



Chemical Hygiene Guide

**New Jersey Institute of Technology
Environmental, Health and Safety Department
University Heights,
Newark, NJ 07102-1982
(973) 596-3059**

August 2019

In 1990, Federal OSHA first introduced Occupational Exposure to Hazardous Chemicals in Laboratories (29 CFR 1910.1450). Known as the Laboratory Standard, this regulation was aimed at controlling potential chemical hazards at the laboratory scale. Many previous OSHA standards were aimed at controlling potential hazards at the industrial scale. The Lab Standard recognizes the unique nature of the laboratory environment and applies to all laboratories that use hazardous chemicals in accordance with the definitions of laboratory use; laboratory scale; and hazardous chemicals provided in this and other OSHA standards.

In February 1993, New Jersey's Public Employees OSHA adopted the Laboratory Standard which establishes the minimum requirements for chemical hygiene practices for public-sector laboratories in New Jersey. Both federal and state standards seek to protect the health and safety of laboratory workers by requiring the following main components of a chemical hygiene program:

- Establishment of a written Chemical Hygiene Plan (CHP);
- Development of written Standard Operating Procedures (SOPs) for laboratory procedures involving hazardous chemicals;
- Appointment of a Chemical Hygiene Officer (CHO);
- Establishment of "Designated Areas" and other enhanced protective measures when working with select carcinogens, reproductive toxins, chemicals with unknown toxic properties, and other Particularly Hazardous Substances (PHS);
- Training of laboratory workers;
- Mechanism to receive medical consultations and exams for workers with potential work-related hazardous chemical exposures;
- Procedures for the prior approval of certain high-hazard laboratory operations; and
- Hazard identification and communication.

The Laboratory Standard supersedes many previous OSHA regulations regarding the use of hazardous chemicals in laboratories. However, certain elements of the OSHA Hazard Communication Standard and the NJ Worker and Community Right-to-Know Standard overlap with Laboratory Standard requirements. Similarly, this version of the NJIT Chemical Hygiene Guide supersedes previous Chemical Hygiene Plans that have been developed by NJIT as a component of the comprehensive Safety and Environmental Management Plan posted on the Pipeline, specifically, Section S-4-3 – Laboratory Chemical Hygiene.

The purpose of the Chemical Hygiene Guide is to provide the generic framework for the development and implementation of a laboratory-specific Chemical Hygiene Plan for each university laboratory as required by the Laboratory Standard. Due to the unique nature of research and instructional activities occurring in laboratories throughout the various departments, schools, and centers that comprise NJIT, this generic guide requires amendments to make it a laboratory-specific Chemical Hygiene Plan. Typically, these amendments are achieved by individual laboratories developing and implementing written laboratory-specific SOPs, and inserting them in the section entitled, "Laboratory-Specific Standard Operating Procedures" of this guide.



NEW JERSEY INSTITUTE OF TECHNOLOGY
University Heights, Newark, New Jersey 07102

Document Control No.:

Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

Safety at NJIT is achieved by providing safe facilities; sound policies, programs, and procedures; protective equipment; and appropriate education and training for NJIT personnel and students.

A **hazardous chemical** is defined in the OSHA Laboratory Standard as “a chemical for which there is statistically significant evidence based on at least one study that acute or chronic health effects may occur in exposed employees.” NJIT has prepared this Chemical Hygiene Plan (CHP) to ensure the safe use of hazardous chemicals in the laboratory. It specifies procedures, equipment, personal protective equipment and work practices that are designed to protect employees from health hazards presented by hazardous chemicals used in the laboratory. It also provides information necessary to comply with guidelines established by OSHA, NJIT, or national consensus associations. The CHP is intended for use by those laboratory personnel and students who may be exposed to hazardous chemicals in the course of their work, and those personnel with responsibility for health and safety in the laboratory. The CHP is available for review by all NJIT personnel and students.


This Chemical Hygiene Plan encompasses the following area(s) (to be completed by Chemical Hygiene Officer):

Name of Department or Division:

Name of Principal Investigator:

Name(s) of Chemical Hygiene Officer(s):

List building/room(s) covered by the CHP:

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

EMPLOYEE ACKNOWLEDGEMENT AND REVIEW OF CHEMICAL HYGIENE PLAN


Principal investigators are responsible for communicating university, as well as their own safety requirements to individuals in their laboratory. EHS has prepared the following form to assist with documenting this communication and hands-on protocol-specific training. Additional copies of this form (PDF) are available from the EHS Department.

