and overseeing all biological research (involving biological materials and other potentially hazardous agents) that will be performed or sponsored by University faculty, staff, and/or students on or off campus. Researchers are required to fill out forms to register recombinant DNA and potentially infectious materials for humans to supplement IBC protocols that must be approved. Specifically, researchers are to submit protocols that contain one or more of the following:

- Agents that can infect and/or cause disease in humans, including bacteria, biological toxins, viruses, fungi, rickettsia, prions, protozoans, or parasites
- Genetically-altered organisms (including transgenics and knockouts)
- Human cell lines, blood, bodily fluids, and tissues
- Recombinant/synthetic DNA, RNA, or cells that are transfected/transduced
- Viral vectors

Approval is required prior to performing biological research, and research funding may be delayed if advanced IBC approval has not been obtained.

The Department of Environmental Health & Safety (EHS) encourages compliance with IBC recommendations to protect the university community and public health. The IBC follows NIH Guidelines on safety practices and containment procedures for basic and clinical research. New guidelines have been enacted by NIH to publicly report the committee membership roster and meeting minutes as of 2025 available on the EHS Biological Safety webpage.

Recombinant DNA Program

The National Institutes of Health (NIH) has established guidelines to specify practices for constructing and handling recombinant deoxyribonucleic acid (rDNA) molecules and the organisms and viruses containing rDNA molecules. Recombinant DNA molecules include molecules that are constructed outside of living cells by joining natural or synthetic DNA segments to DNA molecules that can replicate in a living cell and molecules that result from the replication of the recombined molecules.

All academic teaching syllabus and/or research protocols involving rDNA must follow the requirement of the National Institutes of Health as presented in the latest edition of the *NIH Guidelines for Research Involving Recombinant DNA Molecules* and all supplements published thereafter in the Federal Register. In order to ensure that the research is conducted in full conformity with the provisions of the NIH Guidelines, Towson University has established an Institutional Biosafety Committee (IBC). The IBC is responsible for reviewing, approving, and overseeing all rDNA research that will be performed or sponsored by University faculty, staff, and/or students on or off campus. The IBC is comprised of a minimum of five members. At least three of whom are University faculty/staff with experience and expertise in rDNA technology and the capability to assess the safety of rDNA research and to identify any potential risk to public health or the environment. Two members, not affiliated with Towson University, represent the interests of the outside community.

To assist faculty, staff and students, the IBC has compiled a handbook for investigators using rDNA in research or student laboratories. Anyone who is using or contemplating the use of rDNA should contact EHS at 410-704-2949 or go online to get a copy of the Handbook. IBC approval is required prior to performing rDNA research. Research funding may be delayed if advanced IBC approval has not been obtained.

Special Medical Waste Procedures

The Department of Environmental Health & Safety (EHS) is responsible for the disposal of SMW in accordance with all applicable Federal and State regulations. SMW is biomedical waste and is defined as all non-radioactive biological, pathological, and infectious materials to include:

- Human or animal anatomical materials;
- Blood or blood soiled materials;
- Clinical specimens (sputum, urine, feces, blood, etc.);
- Sharps (syringes, needles, surgical instruments, etc.);
- Unused cultures and stocks of infectious agents;
- Contaminated animal bedding, and;
- Biologically contaminated lab materials

SMW contaminated with radioactive materials are regulated for disposal as radioactive wastes.

Preserved biological specimens must be removed from any preservative solutions and thoroughly drained of all free liquids prior to disposal. Typically, these preservative solutions are regulated as hazardous chemical wastes and cannot be disposed of as SMW. Waste preservative solutions should be presumed to be regulated hazardous chemical wastes and managed in accordance with TU's *Hazardous Waste Management Procedures*. All SMW will be disposed of in leak-proof containers labeled as Biohazard. Needles, syringes, scalpel, etc., must be disposed of in puncture-proof sharps containers. EHS has approved SMW boxes, bags, and sharps disposal containers available at no charge. It is the generators' responsibility to properly package all SMW in the appropriate containers. To request SMW disposal materials or to request the disposal of SMW, contact EHS at 410-704-2949 or at safety@towson.edu.

Chemical Safety

Chemical Hygiene Program/Laboratory Safety

Maryland Occupational Safety and Health (MOSH) adopted the Occupational Safety and Health Administration's (OSHA) regulatory standard regarding occupational exposure to hazardous chemicals in laboratories (29 CFR 1910.1450) to ensure the safety of employees working with hazardous chemicals on a laboratory scale. Laboratory-scale work involves substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safely manipulated by one person. This standard closely resembles the OSHA Hazard Communication Standard with the following exceptions:

1. Use of chemicals is on a laboratory-scale
2. Multiple chemical procedures or chemicals are used
3. Procedures are not part of a production process
4. Protective laboratory practices and equipment are available and in common use to minimize the potential for employee exposure to hazardous chemicals

If your research involves laboratory-scale use of hazardous chemicals, you will be enrolled in the Chemical Hygiene Program/Laboratory Safety.

Environmental Health and Safety (EHS), with the assistance of campus departments performing laboratory-scale experiments, has developed a Chemical Hygiene Program (CHP) to comply with the requirements of the OSHA/MOSH standard. The CHP is available for review to all employees, employee representatives and regulatory agencies. As part of the CHP, an EHS representative will act as the University's Chemical Hygiene Officer. One section of the CHP is the *Laboratory Safety Manual*. This manual provides specific employer and employee responsibilities, laboratory emergency procedures, and standard operating procedures for the safe use, storage and disposal of hazardous chemicals. This manual will be provided to all involved employees during the required chemical hygiene training.

Review of all funded research using hazardous chemicals is also required as part of this standard. Upon submission of proposals to the Office of Sponsored Programs & Research, EHS will receive a copy of the experimental protocol. The protocol will be reviewed to establish procedures for the safe use of the hazardous chemicals. Compliance with the requirements of the OSHA standard will be required prior to performing research. This will not delay submission of grant proposals.

Compressed Gas Cylinder Program

Compressed gas cylinders are typically regulated as hazardous waste due to the contents of the cylinder. However, it has been our experience that no matter how innocuous the cylinder contents (e.g., compressed air) or even if the cylinder is empty, most domestic waste disposal companies/landfills will not accept compressed gas cylinders for disposal unless the cylinders are clearly empty of potentially hazardous contents. Typically, this means either the empty cylinder must be open to ambient atmospheric pressure by either puncturing the cylinder or removing the regulator assembly.

All compressed gas cylinders, and especially small, compressed gas cylinders (i.e., lecture bottles) or unlabeled gas cylinders, are extremely expensive to dispose of, properly. In order to reduce skyrocketing compressed gas cylinder disposal costs, the University has adopted the following policy regarding compressed gases:

All compressed gases purchased for use on the TU campus will be purchased in the smallest sized gas cylinders necessary. All compressed gases will be purchased in cylinders that remain the property of the vendor and will be returned to the vendor when empty or no longer required. Compressed gases will not be procured in non-returnable cylinders. Any departments purchasing compressed gases in non-returnable compressed gas cylinders are responsible for their disposal and will be charged by Environmental Health & Safety for their disposal as regulated hazardous wastes.

All non-returnable waste compressed gas cylinders will be disposed of via Environmental Health & Safety. To request the disposal of a waste compressed gas cylinder contact EHS at 410-704-2949 or at safety@towson.edu.

Hazard Communication Program

In 1970, the United States Congress passed legislation creating the Occupational Safety and Health Administration (OSHA) to help preserve and protect the health and wellbeing of all employees in the United States. As a part of this continuing effort, the Hazard Communication Standard (HCS) was enacted. This specific legislation establishes the legal rights of employees to be informed about hazardous materials present on the job. As a result, employees are endowed with the "right to know" about the potential health risks, protective equipment and clothing, and the proper procedures for the handling, and storing of all chemicals and chemical products used in the workplace. Through employee training and education, employers such as Towson University hope to reduce the number of injuries or illnesses that can be attributed to the improper use and handling of these products. As of 2012, with the implementation of the Globally Harmonized System of Classification and Labeling Chemicals (GHS) through OSHA, the Employee Right-to-Know has been updated to the Employee Right to Understand.

Employer Responsibilities

Towson University, as an employer, has the following responsibilities to all of its employees:

1. To compile and maintain an alphabetical Chemical Information List (CIL) of all regulated chemicals and chemical products used on campus. This list shall include the manufacturer's name, chemical name, common name, and location on campus.
2. To ensure that the University has Safety Data Sheets (SDS) for all regulated products in accordance with Federal and State regulations. In November 1985, all chemical product manufacturers were required by law to supply information regarding the safe use and handling of their products to all consumers. The end result of this requirement has been the development of the Material Safety Data Sheet (today, known as Safety Data Sheets).
3. To develop and implement a written hazard communication program for the workplace which outlines the University's program for meeting the requirements outlined in both the State and Federal regulations.
4. To ensure that a label or other form of warning is legible, in English, and prominently displayed on all containers.
5. To provide an employee training and education program designed to inform all faculty/staff about the existence and content of this law; the hazard communication methods used by Towson University including SDS, CIL, identifiers and placards; the rights an employee may exercise under this program; and the procedure by which an employee may obtain a copy of the CIL and SDS.

Employee Rights

An employee and/or their designated representative(s) have the following basic rights under the HCS or Right To Know (RTK) law, through GHS known as the Right to Understand. These rights are as follows:

1. Access to the Chemical Information Lists (inventories) and Safety Data Sheets.
2. One copy of the requested information or the means to make a copy, without charge, within five working days.
3. If the employer fails to provide access to or a copy of the information about the hazardous chemical pursuant to the provisions of the law, an employee may refuse to work with the hazardous chemical. The employee, however, may not walk off the job or refuse to perform other duties while awaiting the requested information. Management cannot retaliate in any manner or willfully terminate the employment of any employee exercising their rights under this program.

Faculty/Staff Responsibilities

In order to ensure that this program is successful and in full compliance with the regulations governing it, all employees have the following responsibilities:

1. To fully read the hazard warning label, chart, chemical lists, or SDS located in your work area.
2. To carefully read and obey the warning labels on any containers.
3. To contact the University's Department of Environmental Health and Safety (EHS) for copies of any SDSs not found in your work area.
4. To follow the approved handling and use procedures for each product, especially those dealing with personal protective equipment or clothing.
5. To attend all training sessions.
6. To ask your supervisor or contact EHS with any questions regarding this program or any chemical products in use in your area.
7. To provide EHS a copy of the SDS for any products which you purchase and bring into the work area as well as an updated room chemical list.

Towson University Hazard Communication Program

This program is designed to meet all of the requirements set forth in both the federal and state regulations. This program is intended to assist you, the employee, to better understand your rights and how to go about getting more information. Questions regarding this program can be referred to the Program Coordinator at 410-704-2949 or safety@towson.edu. Any requests for SDS or information should be coordinated through the employee's supervisor by submitting a written request to EHS.

Program Coordinator: Environmental Safety Manager
Alternate Program Coordinator: Environmental Safety Assistant
2nd Alternate Program Coordinator: EHS Assistant Director
3rd Alternate Program Coordinator: EHS Director

The University's Alternate Program Coordinator(s) are to be contacted in the absence of the Program Coordinator.

Hazardous Waste Management

The proper disposal of hazardous chemical waste is a continuing concern across the nation. The Department of Environmental Health & Safety (EHS) manages a comprehensive hazardous waste disposal program for the campus community that is in accordance with all applicable federal and state guidelines. Disposal procedures are briefly summarized below:

Accumulation of Hazardous Wastes

- All hazardous waste must be under the direct control of the person(s) who generated the waste and at or near the actual point of generation.
- Hazardous waste generators are required by University Policy to attend Hazardous Waste Generator Training.
- The total maximum volume of waste that may be accumulated at any one point of generation is restricted to 55 gallons of a non-acutely hazardous waste or 1 quart of an acute (P-Listed) hazardous waste. This waste must be moved to the central accumulation area and dated, and it must be removed after 90 days.
- There is no limit on the time a waste may be accumulated in a satellite accumulation area, so long as it is being properly managed in accordance with *Hazardous Waste Management Procedures*. However, EHS strongly recommends that hazardous waste not be accumulated for more than one (1) year.
- Contact EHS to request the disposal of hazardous wastes or to register for Hazardous Waste Generator Training.

Hazardous Waste Containers

Each hazardous waste container must:

- Be made of, or lined with, a material that is chemically compatible with the hazardous waste to be stored.
- Be leakproof and capable of being tightly closed. Open containers or containers sealed with cut glass, rubber or cork stoppers, “Parafilm” or any other non-tightly fitting caps are unacceptable and will not be accepted for disposal.

- Be stored in secondary containment devices (e.g., leak-proof basins) to contain leaks or spills or environmental contamination. Any leaks or spills should be cleaned up immediately. Secondary containment basins must be chemically inert and of sufficient size to either contain 10% of the total volume of all wastes stored in the basin (multiple waste containers) OR 100% of the volume of the largest single container, whichever is greater.
- Be segregated according to chemical compatibility. Incompatible wastes should not be stored together.
- Be kept tightly closed at all times during storage, except when adding or removing waste. Funnels must not remain in containers when waste is not being added. Do not open, handle, or store (stack) containers in a way that might rupture them, cause them to leak, or otherwise fail.
- Be visually inspected at least weekly. Look for leaks, reaction by-products, and for deterioration caused by corrosion or other factors.
- Be maintained in good condition. If a container leaks, put the hazardous waste in another container, or contain it in some other way that complies with EPA regulations. (If necessary, contact EHS at 410-704-2949 for assistance.)
- Be kept clean and free of exterior contamination.
- NOT contain incompatible wastes or materials unless precautions are taken to control potential reactions.
- NOT be stored in an area accessible to the general public or areas that may be potentially exposed to temperature extremes.
- NOT be overfilled. Leave approximately 1 ½" of headspace to allow for expansion.

Labeling of Hazardous Waste Containers

Each hazardous waste container must:

- Be clearly and indelibly labeled as to chemical contents and with the words "Hazardous Waste" and marked with the date the waste was initially generated. EHS has free hazardous waste labels available. To request labels, contact EHS at 410-704-2949 or at safety@towson.edu.
- If the waste is a mixture, all waste components must be identified and the estimated concentrations provided. If the waste is corrosive, the pH must be provided. The label must not contain abbreviations, chemical structure diagrams or formulas or "Trade Names".
- Be completely and accurately identified as to contents as above. Unknowns will not be accepted for disposal.

Flammable Wastes

- Flammable wastes must be stored in an approved flammable liquid storage cabinet if total volume ≥ 10 gallons.

Empty Waste Containers

- Empty chemical containers may be disposed of via traditional, non-regulated domestic waste disposal channels.
- Empty Acutely Hazardous Waste (P-Listed Waste) containers must be triple (3x) rinsed with a suitable solvent prior to disposal and the rinsate collected and managed as a regulated hazardous waste. Non-rinsable empty acute hazardous waste containers (e.g., paper bags) must be managed as a regulated hazardous waste.
- The labels on all empty chemical containers must either be removed or made illegible prior to disposal as non-regulated domestic waste.

For additional information, consult your department's copy of the *Hazardous Waste Management Procedures* or contact EHS at 410-704-2949 or at safety@towson.edu.

Tax-Free Alcohol Management

Towson University Fisher College of Science & Mathematics (FCSM) has a federally-issued tax-free alcohol permit, which allows scientific departments to purchase tax-free alcohol (TFA) without paying any federal tax for certain research purposes. Tax-free alcohol refers to ethyl alcohol (ethanol) that is 190 proof or higher and is regulated by the Alcohol and Tobacco Tax and Trade Bureau (TTB). TTB requires that the use of tax-free alcohol shall be restricted to scientific, medicinal, and mechanical purposes. Laboratories which use tax-free alcohol are required to follow specific purchasing, receiving, storage, disposal, and recordkeeping protocols. Users must maintain positive control over supplies received, issued, and/or stored that can be verified by records maintained and available for audit at any time. Environmental Health & Safety (EHS) will inspect the bulk storage of TFA within this facility on a semi-annual basis.

CPR/AED

Automated External Defibrillator (AED) Program

Approximately, 350,000 to 400,000 people die from sudden cardiac arrest (SCA) each year, according to the American Heart Association (AHA). Even seemingly healthy people may be affected by this condition without warning and death may occur instantly upon its onset. The chance of an SCA victim's survival decreases by 10% for every minute that passes. The AHA states that the only definitive treatment for sudden cardiac arrest is a defibrillation shock that restores a normal heart rhythm.

In order to be effective, defibrillation treatment must be administrated within the first few minutes of SCA. An automated external defibrillator (or AED) is designed to be used by untrained bystanders, so this equipment is a vital resource to be used in the case of such an emergency. The device provides clear, step-by-step voice prompts that guide an individual

through the process of its use. Alternatively, individuals may be trained on the use of AEDs through Campus Recreation or the College of Health Professions.

The campus AED Program was established to provide equipment and procedures for the use of such equipment in cases of emergency. The AED Program implements standardized procedures that comply with Maryland Institute for Emergency Medical Services Systems (MIEMSS) and Code of Maryland Annotated Regulations (COMAR). The procurement, maintenance, and use of all University-owned AEDs on campus will be coordinated through the University AED Program Coordinator, a qualified individual within the Department of Environmental Health & Safety (EHS), and the University's Sponsoring Physician. There are over 120 AED units on campus, typically located at main entrances or elevator lobbies within University buildings.

Environmental Safety

Campus Drinking Water Quality Guidelines

The University community is entitled to safe drinking water on campus. Safe drinking water is defined as meeting the following criteria:

- Water supplied from cold-water faucets or water fountains.
- Water free of offensive tastes to 85% of building occupants.
- Water meeting current EPA Primary and Secondary Drinking Water Regulations

Only water supplied from cold-water faucets or water fountains should be consumed. Water taken from hot-water faucets should never be consumed. All complaints concerning unacceptable campus drinking water quality will be promptly investigated by Facilities Management. The procurement of bottled water with University funds will only be authorized by Environmental Health & Safety (EHS) in the event that building water quality fails to meet EPA standards. The short-term flushing (approximately 30 seconds) of cold-water faucets or water fountains immediately prior to consumption is an EPA-approved method of achieving acceptable water quality. If building occupants with acceptable water quality desire bottled water, it must be paid for by employees and not with University funds.

Past experiences have indicated that the majority of campus water quality issues are caused by discolored water and most frequently occur after Semester Breaks, Holidays, water system maintenance/repairs, or after other periods of low campus water usage. Campus water lines are constructed of ductile iron pipe that naturally rusts. Iron deposits then build up in the water supply system in pipelines, water tanks, and water heaters. Accumulated iron causes the most frequently occurring temporary water discoloration. If water quality problems persist, not responding to flushing, contact EHS by phone or e-mail.

Environmental Noise Control Guidelines

It is known that noise above certain levels is harmful to the health of humans. Although precise levels at which all adverse health effects occur have not definitely been ascertained, it is known that one's well-being can be affected by noise through loss of sleep, speech interference, hearing impairment, and a variety of other psychological and physiological factors. Therefore, reduction and control of noise such as sound and vibration to the campus community (employees, students, and visitors) and the surrounding environment is important. Environmental Noise Control Guidelines should be followed to reduce such noise. Employees who are exposed to full shift (eight hour) average noise exposures more than 85 dB on the A-weighted scale (or peak of 140 dB at any time) must be enrolled the **Hearing Conservation Program**, which is discussed briefly in the Occupational Safety section below.

The guidelines describe areas and situations where these guidelines are applicable or exempted. Noise levels are not permitted to exceed those specified based on the activities and hours mentioned. Control methods such as isolation of noise producing equipment, dampening of sound waves by insulation, equipment modification and redesign, land use management, and/or sound-amplification device placement may be applied. The measurement of noise levels shall be conducted at points on or within the property line of the receiving property or the boundary of a zoning district, and may be conducted at any point for the determination of identity in multiple source situations. The Department of Environmental Health & Safety (or assigned designees through other TU departments) may use sound level monitoring to measure compliance on campus or at the property line for events (e.g. athletics/sports, entertainment, public gatherings) where amplified sound may cause excess ambient noise.

Indoor Air Quality

Towson University is dedicated to providing a reasonably safe and healthy working environment for its faculty, staff, and students. This fact sheet is intended to provide the campus community with basic information concerning indoor air quality (IAQ). Three fundamental components determine the quality of air in any given location:

- Amount of oxygen
- Temperature/humidity
- Presence of airborne contaminants

Oxygen is normally present in the atmosphere at a concentration of approximately 21.5%. Fresh air is introduced into campus buildings by centralized ventilation, small local fan units, passive diffusion (natural movement of air between areas without mechanical force), or by a combination of these. Most buildings that rely entirely upon mechanical means to bring air indoors utilize systems that blend outside air with recirculated air that has previously been conditioned. This type of system introduces fresh air into the building while maintaining energy efficiency.

Temperature and humidity are two factors that immediately affect people's perceptions of their environment, as well as their performance. Recommendations concerning these matters establish a work-rest regimen based upon the temperature and workload. Higher temperatures generally require additional recovery (rest) time. More information about work under high temperature conditions may be found under the **Heat Stress and Heat Illness Prevention** topic. For purposes of IAQ, for workers typically clothed, it is recommended that summer temperatures be maintained between 73°F – 79°F, and 68°F – 75°F during the winter months. Relative humidity should be maintained below 60%.

There are many potential contaminants that could affect IAQ. Worker exposure to most hazardous materials is regulated by OSHA. Permissible Exposure Limits (PELs) have been established for hundreds of substances ranging from carbon monoxide to turpentine to common nuisance dust. Often, contaminants are generated from sources external to a particular indoor environment (e.g., paint fumes, truck exhaust, and asphalt fumes). It is the position of Department of Environmental Health & Safety (EHS) that an occupant's exposure to concentrations of airborne contaminants should be as low as reasonably achievable.

Other common contaminants of indoor air are bacteria and fungi (molds, mildew, and yeasts). These microorganisms are always present in the air, but excessive concentrations may cause health problems. There are no enforceable standards establishing safe limits, but many IAQ professionals have recommended that levels exceeding 1,000 colony forming units per cubic meter of air (CFU/m^3) suggest needed improvement or investigation of the indoor air conditions. High humidity, recent flooding, or freestanding water are conditions that readily promote high concentrations of microorganisms in the air. These conditions often produce characteristic odors.

Exposure to significant concentrations of the bacterium *Legionella pneumophila* may cause an illness commonly known as Legionnaire's Disease. Past widely publicized non-University incidents served to enlighten the campus community of the necessity for preventive action. Preventive measures have been implemented, and will remain in place, to prevent *Legionella* development in building air-handling systems on campus.

The term "Sick Building Syndrome" has been used to describe a class of complaints characterized by nonspecific discomfort, headache, upper respiratory irritation, cough, dry or irritated skin, and sensitivity to odors. Sick Building Syndrome incidents have occurred more frequently in buildings that are exclusively mechanically ventilated. There are many suspected causes for this type of problem, but remedial ventilation alterations usually provide relief by supplying increased amounts of fresh air, or by exhausting more used indoor air.

Acceptable indoor air quality for Towson University buildings has been defined as air in which there are no known contaminants at harmful levels, and with which 80% or more of the occupants do not suffer systematic discomfort. EHS is committed to provide acceptable indoor air for all campus occupants. Successful investigation and remediation of IAQ problems sometimes involve sophisticated and complex techniques that require a great deal of time and expense. All reasonable efforts will be made to correct problems in an expeditious manner. Air testing is performed by EHS when evidence is suggested of contaminant presence. If air in your workplace is tested by EHS, a report will be forwarded to you indicating the parameters or

contaminants tested, results of sampling and the PELs (or recommended limits). EHS also performs quarterly air testing in select areas of University buildings to help maintain indoor air quality.

Lead Paint Management Plan

Lead is a common element found throughout the environment in many different sources. Health effects from lead exposure continue to be a concern both in the workplace and at home. Since the ban on leaded gasolines, environmental lead levels have decreased dramatically. However, lead-based paints in buildings and housing prior to 1977 continue to be a significant source of potential exposure.

All Towson University employees involved in the non-abatement disturbance of lead-containing materials and lead-based paints must attend a lead awareness training class in accordance with Maryland Department of the Environment (MDE) regulations. Workers involved in the abatement of lead paint hazards require more extensive EPA-approved lead abatement worker and/or lead paint maintenance and repainting supervisor or lead paint removal and demolition supervisor training. Lead paint abatement work includes any activity that eliminates or reduces lead paint hazards, including paint removal, replacement of components, encapsulation, or repainting.

The Department of Environmental Health & Safety (EHS) coordinates the campus Lead Paint Management Plan, which ensures that lead-containing paints are properly maintained and disposed of by performing sampling, monitoring, and inspections as necessary to protect employee health and safety and to comply with regulatory requirements. The plan also provides the criteria to be followed when working on lead-based painted structures on campus. Only trained and protected individuals are permitted to disturb lead-based paint. All other personnel should contact EHS prior to the disturbance of painted surfaces unless it is known with certainty, either through documentation or testing, that the surface does not contain lead.

Spill Prevention, Control, and Countermeasure Plan

Originally published in 1973 under the authority of Section 311 of the Clean Water Act, the Oil Pollution Prevention regulation sets forth requirements for the prevention of, preparedness for, and response to oil discharges at specific non-transportation-related facilities. The goal of the regulation being to prevent oil from reaching navigable waters and adjoining shorelines, and to contain discharges of oil. In accordance with federal regulations, TU has prepared a Spill Prevention, Control, and Countermeasure (SPCC) Plan, which has three purposes. The purpose of the plan is to prevent oil from being released into the environment, to control discharges of oil to prevent spills from reaching navigable waters, and to minimize the impact of a spill of oil that has reached a waterway using countermeasures. The plan is administered by the Departments of Environmental Health & Safety (EHS) and Facilities Management.

Fire & Life Safety

The Office of Emergency Preparedness (EP) is responsible for complying with recognized fire safety standards. Specific responsibilities include National Fire Protection Association (NFPA) Life Safety Inspections, campus fire drills and permitting.

Basic Fire Safety Procedures

The University community, like any other community, must be constantly aware of the possibility of fire and fire-related problems. Because of the proximity of unrelated programs, an incident of fire on the campus could easily threaten the lives of many people. Buildings on the campus are frequently used simultaneously for classrooms and research activities. The possibility of fire and injury in such situations is too grave to leave to chance.

In other buildings on campus, where no research activities exist, quite frequently fire hazards are produced from the use of flammable or combustible liquids, electrical appliances, and maintenance work done to keep the University in operation. To keep the campus safe, fire hazards must be addressed. The Office of Emergency Preparedness is charged with the responsibility of overseeing general fire safety for the entire campus. Fire prevention, however, is an area in which every member of the campus community must assume an active role.

Department Heads are encouraged to promote safety in programs within their departments as well as the University in general. Because it is important that you know and understand rules regarding fire safety, you are encouraged to review the fire safety procedures outlined below. Additionally, training in fire safety is available for groups on a regular basis through EP. This training can be arranged to meet your needs at a time convenient to you.

Office Fire Prevention

1. Be alert around electrical equipment. If it is not working properly or is giving off an unusual odor, disconnect and have it serviced.
2. Inspect electrical cords regularly and replace them if they are cracked, frayed or have a broken connection. See the information on “Extension Cords”, “Power Strips” and “Electrical Abuse” at the end of this section.
3. Keep all heat producing devices away from anything that might burn such as curtains, clothing, boxes, etc. Leave plenty of space around the device to allow heat to dissipate. Allocate sufficient space around copying machines, computers, coffeepots, microwaves and other equipment that might give off heat.
4. Make sure all appliances in the work area are turned off at the end of the day. It is best to assign one person to check this each day.
5. Do your part to keep storage areas, stairwells, and other low-traffic areas free of waste paper**,** empty cartons, trash, and other combustible materials.
6. Know the location of, and routes to, at least two emergency exits from your work area.

Never use an elevator to evacuate the building during an emergency. Know the location of fire alarms.

7. Arson is the single largest cause of fires in office buildings. Therefore, proper security measures to keep unauthorized people out of the building will help prevent theft and fire.
8. Ensure all aisles have at least 44" of clear space to allow safe egress in fire emergencies.

If There Is a Fire

Sound the Alarm

If you discover or suspect a fire, sound the building fire alarm. If there is no alarm in the building, warn the other occupants by knocking on doors and shouting as you leave.

Leave the Building

Try to rescue others only if you can do so safely. Move at least 300 feet away from the building and out of the way of the fire department. Do not go back into the building until the fire department or local authority advises it is safe to do so. **Never use an elevator to evacuate a building during an emergency.**

Report the Fire

From a safe location outside the building, dial 911. At the emergency blue-light and yellow phones located around campus, press the emergency button to be connected to the University Police who can contact 911 for you, or dial 911 on the keypad to be connected directly to the 911 Center. Give as much information as possible to the dispatcher such as the building and room number where the fire is located and, if possible, what is burning.

To Survive a Building Fire

Crawl if There is Smoke

If you get caught in smoke, get down on the floor and crawl. Hot, smoke-filled air rises and cleaner, cooler air will be near the floor.

Feel the Door Before Opening

Before opening any doors, feel the metal doorknob. If it is hot, do not open the door. If it is cool, brace yourself against the door, open it slightly, and if heat or smoke is present, close the door and stay in the room.

Go to the Nearest Exit or Stairway

If the nearest exit is blocked by fire, heat, or smoke, go to another exit. Always use an exit stairway and not an elevator. Elevator shafts may fill with smoke or the power may fail, leaving you trapped. Stairway fire doors will keep out fire and smoke - if they are closed - and will protect you until you get outside.

Close as many doors as possible as you leave. This helps to confine the fire.

Fire Extinguishers

It is Towson University's policy that all employees immediately evacuate the building during a fire emergency. Employees are not required to fight fires. Leave all firefighting activities to the Baltimore County Fire Department. If you voluntarily choose to use a fire extinguisher, only use it if you have been trained in its use and if the fire is very small. If the extinguisher does not put out the fire, leave immediately.

NEVER USE A FIRE EXTINGUISHER TO FIGHT A FIRE IF:

- The fire alarm has not been pulled and the building has not been or is currently not being evacuated.
- 911 has not been notified that there is a fire.
- The fire has already spread beyond the immediate area where it started or is already a large fire (bigger than a trash can).
- The fire could block your escape route.
- You are unsure of how to properly use a fire extinguisher.
- You are not sure that the extinguisher you have is the proper one to use on this fire or it is not large enough to fight the fire.

Make sure 911 is dialed for all fires - even if you think the fire is out.

If You Get Trapped

Keep the Doors Closed

Seal cracks and vents if smoke comes in. If you are trapped in a room and there is no smoke outside, open the windows - from the top to let the heat and smoke out and from the bottom to let in fresh air.

Signal for Help

Hang an object in the window (bed sheet, jacket, shirt) to attract the fire department's attention. If there is a phone in the room, dial 911 and report that you are trapped. Be sure to give your room number and location. SOMETIMES, IT IS SAFER TO STAY IN PLACE! If all exits from a floor are blocked, go back to your room, close the door, seal cracks, open the windows if safe, wave something in the window, and shout or phone for help. DON'T JUMP! THE FIRE DEPARTMENT WILL RESCUE YOU.

If You Are On Fire

Drop and Roll

If your clothes catch on fire, immediately STOP, DROP and ROLL. Rolling smothers the fire.

Cool Burns

Use cool tap water on burns immediately. Do not use ointments. If skin is blistered, dead white, brown or charred, call for an ambulance.

To Prevent Fires

No Smoking

Smoking is prohibited in all University Buildings (including dormitories).

Cooking & Appliances

Cook in approved areas or kitchens and use UL-listed appliances. Stay nearby while appliances are on. Clean up grease and appliances as soon as possible.

Extension Cords

Extension cords are only permitted for temporary use (i.e. less than 8 hours). Use only UL-listed extension cords and inspect them regularly for defects. Check the amperage rating and make sure it is not being exceeded. The diameter of the extension cord must be at least as large as the cord of the device being plugged into it. Never plug one extension cord into another and never plug more than one extension cord into one electrical outlet.

Power Strips

Do NOT overload power strips. This can result in overloaded circuits and fire. Multiple-outlet power strips must include a fuse protected by an internal circuit-breaker switch, which will trip open and stop electrical flow when overloading occurs.

Help Eliminate Campus Fire Hazards

Electrical Abuse

Use only UL-listed appliances. Do not overload outlets. Replace damaged wires. No wires may be placed in an area where they can be stepped upon. Wires should never be taped to the floor/carpet. This includes wires from power cords, speaker wires, cable TV coaxial, phone wires, etc. If wires are in a foot traffic area, they must be in a UL-approved cord cover. Ensure that wires are not located where they can be worn or damaged. Take caution when running wires along the walls, around doorframes and behind furniture. Make sure that the wires are not damaged and that any furniture does not move to damage the wiring. Use of electrical "octopuses" to obtain more outlets can result in overloaded circuits and fire. Match your appliance power requirements to the circuit power. Most electrical circuits only supply 15 or 20

amps per room for all the outlets.

Appliances

Coffee pots, irons, curling irons, etc. should never be left unattended. They should be unplugged after use and not stored until they are cool enough to touch. Also, appliances may overload circuits - match the size of the extension cord to the appliance power cord to prevent cord overheating.

Space Heaters

The use of portable space heaters in University buildings is prohibited. Special approval may be obtained from the Department of Facilities Management in coordination with the Office of Emergency Preparedness. Only U.L. listed, enclosed oil-filled heaters will be granted special approval. Contact EP for guidance on the proper use of portable space heaters. Kerosene or compressed gas portable space heaters are strictly prohibited - NO EXCEPTIONS!

Open Flame/Fireworks

Bunsen burners, bonfires, etc. should never be left unattended. Extinguish all open flames, even if left for a very short time. Candles, bonfires and other open flame devices are prohibited from use in University buildings and on University grounds without prior approval from EP. The possession, storage or use of any fireworks or other pyrotechnical devices in Residence Halls is strictly forbidden. The use of any type of fireworks or other pyrotechnical devices for special events requires a permit that must be requested through EP at least 30 days in advance.

Flammable Liquids & Hazardous Materials Storage

Dispose of all combustible waste as soon as possible. Surplus materials, files, or supplies should be stored in a safe place, not in corridors or under stairways. Materials should never be stored within three feet of any electrical or telephone fuse/junction panel. Gasoline, ethers, paints, glues, corrosives and other hazardous materials may not be stored in campus residential buildings. Storage of motorcycles, scooters, and other gasoline-powered equipment is prohibited in all campus residential, academic, and administrative buildings. In all other areas such as administrative offices, labs, shops or classrooms, the storage of flammable liquids and hazardous materials is limited to specific quantities and containers. Contact EP for guidance at 410-704-2949.

Obstacles

Storage of bicycles, chairs, desks, and other items is prohibited in all corridors and entryways/exits. Blocked exits have caused "chain reaction" pile-ups of fallen people during emergencies. Bicycles will only be locked to approved bike racks. Locking a bicycle to a handrail or anything that obstructs a building entrance or exit, either inside or outside, is in violation of the Maryland Fire Prevention Code and will subject the owner to criminal fines and/or prosecution.

Fire Lanes

The University in conjunction with the Baltimore County Fire Department has designated "Fire Lanes" on selected roads and parking areas adjacent to campus buildings. These areas have been clearly posted as no parking areas to allow emergency vehicles quick access to buildings in the event of an emergency. Parking in a posted "Fire Lane" delays emergency response vehicles and is a violation of the State Motor Vehicle Code. TU Police strictly enforce no parking in "Fire Lanes".

Protect Yourself

Participate in Fire Drills

Fire drills are conducted in all campus academic, Residence Halls, and administrative buildings twice yearly during the academic year to familiarize you with the sound of building fire alarms, emergency exits which you may not normally use, and procedures for reporting fires. LEARN WHERE OTHER EXITS ARE NOW! Familiarize yourself with the location of the fire alarm pull stations.

If You Have a Disability

If you are disabled (even temporarily) to an extent that impairs your mobility, it is your responsibility to inform your supervisor or your resident director. You are the best judge of your physical limitations. Co-workers or residents and staff will assist you to evacuate only if it places them in no personal danger. Visually impaired persons should have a sighted assistant to guide them to safety. Hearing impaired persons should be informed individually of the emergency. Do not assume they know what is occurring by watching others. On campus, the staff notifies the fire department of disabled residents to help them find you. Look for "areas of refuge," like stair enclosures or the other side of corridor fire doors. Most elevators are designed to stop operating when the fire alarm is sounding and are not safe during fires. SOMETIMES, IT MAY BE SAFER TO STAY IN YOUR ROOM (follow the advice for *If You Get Trapped*).

Alcohol or Drug Use

You are especially vulnerable to smoke asphyxiation if you are under the influence of alcohol or drugs. Even young, healthy people may not be able to escape a fire if they are intoxicated. They may not be able to hear the smoke detector or fire alarm or be able to find an exit. Let the fire department know if you think someone has not evacuated the building.

Report Damaged Fire Equipment

Fire Doors - Should close completely and automatically.
Exit Signs - Two exits should be visible from all public areas.
Fire Alarms - Horns, bells, and pull stations should be accessible and not vandalized.
Smoke Detectors - Keep them clear so they can detect smoke when you are asleep and wake you in time to get out.
Sprinklers - Keep 18" clearance around heads. Report bent or damaged heads.

Fire Extinguishers - Report missing, empty or vandalized extinguishers.

Keep Fire Doors Closed

Never prop or block fire doors open for ventilation or for ease of passage. Fire doors are designed to restrict the spread of fire and smoke and should be closed at all times.

Report All Fires

Report all fires by dialing 911 even if you think they are out. Fires that appear to be "out" may be smoldering and re-ignite at a later time and cause additional damage.

Fire Drills

EP is responsible for performing fire evacuation drills in all campus buildings. The purpose of the drills are to familiarize campus personnel with safe evacuation routes in the event of an emergency and to test the fire system to ensure that all components operate properly. The drills occur in all academic, administrative, and residential buildings on a semiannual basis. Certain departments require drills at more frequent intervals. To minimize class disruption, the drills are scheduled during the first month of the Fall and Spring semesters at the end of most scheduled class periods. If a fire alarm system is activated for any reason, drill or actual fire, all occupants in the building are required to evacuate the building. Occupants will be notified when it is safe to re-enter a building.

Fire Permits

For campus events that involve an open fire or flame-producing device (e.g., cookouts, bonfires or fireworks), prior approval from Emergency Preparedness or the Authority Having Jurisdiction is required. For cookouts, contact EP to obtain a Fire Permit. To receive this permit, there must be at least two responsible people supervising the event. Additional requirements will be discussed when the permit is issued. Bonfires are prohibited by state/county ordinances until further notice.

The Office of the State Fire Marshal provides the permit for a public fireworks display. This includes indoor (theatrical) or outdoor events. The group sponsoring the event must use a fireworks shooter licensed in the State of Maryland and must ensure that the permit is obtained prior to the event. As a condition of the contract, the shooter can be assigned responsibility for obtaining the permit, but, for all circumstances, EP must receive a copy of the permit prior to the event. To avoid delays in the permitting process, contact EP as soon as it is determined when the event will occur. External permits may require at least 30 days in advance for processing. For general information regarding fire safety on campus, click on the Campus Fire Prevention and Response Guide link. More information is available through the Fire Safety webpage.

Hot Work Permits

When a contractor or campus employee at any location on campus is performing work involving the use of an open flame, a Hot Works Permit is required. This permit outlines the precautions that must be taken to ensure a safe working environment when using open flames. Prior to the start of work, the permit must be obtained from EHS and completed by the Project Manager, Job Foreman, or Supervisor. The completed permit must be posted at the location where the work is being performed. Upon completion of the work, the permit must be returned to EP for recordkeeping purposes.

Insurance

CDL Drug & Alcohol Program

Towson University recognizes the safety-sensitive function of its employees who are required by their job function to hold a commercial driver's license (CDL). As an employer, the University has a responsibility to help prevent accidents and injuries resulting from the misuse of alcohol and use of controlled substances by employees who drive commercial motor vehicles. In order to ensure the safety of employees with CDL licenses (CDL Employee(s)) and the campus community, and to comply with the Omnibus Transportation Employee Testing Act of 1991 (the Act), the University adopts as policy the prohibitions against the misuse of alcohol and the use of controlled substances by CDL Employees and the drug and alcohol testing procedures as set forth in the federal regulations implementing the Act. Copies of these federal regulations are available on the Insurance webpage or by calling the Insurance Administrator at 410-704-6377.

Employees whose job position requires a commercial driver's license (CDL) must adhere to specific alcohol and drug testing. Our Human Resources office has designated employer representatives to assist in CDL drug and alcohol program compliance. Our employees must comply with federal regulations and testing procedures on controlled substances and alcohol use, transportation drug and alcohol testing programs, and medical marijuana use.

Drones Program

University currently allows drone flights on campus for academic and business-related purposes only. All recreational drone and model aircraft flights on or above University property are strictly prohibited. To ensure safety and adherence to 14 CFR Part 107 (FAA, Small Unmanned Aircraft Systems), all flights on campus must be reviewed and approved by the Drone Committee at least seven business days in advance of the proposed flight date. There are a few restrictions and requirements for approval:

- Must be a certified pilot

- Must have drone registered with the FAA
- No indoor flights (Buildings, Parking Structures, Outdoor Pavilions, etc.)
- No flights over crowds, individuals, or vehicles
- No flights over 400 ft. above ground level
- No flights over campus areas where there is a reasonable expectation of privacy such as dorms, childcare, etc.

For approval, please complete the Drone Application and provide supporting documents to drones@towson.edu. The application should include applicable documents such as drone registration, license, proof of insurance (only for non-TU faculty/staff), and flight map. Once approved, you will be provided a drone permit you must keep on you at all times. Additional operating requirements will be found in the program document.

Insurance Claims

As an agency of the State of Maryland, Towson University is provided insurance coverage through commercial carriers and the state self-insurance program. The authority to purchase insurance and provide claims management for state agencies has been mandated to the Maryland State Treasurer's Office. The Insurance Administrator in the Department of Human Resources serves as the liaison between the Maryland State Treasurer's Office and the University. The Insurance Administrator aids in investigating accidents occurring on campus; however, the State Treasurer's Office makes the final determination in the settlement of all claims. Additional responsibilities of the Insurance Administrator include obtaining certificates of insurance, securing premium authorizations, completing risk assessment questionnaires, and compiling annual insurance surveys.

Maryland Tort Claims Act

The University has self-insurance protection under the Maryland Tort Claims Act (MTCA). The MTCA protects the University and/or its employees acting within the scope of their public duties from liability imposed by law for damage to property and/or bodily or other personal injury resulting from negligent acts or omissions. Under the provisions of this act, claims may be filed against the State of Maryland with the Maryland State Treasurer's Office and submitted to:

Dereck E. Davis, State Treasurer
Treasury Building
Louis L. Goldstein Building
80 Calvert Street
Annapolis, MD 21401-1991

All claims must be submitted in writing within one year (365 days) after the incident and must include the following data:

1. A concise statement of facts describing the nature of the claim including date, time and location of the accident.
2. A demand for specific damages.
3. Names and addresses of all involved parties and witnesses, and, if applicable, the name, address and telephone number of claimants legal counsel.
4. Signature by the claimant, his legal representative or counsel.

To assist in the investigation process and to ensure potential safety issues are addressed, a copy of all correspondence/documentation should also be forwarded to the Insurance Administrator. Information forwarded to the Insurance Administrator does not replace the required notification of the State Treasurer's Office.

Personal or Non-State Owned Property

As a rule, personal property is not covered by the State unless the loss is considered to be caused by negligence on the part of the University. The State Treasurer's Office will investigate and determine each case on the merits of the claim. It is important to note that Towson University does not assume responsibility for personal or non-university owned property kept or stored in University facilities. Should damage or loss occur, payment for loss or replacement is the responsibility of the individual. Employees are encouraged to verify if their personal insurance covers any personal property brought on campus.

State-Owned Property

University-owned property and property in which the State has an insurable interest is covered for direct physical loss or damage by the State Insurance Trust Fund and commercial policies. Coverage is on a "Replacement Cost Basis" and applies to all buildings and contents, materials and supplies, and machinery and equipment. The coverage provides for losses caused by fire, explosion, windstorms, vandalism, flood, steam boiler and machinery breakdown, and any other direct property losses. Property coverage exclusions apply. All losses should be reported as soon as possible (within 24 hours/next business day) to the Insurance Administrator. The Insurance Administrator will advise the State Treasurer's Office of the loss and will provide the affected department(s) with the proper procedures to follow and a listing of the required documentation to submit for reimbursement. Necessary actions should be taken to mitigate damage; however, only emergency procurement of services/commodities can be obtained without prior approval of the Insurance Administrator.

Personally-Owned Vehicles

The University provides only liability coverage for all privately owned vehicles driven by authorized persons on State business. Always notify both the University's Fleet Services Department and your family automobile insurance agent of all incidents and accidents. Failure to notify both could jeopardize your legal status in related claims and lawsuits. The University

does not provide either uninsured or underinsured protection coverage. The employee may file and receive benefits under his/her automobile insurance policy. It is required that faculty, staff, and students using their own vehicle on official University business carry their own auto insurance with minimum limits of at least an amount as required by the State of Maryland.

State-Owned Vehicles

For the purpose of insurance coverage, a State vehicle is defined as any vehicle owned by, hired, leased, loaned to, or used on behalf of the State of Maryland. Coverage is provided by the State's self-insurance program and provides liability coverage under the Maryland Tort Claims Act; physical damage on an "Actual Cash Value" basis as determined by the State Treasurer's Office; and towing and storage. Compensation for injury to an employee is provided under Workers' Compensation. Contact the Insurance Administrator for information specific to out-of-state and foreign accidents, rented vehicles and leased vehicles.

Any damage to a State vehicle must be reported to Fleet Services within 24-hours of the incident. In some instances, the driver of a State vehicle can be held responsible for damage to the vehicle operated by them if damage results through misuse or gross negligence.

Theft

The State of Maryland does not provide insurance coverage for theft. Adequate measures should be taken to properly secure all State property. Any instances of theft/loss should be reported to TUPD and Property Control.

Travel Coverage

All active, full-time exempt University employees are covered under a blanket commercial policy for accidental death or dismemberment resulting while traveling on the business of the University (State). "Traveling on the business of the State" means while on assignment by or at the direction of the State for the purpose of furthering the business of the State. It does not include any period of time (1) while the employee is working at his or her regular place of employment; (2) during the course of everyday travel to and from work; or (3) during an authorized leave of absence or vacation. Written notice of claim must be given within 20 days after a loss; written proof of loss must be provided within 90 days of loss.

Occupational Safety

Accident Investigation Policy and Procedures

The TU Police Department (TUPD) shall be notified immediately regarding any accident on campus that involves a personal injury. Upon notification, the TUPD shall respond to the accident and, where appropriate, conduct a preliminary investigation. The TUPD shall notify the Departments of Environmental Health & Safety (EHS) and Human Resources (Insurance) immediately for personal injuries that are OSHA reportable (fatality, dismemberment, etc.), involves the potential for a Tort Claims suit against the University from non-University personnel (slips, trips, falls, cuts, etc.), or involves any TU employee. Depending upon the nature and severity of the injury, EHS will also respond.

Any follow-up investigation (if necessary) shall be conducted by a team consisting of a representative from EHS, the TUPD (designated by the Director of Public Safety), the employee's supervisor, and as appropriate, Facilities Management (to be designated by the Associate Vice President (AVP) of Facilities Management. All investigation findings shall be recorded in writing. Where appropriate and whenever possible, photographs shall be obtained to document the accident scene and any other relevant evidence. His/her supervisor and TUPD/EHS shall always investigate all accidents involving employee personal injury (as necessary, depending on the severity and nature of the injury). Any follow-up accident investigation involving personal injury to a Facilities Management employee will include as a member of the investigating team (in addition to the immediate supervisor) EHS, TUPD (where appropriate), and a Facilities Management employee designated by the AVP of Facilities Management. In cases where Facilities Management expertise is required in other accident investigations, the AVP of Facilities Management, or his/her designee, shall be contacted to arrange for the individual to assist EHS/TUPD in their investigation of the accident.

For the purpose of this policy, injuries resulting from sports related activities (e.g., sprains due to playing basketball, jammed fingers due to playing volleyball, etc.), or ambulance calls for a sick person shall not constitute a need for an investigation as long as there are no other mitigating circumstance(s) involved attributable to University negligence which contributed to the accident/sickness (e.g., loose floor board, food poisoning). When accidents are caused by a TU employee's disregard of established work procedures/policies, the investigation team shall notify the employee's immediate supervisor and the supervisor's department head within 24 hours. It shall be the supervisor's responsibility to initiate disciplinary action as warranted by the incident. Disciplinary action shall comply with current University Policy. The department head shall notify the Division Vice President of the disciplinary action to be taken.

At a minimum, on a quarterly basis, EHS shall review all accidents involving personal injury, any disciplinary action instituted against the offending employee, and any new or modified policies/procedures implemented to prevent a recurrence of a similar incident. EHS shall make additional recommendations as necessary regarding any actions or policies/

procedures implemented. Prior to the implementation of any new/modified University policies/procedures, the policy/procedure shall be submitted to the President for approval, as necessary.

Recommendations made by the investigation team and/or EHS regarding the implementation of new/modified work procedures as approved by the President shall be the responsibility of the department head/supervisor of the injured employee to implement. The department will be held accountable (i.e., will have medical costs deducted from their budget) for future injuries that occur because of failure to implement the recommended modified/new work policies/procedures. If they do not concur with the recommendations, the department shall discuss the issue with EHS to mutually arrive at acceptable new/modified work procedures.

Aerial Platform Program

An aerial platform is a mobile or manually propelled device or vehicle-mounted device that has an adjustable position platform, supported from ground level by a structure or vehicle. Common examples of these devices are as follows:

1. Boom lifts
2. Scissor lifts
3. Push-around lifts
4. Trailer-mounted boom lifts

Aerial platforms or a combination of such devices are used to elevate associates to job-sites or for the purpose of maintenance activities above ground and to prevent serious accidents from occurring while they operate these devices. Only authorized (those who have been properly trained and certified) individuals shall operate an aerial platform/lift, extensible boom platform, aerial ladders, articulating boom platforms, vertical towers, ladder trucks, tower trucks, or any combination of such devices. Serious injury, death, or property damage may occur if not used properly or trained. The Aerial Platform Program applies to the above devices owned or leased by Towson University, which are operated by TU employees.

All operators and workers who are to perform work from any aerial lift shall be trained on this procedure and on the operating manual of the specific device which is to be operated or work performed from. Individuals who are scheduled to perform routine maintenance, inspections, or to repair any aerial lift shall have received training or possess appropriate knowledge on this procedure and on the operating manual of the specific device prior to performing any work on that device. Operating and maintenance manuals should be obtained from the manufacturer of the aerial platform. A copy of the operating manual, maintenance manual, and the log of inspections shall be kept with each aerial platform. These documents are considered an integral part of the aerial platform and are vital to communicate necessary safety information to users and operators.

No aerial platform shall be modified or altered without the modifications or alterations being approved and certified in writing by the manufacturer. Records of all approved

modifications and alterations, including written authorization from the manufacturer for the modification or alteration, shall be kept with the aerial platform as part of the operating and maintenance manual. The altering or disabling of interlocks or other safety devices is prohibited.

Asbestos Management

Asbestos, referred to as the "miracle mineral" by the Greeks, is a naturally occurring mineral. It has been incorporated in virtually hundreds of items such as floor and ceiling tile, automotive brake and clutch lining, steel beam fireproofing, pipe and tank insulation, gaskets, laboratory fume hood linings, electrical wiring insulation, drywall joint and spackling compounds, fire resistant insulation in fire doors and fire curtains in theaters. These items, commonly referred to as asbestos containing materials or ACM, are found in numerous facilities located on campus. A list of these facilities with known locations of asbestos containing materials will be distributed to the campus community on the EHS website. Clinical, epidemiological, and laboratory studies have shown that exposure to airborne asbestos fibers may be detrimental to your health.

Therefore, in order to minimize employee exposure, the following University guidelines shall be strictly adhered to. The only exception is if the item(s) involved has been positively identified, by a certified/approved laboratory, as being non-ACM. The guidelines are as follows:

1. Do not disturb any pipe or tank covering through any activity, which may cause damage to the protective outer covering.
2. Do not scrape, drill, or hammer items into ceiling tile, sheetrock, floor tile, or transite lined laboratory bench top, cabinet, or fume hood.
3. Do not insert hanging plant holders into ceiling tile.
4. Do not attach items to beams or columns that are covered with fireproofing material.
5. Do not remove or go above any ceiling tile unless clearance has been provided through the Department of Environmental Health & Safety (EHS).
6. Do not sand or abrasively abuse any floor tiles, transite lined laboratory bench top, cabinet, or fume hood.
7. Do not sand, chip, or disturb any ceramic/plaster of Paris items, especially those constructed prior to 1980.
8. Do not sand, cut, chisel, or otherwise disturb any pipe/tank gaskets.
9. Only authorized University personnel shall work with ACM. Proper personal protective equipment shall be utilized at all times while working with ACM.

By adhering to these simple guidelines, the chance of exposure to airborne asbestos fibers can be greatly minimized. Remember, if you are not absolutely positive the item is non-ACM, then do not disturb it; asbestos is a hazard when it is friable or disturbed so that fibers become airborne and are inhaled. If in doubt, contact the Department of Environmental Health & Safety at 410-704-2949 so arrangements can be made for sampling and laboratory analysis.

Confined Space Entry Program

The purpose of Towson University's Confined Space Entry Program is to establish minimum requirements and standards for safely entering confined spaces (e.g., boilers, manholes, etc.) on campus. The confined space entry procedures shall be used whenever a worker (TU employee or contractor) enters any space identified as being a confined space. Only employees trained in confined space entry procedures are permitted to enter a confined space at Towson University. Training is provided through the Department of Environmental Health & Safety (EHS).

Contractors

Whenever non-university employees are working on campus engaging in activities covered by the scope and application of this procedure they must directly coordinate with the Department of Facilities Management and Environmental Health and Safety. The Department of Facilities Management will ensure that all contractors comply with this policy unless their policy meets or exceeds the requirements presented in this document and is in full compliance with current OSHA/MOSH regulations. A copy of the contractor's Confined Space Entry Policy must be provided to the Department of Environmental Health & Safety (EHS) for review at least 48 hours prior to work commencement; otherwise, the contractor will comply with the University's Confined Space Entry Program.

Electrical Safety Program

Electrical safety refers to safe practices put in place to prevent incidents related to the use or presence of electrical tools, equipment, or infrastructure. Such incidents may lead to electric shock, electrocution, burns, falls, other serious injuries, explosion, fire, and property damage. These incidents can be caused by exposure to electrical current/voltage, electrical arcs or arc flashes, sparks, electrical static, contact with hot surfaces, overloaded circuits, improper grounding, collisions, etc. The Electrical Safety Program through the Department of Environmental Health & Safety is used to minimize the risk of injury to faculty, staff, students, and visitors; fire and associated property damage; interrupted operation; and shortened equipment life.

All facilities and electrical equipment used on campus must comply with the program. This program shall conform to the requirements of at least 29 CFR 1910 Subpart S – Electrical; The National Electrical Code (NEC; also identified as ANSI Standard ANSI/NFPA 70); NFPA 70E – NEC Standard for Electrical Safety in the Workplace; and any other applicable standards. To ensure electrical safety, it is important to follow local, state, and federal laws, regulations, codes, and guidelines, TU Policy, EHS guidelines, and industry best practices. This document may be supplemented by other code requirements and internal documents, such as:

- State and local code requirements
- Unique location safety requirements
- Energy conservation requirements
- Installation and service requirements
- Special operating requirements
- Lockout/Tagout Program

Laws & Regulations

Laws and regulations regarding electrical safety established by local, state, and federal governments ensure that electrical equipment, installations, and practices meet specific safety standards. These laws and regulations may vary by jurisdiction, but cover the following areas:

- Electrical installation standards: Standards for the installation and use of electrical equipment, wiring, and appliances. This includes requirements for proper grounding, electrical panel protection, and use of electrical conduit and connectors.
- Electrical tools and equipment standards: Standards for the design, construction, and use of electrical equipment and appliances. These standards may cover grounding, electrical insulation, current capacity, and other safety features.
- Electrical inspection and testing: Periodic inspections and testing of electrical installations and equipment to ensure that they meet safety standards and are in good working order.
- Electrical work practices: Safe work practices and procedures for those working with or around electrical equipment, including requirements for personal protective equipment, lockout/tagout procedures, and proper use of tools and equipment.

Electrical Conductivity

Electricity travels or flows through any conductive material, material that contains a conductor to the ground, or electrically grounded material. These materials are typically attached directly to the earth or indirectly linked through circuitry. Your body is also a conductor, which is why you must take precautions to protect yourself. A common example of conductive material is metal wiring, specifically placed along a circuit with the intent to distribute electricity where it is required, but conductors may take other forms. There are objects constructed of similar materials that may conduct electricity unintentionally. Often, this conducting material is solid, but it may be a liquid or gas.

Liquids such as water, which often has salts and other substances dissolved in it, may also conduct electricity. Although pure water is a poor conductor, water found in nature is almost never pure. Drinking water available through the tap is treated with additives, which will make it more conductive. Working with electrical equipment or doing electrical work in an environment where there is moisture indoors such as with pipes or high humidity, or outdoors in wet or rainy conditions will always be hazardous, so use proper hazard controls. Reduce electrical paths to ground through you by doing proper housekeeping, reducing conductive

materials near your work (especially at your feet) and on your body, reduce exposure to live electrical wiring.

Lightning is a natural example of air conducting electricity. This often occurs where clouds have a build-up of charge and air has been ionized/charged, typically by heat, to allow an electrical path to the ground from these clouds; such a path can also be created due to dust or other impurities in the air as well, making certain regions of the air more conductive. A similar example takes place when an electric arc forms in air due to work such as welding, or unintentionally such as in a faulty circuit or with improper grounding. It essentially allows electricity to move through the air due to intense heat or if the gap between conductive objects is short enough (this may depend on the voltage of the specific conductors). The arc ionizes the air, creating plasma (ionized air) that can carry electrical current; typically, air is a poor conductor.

Circuits, Loads, and Utilities

Electricity requires a closed circuit in order to flow; a circuit is closed when a connection between the source or circuit breaker to the ground is completed, typically through a switch or other electrical equipment. This is why it is important to not touch or be near live wiring, you may unintentionally complete a circuit to the ground. A typical circuit is rated for 20 amps or 20,000 milliamps. Some circuits may be as high as 500 amps. 0.05 amps (50 milliamps) is enough to cause you to stop breathing and possibly cause death. Circuit breakers are commonly located in the electrical panel and are used to protect electrical wiring and equipment from overheating and causing a fire, or a ground fault. A ground fault occurs when electricity follows a path other than through neutral wire for the electrical system. A ground fault may be due to a short circuit or current leakage. Electrical panels should have a minimum of 36 inches of clearance in all directions to avoid injuries or damage from creating accidental paths to ground.

The National Electrical Code requires that 80% of the maximum capacity for the power load for a circuit is not exceeded. That is, the difference between the maximum amperage rating (ampacity) for a circuit and its legally allowed current usage should be 20%, to avoid circuit overloading. For example, on a circuit with a 20-amp maximum rating, 16 amps (or 1,920 watts on a standard 120-volt circuit) is the legally allowed current load based on equipment. One may find the amperage on equipment by viewing its electrical tag; add all amps on a circuit based on tags for each piece of equipment connected to the circuit to find the total potential electrical load. Overloaded circuits are fire hazards; plugging too many devices into one receptacle or receptacles that are not rated for the intended load.

Beware of overhead power lines when working with ladders or elevated platforms. Such lines carry high voltage and can arc down to the ground when conductive materials are present. Minimum of 10 feet between metal tools and equipment, or materials and power lines that carry up to 50,000 V. Add 4 inches to the minimum 10 ft distance for every 10,000 V over the minimum 50,000 V. Only licensed high voltage electricians may work on overhead power lines. Always call the power utility company to interact with such equipment.

Injuries and Effects

The danger of injury is present whenever electrical power is used. All electrical equipment should be adequately insulated, grounded, or isolated to prevent bodily contact with any source of dangerous potentials. Use tools that are safe for the job. Make sure that you do not provide a lower-resistance path to the ground. Under certain conditions, people can be injured severely even from relatively low voltages coupled with high current. The primary effects of electrical shock or electrocution are due to current actually flowing through the body. Electrical burns occur when the body, or a part of it, completes a circuit connecting the power source with the ground. Although the resistance of dry, unbroken skin to electric current is relatively high, the amount of current necessary to kill a person is small. Therefore, it is easy to exceed lethal levels of current flow, especially if the skin is broken, wet, or damp with sweat. Specific issues regarding electrical safety must currently be covered locally by supervisors on standard operating procedures.

Ergonomics Guidelines

Computer Workstations

The use of personal computers has grown dramatically over the last few decades and it is commonly used on campus. The estimated computer usage in 1975 was 1 million; today use is estimated to be over 10 million. Extensive tests conducted by the National Institute for Occupational Safety and Health (NIOSH) and the Food and Drug Administration (FDA) show that radiation from VDT terminals or computer monitors, in normal operation, is well below existing governmental standards. The tests were conducted at a distance of two (2) inches from the screen. As a result, because the radiation levels are extremely low, there is no appreciable radiation hazard to the operator, particularly at normal viewing distances (~18 inches).

Although radiation is not a significant problem, any close work, including working on a VDT, can cause discomfort and stress over a period of time. That can affect how you do your job and your general health. Therefore, to enhance your comfort and reduce stress, follow these guidelines:

Computer Workstation

1. Top surface of the keyboard space bar is no higher than 2-1/2 inches above the work station.
2. Elbows at a 90 degree angle resting comfortably at side.
3. Top of viewing screen is at or below eye level.
4. Screen is about 18 inches from the operator's eyes.
5. Screen is tilted back ~10 to 20 degrees.
6. No glare is on the screen.
7. Images are clean, sharp, and easy to read.
8. For text entry, the keyboard should be directly in front of the operator.
9. For data entry, the keyboard should be directly in front of the operator's keying hand.

Body Position

1. Place document holder at the same height and distance from your eyes and the screen.
2. Knees at a 90-degree angle or greater.
3. Feet flat on the floor or supported by a footrest.
4. Adjust chair to accommodate elbow position.
5. Wrists flat over keyboard.
6. Head directly over shoulders; shoulders relaxed.
7. Lumbar back supported by chair back or cushion.

Glare

1. Adjust contrast and brightness on screen.
2. Position screen away from windows and overhead light.
3. Tilt screen to reduce glare.
4. Position lighting to reduce glare.
5. Adjust window coverings to reduce glare from outside light.

Exercises

The following exercises are recommended prior to working with a VDT:

1. Chin tuck.
2. Neck rotation.
3. Neck side & forward bending.
4. Chest stretch.
5. Wrist flexion/extension.
6. Finger stretch.

Work Methods

No matter how comfortable your workstation is, sitting still for long periods of time can be tiring and stressful. Therefore, in addition to the above:

1. Stretch occasionally and look away from your work.
2. If possible, get up from your terminal and do other tasks.
3. If possible, alternate different tasks throughout the workday.

Again, the above are recommended guidelines to follow to increase your comfort and reduce stress. For illustrations, etc. related to Proper Ergonomics of a PC, Computer Related Health Hazards, and Computer Related Repetitive Strain Injury, go to https://www.ceiwc.com/iwif/risk-management-services. IWIF is now known as Chesapeake Employers Insurance which is third party administrator for the state and can provide risk management consultants.

Again, the above are recommended guidelines to follow to increase your comfort and reduce stress. For illustrations, etc. related to Proper Ergonomics of a PC, Computer Related Health Hazards, and Computer Related Repetitive Strain Injury, go to: https://www.osha.gov/SLTC/computerworkstation/additionalinformation.html

https://www.osha.gov/SLTC/computerworkstation/hazards.html
https://www.cdc.gov/niosh/docs/99-135/
For more comprehensive guidance for computer workstations, please read the guidelines.

Laboratories

Employees that work in a laboratory setting may be exposed to ergonomics-related hazards such as awkward and/or static postures while sitting or standing for extended periods of time, repetitive movements, forceful exertion, bending and crouching, vibration, contact stress, and other factors.

Body Position/Seating

General:

- Keep shoulders relaxed and elbows at side

Sitting:

- Be aware of posture
- Keep space clear for knees below bench
- Situate body so that lab bench is just below the elbows
- Sit upright in seat, with back against the back support
- Tilt chair forward or use seat wedge to avoid jutting chin forward to work closely while seated
- Use footrest or support to position knees at 90-degree angle; also use footrest, if feet do not reach the floor while seated or adjust the sit lower
- Arms should be parallel to the floor and legs should fit comfortably under the table
- Keep shoulders, arms, and hands relaxed and elbows close to the sides while working

Standing:

- Keep floor clear of debris or objects
- Shift weight often enough to avoid back and foot strain
- Stand directly in front of surface or equipment, and as close to the work surface or equipment as safely possible

Clothing/Jewelry

- Avoid clothing/jewelry that is bulky, loose, or ill-fitting that can easily get caught on furniture/equipment, or otherwise causes an injury
- Wear comfortable, supportive shoes (shoes should be closed-toe within the laboratory)

Scheduling

Rest:

- Avoid long hours
- Minimize the amount of time spent on specific task

- Stretch, improve blood circulation
- Take regular rest breaks to avoid strain on eyes, hands, and muscles

Substitution:
- Rotate work duties
- Vary activity/tasks

Workspace

Setup:
- Adjust height of work surface to just below the elbows, if possible
- Adjust placement and position of your work area - This includes surfaces such as laboratory bench, desktop, or ventilation hood/cabinet; seat adjustment (chair, stool); and the placement of your seat in front of the work surface
- Design space with maximum body clearance to avoid accidental strikes and minimum reach for equipment and other items to reduce strain
- Place items on bench within reach, in a semicircular arrangement
- Place seat in an upright, supported position to avoid leaning, awkward bending or turning; where possible, adjust work surfaces to avoid bending
- Provide ergonomic, adjustable computer workstations for sitting and standing
- Provide support for arms, wrists, neck, back, legs, and feet; add padding to work surfaces
- Provide supportive comfortable chairs that include footrests and ensure that there is knee clearance under the lab table
- Select the right tools for the work/experiment to reduce repetitive movements and reduce other unnecessary hazards such as heat or vibration
- Use anti-fatigue, cushioned floor mat for standing
- Use trays to keep items organized, contained, and close by
- Work at a bench cut out; cut outs can help workers get close to their work while sitting against the back of their chair

Environmental Conditions:
- Adjust temperature and humidity in work area to increase comfort
- Practice good housekeeping (remove debris, dispose waste, reduce hazards)
- Use adequate light to avoid floor obstructions, to use the work surface and equipment clearly, and to reduce eye strain

Equipment/Techniques:
- Alternate your grip on items like forceps
- Equipment should be the right size for your hand
- For precision work, the work surface can be adjusted higher to provide support and reduce bending and hunching
- Keep equipment clean and well-maintained to avoid injuries or strain from use
- Provide ergonomic microscopes and pipettes; separate supports may be needed for the

arms when working with microscopes
- Provide handling devices to move and lift full carboys (containers)
- Store heavy items on lower shelves
- Use light pressure when performing tasks involving hands to use your equipment (e.g. pipettes)
- Use appropriate personal protective equipment (PPE) to avoid injury
- Use bottle dispensers and bottom dispensing carboys for dispensing liquids
- Use equipment with ergonomic design (e.g. rubber grips) to protect hands
- Use utility carts to move bulky or large amounts of items at once
- Use electronic, automated, or light touch model equipment when possible

For specific guidelines for laboratory equipment use or more comprehensive guidance in laboratories, please read the guidelines.

Proper Lifting

The predominant reason for back injuries on campus is due to improper lifting. Therefore, in order to alleviate this problem, the following techniques/guidelines are being provided to you. Please review and utilize these recommendations each and every time you lift objects. Some general procedures/guidelines that are recommended prior to actual lifting are:

1. Warm up - stretch/bend gently prior to lifting.
2. When possible, break larger loads into smaller ones.
3. Wear safety shoes with non-skid soles/reinforced toes.
4. Wear tight fitting gloves - avoid loose fitting clothes.
5. Load/unload at waist height.
6. Know how heavy the load is (push up on object to determine this) - get help or use special equipment to accomplish the task (hand truck, barrel dolly, etc. - remember to push, don't pull).

Once the above has been accomplished, the following techniques/guidelines for loading/unloading are recommended for actual lifting:

1. Stand close to load.
2. Grip firmly with your hands, not just your fingers.
3. Bring load close to your body.
4. Keep arms/elbows tucked in.
5. Keep your weight centered - back straight, stomach muscles tight, feet spread.
6. Bend your knees, let your legs do the work - lift your head/shoulders first, then let your legs push your body up slowly and smoothly, push buttocks out behind you.
7. Move slowly with the load; take small steps.
8. Do not twist; if you have to change direction, move your feet first.
9. Face the spot you have chosen and lower the load slowly.
10. Place load on the edge of the surface - slide into place.

11. For special situations like removing items from a shelf:
    a) stand on a platform (not a ladder) - lift in smaller pieces.
    b) grip firmly - slide load down as close to yourself as possible.
12. For a two-person lift:
    a) people should be the same height.
    b) one person should give the "lift" command.
    c) lift/raise at the same time - keep load at same height.
    d) move smoothly together - unload at the same time.
13. For awkward objects (chairs, desks):
    a) grip top outside/bottom inside corners.
    b) feet spread, back straight - use legs to lift.

For more comprehensive guidance for proper lifting, please read the guidelines.

Fall Protection Program

Falls are among the most common causes of serious work-related injuries and deaths. The highest counts of nonfatal fall injuries are in the educational and health services and the healthcare and social assistance industries. These injuries are mostly slips and falls on the same level. Falls in the workplace frequently involve:

- Unprotected edges
- Unsafely positioned ladders
- Misused fall protection
- Water, grease, and other contaminants on the floor
- Clutter and tripping hazards in walkways
- Irregularities in the floor and wall openings

Reducing fall injury and death rates require effective fall prevention and protection, and using appropriate PPE like harnesses, fall guards, and slip-resistant footwear. To reduce falls, the workplace must be set up to prevent employees from falling off of overhead platforms, elevated workstations or into holes in the floor and walls.

OSHA requires that fall protection be provided at elevations of four feet in general industry workplaces and six feet in the construction industry. In addition, OSHA requires that fall protection be provided when working over dangerous equipment and machinery, regardless of the fall distance. To prevent employees from being injured from falls:

- Guard every floor hole into which a worker can accidentally walk (using a railing and toe-board or a floor hole cover).
- Provide a guard rail and toe-board around every elevated open-sided platform, floor, or runway.
- Regardless of height, if a worker can fall into or onto dangerous machines or equipment guardrails must be provided and toe boards to prevent workers from falling and getting injured.

- Other means of fall protection that may be required on certain jobs include safety harness and line, safety nets, stair railings and handrails.
- Provide working conditions that are free of known dangers.
- Keep floors in work areas in a clean and, so far as possible, a dry condition.
- Select and provide required personal protective equipment at no cost to workers.
- Train workers about job hazards in a language that they can understand.

Fall hazards must first be controlled through engineering controls if feasible. When engineering controls are not feasible, then personal fall arrest systems, administrative controls and training must be instituted.

The Fall Protection Program through the Department of Environmental Health & Safety (EHS) is used to maintain a safe and healthful environment for employees that use fall protection, who are exposed to fall hazards and/or falling objects. The procedure establishes a means to analyze elevated work tasks and determine appropriate personal protection against falls in accordance with OSHA. The scope of the program relates to fall protection with respect to walking-working surfaces, vehicles, and equipment where an employee fall may occur or the hazard of falling objects exist, and it applies to all employees who are exposed to unprotected sides or edges of surfaces that present a falling hazard of four (4) feet or more to a lower level.

Employees will not be required, nor allowed to perform any duties which require the employee to get closer than six feet to an unprotected edge, platform, walkway of any building or utilize elevated equipment unless the employee is properly secured from falling. Exceptions to this requirement include the working sides of loading docks and exposed perimeters of performance/entertainment stages. Additionally, this program shall apply to all employees in order to minimize slips, trips, and falls on the same elevation. All employees shall control fall hazards in their work area by maintaining good housekeeping and shall report conditions that may lead to slips, trips and falls to the appropriate facilities maintenance unit. Contractors for Towson University are required to comply with all applicable OSHA/MOSH regulations and shall have their own fall protection program.

Forklift Safety Program

A powered industrial truck is defined as a mobile, power-driven vehicle used to carry, push, pull, lift, stack, or tier material. Forklifts are regulated under the OSHA Powered Industrial Truck Standard, 29 CFR 1910.178. It requires all operators of industrial powered lift trucks (such as forklifts, order pickers, pallet jacks, etc.) to be trained in safe handling, design features, inspection and other operational aspects of lift truck work. Initial training and evaluation of the lift truck operators must be completed before they are assigned to operate a powered industrial truck at Towson University. If an employee has had forklift truck training previously, their Department must provide the Department of Environmental Health and Safety (EHS) with documentation that the employee has been trained and evaluated, including the date, type of lift truck, and instructor.

EHS provides initial and refresher lift truck training to departments who utilize lift trucks on campus. Training shall consist of a combination of formal instruction (e.g., lecture, discussion, video, written material), practical training (demonstrations performed by the trainer and practical exercises performed by the trainee), and evaluation of the operator's performance in the workplace. Training topics include:

1. Operating instructions, warnings, and precautions for the types of truck the operator will be authorized to operate;
2. Differences between the truck and the automobile;
3. Truck controls and instrumentation, engine or motor operation, steering and maneuvering, fork and attachment adaptation;
4. Visibility (including restrictions due to loading);
5. Vehicle capacity and stability;
6. Inspection and maintenance and refueling and/or charging and recharging of batteries;
7. Any other operating instructions, warnings or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate;
8. Surface conditions, narrow aisles, other restricted places and pedestrian traffic where the vehicle will be operated;
9. Composition of loads to be carried and load stability including load manipulation, stacking, and unstacking;
10. Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust and other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation.

Only trained and authorized operators shall be permitted to operate a powered industrial truck at Towson University.

Hearing Conservation Program

The Occupational Safety and Health Act of 1970 (OSHA) mandates that Towson University provides a workplace free of excessive noise and will administer a continuing, effective hearing conservation program whenever employee noise exposures equal or exceed an 8-hour, time-weighted average sound level (TWA) of 85 decibels. The Department of Environmental Health and Safety (EHS) is responsible for overseeing and coordinating the Hearing Conservation Program.

Therefore, EHS will monitor all high noise, or potentially high noise areas, to identify those employees who are exposed to noise at or above 85 dBA TWA. Employees exposed to hazardous noise levels will be enrolled in the Hearing Conservation Program at no cost to the individual. The Hearing Conservation Program includes providing annual audiometric testing, hearing protection devices, and training in the following subjects:

1. Description of the human hearing system and how noise affects it;
2. An explanation of how noise is monitored in the workplace;

3. An illustration of how an audiometric test is performed, what the results mean, and how the results are used to monitor hearing loss;
4. A description of the various types of personal hearing protection devices available to the employee, how they work, and how to properly fit, wear, and care for them; and,
5. Various administrative and engineering methods of reducing noise levels and exposures in the workplace.

If you have a concern about excessive noise exposure in your area, please contact the Department of Environmental Health and Safety at 410-704-2949.

Heat Stress and Heat Illness Prevention Program

Workers in both outdoor and indoor work settings without adequate climate controls are at risk of hazardous heat exposure. Certain heat-generating processes, machinery, and equipment can also cause heat hazards when cooling measures are not in place. Excessive heat in the workplace can cause adverse health effects, including heat stroke and death, if not treated properly. Heat is the leading cause of death among all weather-related phenomena in the United States. Per the General Duty Clause from the OSHA Act of 1970, all employers must provide a work environment "free from recognized hazards that are causing or are likely to cause death or serious physical harm", and the following information is intended to help workers recognize and mitigate such hazards.

The Heat Stress and Heat Illness Prevention Program through the Department of Environmental Health & Safety (EHS) is used to protect employees from heat-related illness caused by heat stress in the workplace. The procedure applies to employees whose employment activities, indoor or outdoor, expose them to a heat index in the area where the employee is working that equals or exceeds 80 degrees Fahrenheit. This procedure does not apply to emergency operations and essential services (as defined in the Program) that involve protecting life or property; incidental exposures when an employee is not required to perform work activities for more than 15 consecutive minutes per hour; or buildings, structures, and vehicles that have a mechanical ventilation system or fan that maintains the heat index below 80 degrees Fahrenheit.

Millions of U.S. workers are exposed to heat in their workplaces. Although illness from exposure to heat is preventable, every year, thousands become sick from heat exposure, and some cases are fatal. Causes of heat stress in the workplace vary dependent upon sunlight; the ambient air temperature, humidity, and movement; location and type of work; and the materials and equipment involved. Examples of heat stress sources include, but are not limited to the following:

- Areas with heat-generating appliances (kitchen, laundry, etc.)
- Equipment (furnace, power tools, heavy machinery)
- Fire-containing structures (fireplace, fire pit, chimney, kiln)
- Hot work (welding, soldering, brazing, cutting, grinding, riveting, metalworking, glassblowing, work with open flame, sparks, and flammable materials, etc.)

- Uncontrolled temperatures indoors (e.g. attic, warehouse)
- Work in confined spaces (boilers, steam tunnels, hot water/steam pipe areas, vents, etc.)
- Work outdoors (e.g. agriculture, landscaping, roofing and building construction, asphalt/road maintenance, utility work, deliveries, etc.)

The heat hazards from these sources may derive from fire, hot/humid ambient air (stagnant or blown), hot gases and exhaust air, hot or molten liquids (e.g. heated metal, fresh asphalt, tar, boiling water), hot surfaces (including reflective materials), radiant heat and light, sparks or hot particles, and steam. Other contributions to heat stress may come from strenuous physical activity; protective gear such as tight, heavy, dark, and/or synthetic clothing or personal protective equipment; and individual risk factors such as pre-existing health conditions and lifestyle.

The severity of heat injuries will vary based on the duration, frequency, and intensity of heat exposure and the lack of recovery and rest. The consequences of heat stress in decreasing order of severity are as follows:

- Heat stroke
- Heat exhaustion
- Heat cramps
- Heat rash

EHS provides training for affected employees to assist in their recognition of such hazards and injuries.

Ladder Safety Program

Falls from portable/step ladders are a major source of serious injury. Users must be aware of possible hazards and take proper precautions to prevent falling. Below are recommended items that should be done before and after using a ladder:

1. Inspect the ladder frequently, before and after each use, or when the ladder tips over.
2. Reject any defective ladder and tag it “out of service” to prevent use by another person. Have the ladder repaired or discarded if beyond repair.
3. Use the ladder designed for your tasks. Consider strength, type, and height. For step ladders, use a ladder that is 3 feet shorter than the highest point you have to reach.
4. Get help when handling a heavy or long ladder (10 feet or more).
5. Keep ladder away from electrical wires. Check for overhead electrical wires before setting up. Ensure that all electrical equipment used during ladder work is in good condition and properly grounded.
6. Tie off ladder at the top and secure bottom to prevent it from slipping. Clear the area around the base and top of the ladder of debris, tools and other objects. Keep step ladders close to your work; don’t overreach.
7. Set up barricades and warning signs when using a ladder in a doorway or passageway. Do not place a ladder against flexible or moveable surfaces or erect on unstable surfaces.

8. Clean muddy or slippery boot/shoe soles before climbing the ladder. Avoid climbing with wet soles. Ensure that footwear is in good condition.
9. Face the ladder when ascending or descending and when working from it.
10. Keep the center of your body within the side rails.
11. Ensure that only one person is on a single-width ladder.
12. Maintain three points of contact by keeping two hands and one foot, or two feet and one hand, on the ladder at all times.
13. Grasp the rungs when climbing, not the side rails. Do not carry objects in your hands while on the ladder.
14. Do not work from the top three rungs of a portable ladder. Do not climb or sit on the top two steps of step ladders.

By following these simple procedures, ladder injuries can be prevented. For additional information, please contact the Department of Environmental Health and Safety (EHS) at 410-704-2949.

Lockout/Tagout Program

The Towson University Lockout/Tagout Program provides procedures to prevent accidental startup of machines or equipment, and to prevent the release of stored energy during servicing or maintenance of equipment. Lockout/Tagout must be used when employees are required to service or maintain equipment where hazardous energy exists, guards, or safety devices are bypassed, the employee must put any part of his/her body into the piece of equipment or when unexpected start-up could occur. The Lockout/Tagout program is regulated under the OSHA Standard, 29 CFR 1910.147.

This program defines responsibilities and establishes procedures for the lockout/tagout of energy isolating devices whenever maintenance or servicing is done on machines or equipment. These procedures must be used to ensure that the machine or equipment is stopped, isolated from all potentially hazardous energy sources, and locked out before employees perform any servicing or maintenance where the unexpected energization or start-up of the machine or equipment or release of stored energy could occur.

Through the use of specific procedures that involve applying locks and/or tags, equipment is isolated from both kinetic and potential electrical, chemical, thermal, hydraulic, pneumatic, and gravitational energy prior to equipment repair, adjustment or removal. While lockout is the preferred method of isolating machines or equipment from energy sources, tagout is permitted when the energy isolating devices are not lockable. Tagout may not be used when the energy isolating devices are lockable.

The Department of Environmental Health and Safety (EHS) will train employees before they are required to perform any lockout/tagout procedures. Every authorized employee will receive initial training in the significance of the lockout/tagout procedures, as well as how to use those procedures. Retraining will be held annually. Only authorized (trained) employees may lockout machines or equipment. Affected employees are not authorized to perform any type of

lockout/tagout procedure. Authorized employees will notify the affected employees whenever a lockout or tagout will occur, as well as when the equipment is being placed back in service.

Machine Guarding Program

Machine guarding is an essential part of work with powered tools and other machinery. Personnel and students, in general, must be trained in the safe use of hand tools, power tools, and other machinery, and counseled to take every precaution to prevent accidents. The diversity of activities conducted on the University campus requires use of such machinery in the arts to produce crafts/works; in science and engineering workshops for fabrication, alteration, or maintenance of devices or material; and by Facilities Management to produce parts or other useful products. Thus, personnel and students must be properly supervised and provide the correct type of equipment, personal protective devices, and safely guarded machinery to perform their assigned tasks.

Any machine part or process may cause injury if it is not properly safeguarded and maintained, or if the operator or other people in the work area are not familiar with or cautious of its hazards. Crushed hands and arms, crushed/severed fingers, abrasions, lacerations, amputations, burns, blindness, electrocution, etc. are part of a list of possible machinery-related injuries. Any machine part, function, or process which may cause injury must be safeguarded. When the operation of a machine or accidental contact with it can injure the operator or others in the vicinity, the hazards must either be eliminated or controlled.

The appropriate guard will likely be included with the machine purchased from the manufacturer; any new machinery purchased should include such parts. If there is no guard on machinery where it is required (e.g. legacy equipment), shop supervisors or other responsible individuals for the work areas should seek the appropriate guard from the manufacturer or approved vendor, or the equipment should be removed from service. Regardless of the type of guard employed, guards should meet the following minimum general requirements:

- Durability to not be damaged during normal operation
- Efficacy in preventing contact with body parts
- Integrity in being secure to the machine, so that operators or bystanders may not easily defeat (remove/tamper with) the guard, and preventing objects from falling into moving parts
- Safety in not creating new hazards such as shear point, a jagged/pointy edge, or an unfinished surface that could cause lacerations
- Facility in not creating interference to the operator from performing the job quickly and comfortably; and
- Allowing safe lubrication of machine (if possible, without removing the guards). Guards shall be affixed to the machine where possible and secured elsewhere, if for any reason attachment to the machine is not possible.

Personal protective equipment should be used during operation of machinery with guards in place.

The Machine Guarding Program is designed to ensure that University employees and students follow procedures which ensure that equipment or machines are operated safely and meet state, federal, and industry machine guarding standards. Machine guards may be employed to create a physical barrier between a user and the hazard, but not all hazards may be guarded in this manner (see **Electrical Safety Program** and **Lockout/Tagout Program** for information on hazards from energized equipment.) Appropriate training on hazards in the work area, hazards associated with the machines used, and use of machine guards will ensure a safe workplace.

Office & Workplace Safety Guidelines

One of the elements of the Governor's State Employee Risk Management Administration Program (SERMA) is office safety. The scope of the guidelines pertains to reducing accidents and injuries on campus, primarily in offices and non-laboratory workplaces. Although there are specific standards governing laboratory hygiene and activity, laboratories which contain office space as part of a suite or office equipment will comply with these guidelines and the general safety guidelines contained herein may also be applied to these spaces. The guideline applies to personnel, students, and any visitors to campus. To ensure a safe workplace, the following guidelines are provided for your information. By adhering to these guidelines, office safety hazards can be identified and expediently corrected to avoid potential injury.

1. Keep aisles, stairs and exits clear.
2. To prevent striking someone, doors opening into corridors should be labeled "Caution - Open Slowly"
3. Keep floors clean, dry, free of broken tiles, paper clips, rubber bands, and/or other foreign materials.
4. Make sure floors and walls are free from protruding nails, splinters, holes, loose boards, loose panels, hooks and staples.
5. Make sure electrical and/or telephone cables do not cross, dangle or extend into walkways or under chairs.
6. Keep desk and file cabinet drawers closed when not attended.
7. Make sure office chairs are in good condition: free of sharp edges, broken seats, loose backs, loose arm rests or loose casters.
8. Make sure heavy hanging objects are properly secured.
9. Make sure typewriters and other office machines are secured on firm working surfaces.
10. Keep pointed objects such as razor blades, X-Acto knives, etc. boxed or properly stored.
11. Make sure storage rooms are kept neat, orderly, well-lit and material is properly stored.
12. Make sure every effort has been made to arrange office furniture and electrical appliances with safety and personnel in mind and to obtain maximum utilization of installed facilities (overhead lighting, overhead drop cords, and outlets located on posts).
13. Make sure fire extinguishers are accessible.
14. Make sure fire extinguishers are properly mounted and secured.

15. Make sure fire alarms, bells, etc. are free of foreign objects such as paper, rags or wooden blocks.
16. Do not wrap electrical cords around metal water pipes or warm appliances.
17. All electrical tools and equipment, including cords, cables, and hoses shall be free of splices and shall not extend into walkways. All receptacle plates and junction boxes must be properly secured. Frayed or damaged insulation on electrical cables at receptacle ends (grounding prong missing, broken plugs) are considered defective.

For more comprehensive guidance in the workplace, please read the guidelines.

Personal Protective Equipment Program

The OSHA Personal Protective Equipment Standards (29 CFR 1910.132, 1910.133, 1910.135, 1910.136, and 1910.138) require Towson University to furnish and require employees to use suitable personal protective equipment (PPE), such as hard hats, safety glasses, goggles or splash shields, gloves, safety shoes, etc. where there is a "reasonable probability" that injury can be prevented by such equipment. PPE will be provided to all employees who are required to wear it at no cost to the employee. Hearing and respiratory protection are covered under other specific OSHA standards.

While the use of PPE is important, it is only a supplementary form of protection, necessary where all hazards have not been controlled through other means of engineering or administrative controls. Engineering controls will be implemented before the use of PPE. Employees shall receive training concerning the hazards of the chemicals, processes, or instruments used in their work and the measures that they can take to protect themselves from these hazards. They will also be trained in how to properly wear and maintain their personal protective equipment. PPE will be worn in accordance with manufacturer's instructions.

Managers and Supervisors are responsible for knowing the hazards in their areas that require PPE and assuring that safe operations are maintained within their departments to prevent injuries to the eyes, face, head, hands, and feet. They must also enforce PPE use in the areas in which it is required and immediately notify the PPE Program Administrator of any new job hazards that require new or different types of PPE.

Safety Data Sheets (SDS) or other references should be consulted for information on the type of protective measures required for the particular work being performed. Eye, face, head, hand, and foot hazards have been assessed on campus by EHS based upon a review of employee job descriptions and job audits. The appropriate protection will be provided for all affected employees. Employees are required to use PPE wherever hazards exist.

Respiratory Protection Program

Millions of workers are required to wear respirators in various workplaces throughout the United States. Respirators are among the most important types of personal protective equipment for work in a hazardous environment. Respirators protect workers against

insufficient oxygen environments, harmful dusts, fogs, smokes, mists, gases, vapors, and sprays. These hazards may cause cancer, lung impairment, diseases, or death. Compliance with the OSHA Respiratory Protection Standard will decrease the likelihood of illness, injury, and death.

A respirator is a device that can protect the user from respiratory hazards, such as chemicals (including harmful vapors, gases, and fumes), infectious aerosols and related biological hazards, airborne radiological hazards, dusts of varying composition, and respirable particulate matter such as silica. Not all respirators provide the same level of protection or can protect against each hazard. Selecting the right respirator requires an assessment of all the workplace operations, processes, or environments that may create a respiratory hazard. The identity of the hazard and its airborne concentrations need to be determined before choosing a respirator. This assessment should be done by experienced safety personnel or by an industrial hygienist.

The Respiratory Protection Program is to maintain a safe and healthful environment for employees that may be exposed to respiratory hazards in their work area. The program establishes procedures for the selection, use, and care of respiratory protective devices, and is used to identify procedures and designate responsibilities. It will do so in cases where respiratory protection that is required to be used by employees and voluntarily used by employees in instances where such protection is not required. Respirators shall only be used to protect employees from inhalation hazards in the following circumstances:

1. When other options for hazard control are infeasible (i.e., engineering controls or substitution of less toxic materials);
2. While engineering controls are being installed or repaired; or
3. During emergencies.

Wherever feasible, engineering controls and work practices will be used to maintain worker exposures below regulatory exposure limits and at a safe level. When respirators are to be used, all requirements contained within the program shall be followed. Consultation with the Department of Environmental Health & Safety (EHS) may take place to assess when respirator use is required and for performing quantitative fit testing for employees.

Trenching & Shoring Plan/Excavation Safety

OSHA defines an excavation as any man-made cut, cavity, trench, or depression in the Earth's surface formed by earth removal. A trench is defined as a narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth of a trench is greater than its width, but the width of a trench (measured at the bottom) is not greater than 15 feet (4.6 m). Trenches are typically classified based on their purpose and depth.

Excavation and trenching are extremely hazardous operations that expose workers to the possibility of serious injury or death and are among the most hazardous construction operations. The greatest hazard associated with trenching is the cave-in of the surrounding soil on workers in the trench, the result often being fatal. One cubic yard of soil can weigh as much as a car. Other hazards involved in trenching include falls, falling loads, confined spaces,

hazardous atmospheres, hazards from mobile equipment, and exposure to underground utilities such as electricity, water, sewer, steam, gas, and communications. Employees involved in excavation operations should be knowledgeable about how to minimize these hazards.

The Trenching & Shoring Plan is used to comply with regulations established by OSHA, as enforced by MOSH, the Maryland Underground Utility Damage Prevention Act, and the International Building Code, Chapter 33, Section 3304 “Site Work”. The University is dedicated to providing safe work facilities for students and employees, and this plan will apply to all faculty, staff, and/or students who are involved in excavation operations on property owned and/or operated by Towson University and operations associated with the campus that are located in the State of Maryland. Provisions of 29 CFR 1926.650, 1926.651, and 1926.652 for "Excavation, Trenching and Shoring" will apply, unless more stringent safety regulations for that jurisdiction are in effect. Contractors involved in excavation operations on Towson University property are required to comply with all applicable provisions of OSHA/MOSH regulations as per their contract.

The Department of Environmental Health & Safety (EHS) may provide consultation based on this Plan, distribute this Plan, and assist in coordinating safety training. Facilities Management will review and approve project concepts and designs that may impact utilities on University property and any utility repair proposals, and it will inspect such repairs after they are completed. If contractors are used, Facilities Management will interface with contractors under its control to monitor compliance with OSHA/MOSH regulations.

Radiation Safety

Laser Safety Program

A laser - **l**ight **a**mplification by the **s**timulated **e**mission of **r**adiation- is a device that emits a narrow beam of concentrated light. Lasers typically store energy from an external source (e.g. electrical discharge, chemical reaction, optical illumination) that releases the energy as light. The light (or electromagnetic radiation) that is emitted will fall into the infrared, visible light, ultraviolet, or X-ray portions of the electromagnetic spectrum. The light from a laser is monochromatic and coherent, meaning that the light waves move in the same direction at the same wavelength. It is also very directional, with a narrow beam that is powerful and concentrated. The type of light a laser emits, guiding the function of the laser itself, is primarily determined by the lasing medium and its energy levels.

The power and directionality of lasers can make them a dangerous tool. Reflections or scattering of laser light from surfaces can be hazardous depending on the strength of the laser conveyed by its class, with various injuries to the eyes and skin. There are also nonbeam hazards from the equipment such as fire, shock and electrocution from high voltage, and burns from high heat, or chemical hazards such as toxicity, asphyxiation, cryogen burns, flammability, or corrosivity. Aside from the inherent hazards associated with lasers, there are other behaviors that may lead to injury as follows:

- Improper use of interlocks with a higher-powered laser
- Inattention to non-beam hazards
- Lack of use of signs or labels for laser equipment, their specific parts, and their location
- Lack of use or inappropriate use of personal protective equipment
- Laser beam not enclosed or terminated properly
- Misuse of laser products
- Use of an optical instrument when not advisable

These conditions may lead to equipment failure, and/or a potential errant exposure to personnel. Personnel should be aware of the hazards of the specific equipment that they utilize or that is present in their work areas.

The Laser Safety Program is available to those who employ laser use on campus. The primary focus is on laboratories where Class 3B and Class 4 lasers are used. Basic safety training about how lasers work, behaviors and PPE used to reduce exposure to laser hazards, and how to use available laser interlock systems of which some laboratories are equipped is available through the Department of Environmental Health & Safety (EHS). EHS may conduct inspections of laser laboratories to ensure that equipment matches what is reported and that conditions for use meet safety standards appropriate for the laser.

Radiation Protection Program

The Maryland Department of the Environment Air and Radiation Management Administration (MDE-ARMA) has established regulations for the control of ionizing radiation (COMAR 26.12.01.01-.03). These regulations establish the requirements for the safe use of radiation-producing devices and sealed and unsealed radioactive materials. A Department of Environmental Health & Safety (EHS) representative acts as the University's Radiation Safety Officer (RSO) to ensure compliance with the applicable regulatory requirements and to maintain the University's Radioactive Material License.

EHS is committed to keeping radiation exposure to workers and the general public as low as reasonably achievable (ALARA). A Radiation Safety Manual has been compiled to provide personnel working with radioactive materials standard operating procedures to ensure their safety. In addition, a Radiation Safety Guide for Ancillary Personnel has been developed to provide basic radiation safety information for ancillary campus personnel (Housekeeping, Facilities Management and University Police) who occasionally enter or work in areas posted with the radiation symbol. Ancillary personnel are ***not*** allowed to use or handle radioactive materials.

Prior to using radioactive materials, personnel must be cleared by EHS as either a Principal User (PI) or an Individual User (IU). PIs must complete an application package. The completed package will be submitted to MDE-ARMA for approval and for the PI to be added to the Radioactive Material License. Employees/students requesting clearance as an IU must complete general and site-specific training and, once approved, can only use radioactive materials under the direct supervision of a PI.

As part of the concept of ALARA, all users of radioactive materials will be issued dosimetry to monitor for exposure. Dosimetry appropriate for the type of work the individual will be performing will be issued by EHS on a monthly basis. Dosimetry reports will be reviewed monthly by EHS to determine any occupational exposure. If an exposure occurs, the RSO will review the individuals work practices to determine the cause of exposure and will make the necessary recommendations for changes in procedures, etc. to prevent future exposures.

Additional ALARA guidelines that are followed are: 1) all regulated materials will be used/stored in secured, clearly labeled, permitted locations that are well away from the general public; 2) periodic surveys of all licensed areas where radioactive materials are used/stored will be performed; 3) radiation exposure to workers under the age of 18 and workers who have declared their pregnancy will be kept to 10% of the regulatory limit. If a worker does not formally declare their pregnancy, normal exposure limits will be observed; and 4) minors less than 16 years old are strictly prohibited from entering or working in any campus location where regulated radioactive substances are used or stored or when there is any potential to exposure to ionizing radiation.

To ensure that only licensed radioactive isotopes are purchased, that the licensed limit of radioactive isotopes are not exceeded, and that a proper inventory of all radioactive materials on campus is maintained, the RSO or an approved EHS representative must place all orders for radioactive materials. In addition to this, PIs will receive a quarterly inventory report to update use, decay and disposal of radioactive materials in their possession. Radioactive waste management will be provided by EHS. This includes decay-in-storage of waste containing isotopes with a half-life less than 90 days and disposal of waste containing long-lived isotopes.

All radiation-producing devices must be registered with MDE-ARMA. Examples of these devices include x-ray diffraction units, electron microscopes, and certain cathode ray tubes. If you use or plan to use any of these types of devices on campus, you must be trained in the safe use of the equipment. Manufacturers' representatives can provide the necessary training. If a device that is capable of producing radiation is either purchased by or donated to TU, EHS must be contacted prior to its use and the device must be registered with MDE-ARMA prior to operation. To avoid delays in use, registration of the device should be done as soon as possible. Annual inspections of all radiation-producing devices will be performed by the Radiation Safety Officer and a formal certification will be performed every three years by an MDE-ARMA approved inspector. All licensing fees will be funded by EHS.

Smoking Free Campus Policy (TU Policy 06-14.00)

Towson University (TU) is committed to promoting a healthy and safe environment for students, faculty, staff, vendors, and visitors. This policy is intended to reduce the health risks related to smoking and secondhand smoke for the campus community. Smoking is prohibited on all property owned, leased, or operated by the University. This consists of all buildings, including residence halls; all grounds, including exterior open spaces, parking lots and garages, on-

campus sidewalks, streets, driveways, stadiums, recreational spaces and practice facilities; and in all University-owned or leased vehicles.

Faculty, staff and students who violate this policy are subject to University disciplinary action, including fines and sanctions. Visitors who violate this policy may be denied access to the University campuses and may ultimately be subject to arrest for criminal trespass. Regarding student, faculty/staff, and visitor violations of this policy should be respectively referred to the Office of Student Accountability and Restorative Practices, the Office of Human Resources, and the University Police Department.

Storm Water Management

In 1987, Congress amended the Clean Water Act and required the development of a stormwater permitting program by the USEPA. The agency had long required permits for the discharge of pollutants into surface and groundwater under its National Pollutant Discharge Elimination System (NPDES). Towson University (TU) maintains three (3) NPDES permits: an individual permit, which is specifically tailored to controlling the University's discharge of wastewater to surrounding surface waters; a general permit, which covers the discharge of stormwater runoff from land, pavement, building rooftops, and construction sites on campus; and a permit for discharges from stormwater associated with campus industrial activities.

Stormwater is water runoff after a rainstorm from streets, construction sites, parking lots, buildings, and other areas that goes directly into storm drains and eventually into local streams and rivers. Runoff is excess surface water that is a result of impervious surfaces. Impervious surfaces are areas constructed of infrastructure such as pavement, concrete, and buildings that do not allow water to penetrate into the ground. This water can pick up pollutants along the way to these streams and rivers. TU has set up a Storm Water Management program that seeks to protect this water from pollutants.

The Storm Water Management program involves the permits, and requires personnel education and outreach, public involvement and participation, illicit discharge detection and elimination (see the TU Policy), construction runoff control, pollution prevention, reporting, inspections, and recordkeeping. There are many things that we can do to help reduce pollution from this runoff:

- Disposing of waste properly
- Placing litter in proper containers
- Never dump anything into a storm drain
- Check vehicles for leaking fluids
- Recycle used motor oil

An illicit discharge is disposal of anything other than storm water into the storm water drainage system. This includes illegal connection or tie-ins to the storm sewer system. Examples of illicit discharge to storm sewer system:

- Trash
- Sanitary wastewater (sewage)

- Septic tank waste
- Car wash, laundry, or industrial wash water
- Concrete truck washout
- Improper disposal of automotive fluids and household toxics
- Soapy water used to wash parking lots, sidewalks, buildings and loading docks
- Grease trap overflows
- Sump pump with contaminated water flowing into storm drain
- Dirty water from mopping being dumped into a storm drain

To report an illicit discharge please contact the Towson University Police Department at (410) 704-4444. NOTE: For additional information regarding Storm Water Management education/research go to http://www.towson.edu/fcsm/centers/uebl/ or contact the EHS at (410) 704-2949 or safety@towson.edu.

Wastewater/Sanitary Sewer Discharge

The University's Industrial Wastewater Discharge Permit strictly prohibits the disposal of waste chemicals and corrosives via the sanitary sewer system. No waste chemicals (e.g., old, unused, excess, etc.) including but not limited to, organic solvents and/or corrosives (pH < 6 and > 10) will be disposed of on campus via the sanitary sewer system without advance written approval of the Department of Environmental Health & Safety. University contractors shall submit safety data sheets for all chemicals to EHS for approval, prior to their use or disposal. Contractors will be held strictly accountable for the improper disposal of waste chemicals and corrosives on campus via the sanitary sewer system.