Specific safety requirements will vary based upon the individual and their assigned work activities in each laboratory. Principal investigators are expected to review relevant topics with individuals based upon their anticipated and assigned work activities. At a minimum, principal investigators need to review with their lab workers:

- The N.J. Hazard Communication Standard, including applicable provisions of the N.J. Worker Community Right-to-Know Act.
 - For additional information and resources on these programs, go to: <http://www.njit.edu/environmentalsafety/righttoknow/index.php>
- The OSHA Occupational Exposure to Hazardous Chemicals in Laboratories (the Lab Standard) as it pertains to the standard (Appendix H of this Guide).
- Applicable exposure limits (Appendix J of this Guide).
- Location of the Chemical Hygiene Plan (where CHP is maintained in the lab).
- Location of Safety Data Sheets (SDS) for chemicals used in the lab.
- Specific information concerning hazardous chemicals used in the lab.
- Specific elements of the CHP.

The following employees have reviewed and understood the NJIT Chemical Hygiene Plan, this Laboratory’s Standard Operating Procedures (SOP’s), as well as the Safety Data Sheets (SDS’s) for the chemicals they use:

Print Name	Sign Name	Date

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

DOCUMENTATION OF HANDS-ON TRAINING and LABORATORY-SPECIFIC STANDARD OPERATING PROCEDURES

The NJIT Environmental Health and Safety Department (EHS) acknowledges that the NJIT Chemical Hygiene Plan is generic in nature and cannot be specific to all laboratory activities occurring in each individual NJIT research or instructional laboratory. Therefore, it is required that Principal Investigators and Laboratory Supervisors insert laboratory-specific Standard Operating Procedures (SOPs) into this plan that are specific for the work being performed in the particular laboratory’s covered by the plan. EHS is available for consultation on the development of laboratory-specific SOPs. In addition, a library of generic SOPs is appended to this document. Additionally, Principal Investigators, Laboratory Supervisors, and their designees are responsible for providing workers in their laboratory with protocol-specific hands-on training. In the spaces below, please insert the titles of the protocol Specific SOPs included in this plan as well as the names of lab workers who have been provided with hands-on training.

Laboratory Specific SOPs:

SOP Title	Nature of Hazard	Inserted in Section

Documentation of Hands-On Training:

Name	Title	Date	Procedure/Protocol	Trained By


	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

TABLE OF CONTENTS

1.0 PURPOSE 15

1.1 Scope 15

1.2 Responsibilities..... 15

 1.2.1 Administration..... 16

 1.2.2 Faculty/Principal Investigator..... 16

 1.2.3 Lab Workers..... 19

 1.2.4 Environmental, Health and Safety Department 20

1.3 Laboratory-specific Chemical Hygiene Plan 21

2.0 STANDARD OPERATING PROCEDURES 22

2.1 Training Requirements 22

 2.1.1 General Training 23

 2.1.2 Laboratory-Specific Training..... 23

 2.1.3 Work Conducted Autonomously or Independently..... 24

 2.1.4 Recordkeeping of Safety Training 24

2.2 Laboratory Security 24

2.3 Laboratory Door Signage..... 25

2.4 Laboratory Safety Inspections 25

 2.4.1 Laboratory Self-Inspections 25

 2.4.2 EHS Laboratory Inspections for Quality Assurance..... 25

2.5 Laboratory Decommissioning & Vacating Process..... 25

3.0 PROCUREMENT, INVENTORY, LABELING & STORAGE 26

3.1 Procurement..... 26

3.2 Chemical Inventory..... 26

 3.2.1 All Hazardous Chemicals..... 26

 3.2.2 Select Agent Toxins 27

 3.2.3 Controlled Substances 27

3.3 Labeling 27

3.4 Storage 28

 TABLE 1: Specific Chemical Incompatibilities 30

 TABLE 2: Segregation of Acids and Bases..... 31

4.0 CLASSES OF HAZARDOUS MATERIALS 32

4.1 Flammable and Combustible Liquids 32

4.2 Corrosive Materials 32


4.3 Highly Reactive and Unstable Materials..... 32

4.4 Compressed Gases, Cryogenic Liquids, and Toxic Gases..... 32


4.5 Particularly Hazardous Substances 33

 4.5.1 Select Carcinogens..... 33

 4.5.2 Reproductive Toxins..... 33

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450


4.5.3	<i>Acutely Toxic Substances</i>	33
4.6	Sensitizers	33
4.7	Irritants	34
4.8	Restricted Chemicals	34
4.9	Nanomaterials	34
4.10	Select Agent Toxins	34
4.10.1	<i>Possession of Permissible Amounts of Select Agent Toxins</i>	35
4.10.2	<i>Possession of Select Agent Toxins Above Permissible Amounts</i>	35
5.0	PRIOR APPROVALS AND SPECIAL PRECAUTIONS	36
5.1	Use of Particularly Hazardous Substances (PHS) and Restricted Chemicals	36
5.2	Use of Human Materials, Pathogens, and Select Agents & Toxins	37
5.3	Use of Radioactive Materials	37
5.4	Use of Animals	37
5.5	Working Autonomously or Independent	37
5.6	Generation of Mixed Waste	38
5.7	Respiratory Protection	39
5.8	Minors and Volunteers in NJIT Laboratories	39
6.0	CONTROL METHODS	39
6.1	Substitution	40
6.2	Engineering Controls	40
6.3	Administrative Controls	40
6.3.1	<i>Hazard Information</i>	41
6.3.2	<i>Recordkeeping</i>	41
6.4	Personal Protective Equipment	41
6.4.1	<i>Eye and Face Protection</i>	42
6.4.2	<i>Hand Protection</i>	43
6.4.3	<i>Clothing</i>	44
6.4.4	<i>Respiratory Protection</i>	44
6.4.5	<i>Other PPE</i>	45
7.0	LABORATORY SAFETY EQUIPMENT	45
7.1	General Laboratory Ventilation	45
7.2	Chemical Fume Hoods	46
7.3	Biological Safety Cabinets	46
7.4	Emergency Equipment	46
7.4.1	<i>Fire Extinguishers</i>	47
7.4.2	<i>Safety Showers</i>	47
7.4.3	<i>Drench Hoses</i>	47
7.4.4	<i>Eyewash Stations</i>	47
7.4.5	<i>First Aid Kits</i>	48

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450


7.4.6	Spill Kits	48
7.5	Equipment Maintenance.....	48
8.0	CHEMICAL ASSESSMENTS & EXPOSURE MONITORING	48
8.1	Chemical Assessments	48
8.2	Personal Exposure Monitoring.....	49
8.3	Communication & Documentation	49
9.0	MEDICAL CONSULTATION, EXAMINATION & SURVEILLANCE.....	49
9.1	Health Care Providers.....	49
9.2	Information Provided To Physician	50
9.3	Medical Records	50
10.0	WASTE MANAGEMENT	50
10.1	Container Labelling.....	52
10.2	Container Management	52
10.3	Waste Disposal	53
10.4	Satellite Accumulation Areas (SAA).....	53
10.5	Other Waste Streams	53
10.5.1	Universal Waste	53
10.5.2	Biological Waste.....	54
10.5.3	Radioactive Waste.....	55
10.5.4	Electrophoresis Waste	55
10.5.5	Non-Hazardous Waste	55
11.0	EMERGENCY PROCEDURES.....	56
11.1	Exposures & Injuries.....	57
11.2	Spill Response.....	58
11.2.1	Small Chemical Spill (≤ 1 Liter).....	58
11.2.2	Large Chemical Spill (> 1 Liter)	58
11.2.3	Acutely Hazardous Spill	59
11.3	Fire Incident.....	59
11.4	Incident Reporting.....	59

APPENDICES

- APPENDIX A: Abbreviations and Definitions
- APPENDIX B: PEOSH Hazard Communication Standard (N.J.A.C. 12:100-7)
- APPENDIX C: New Jersey Right to Know Brochure
- APPENDIX D: OSHA Hazard Communication (29 CFR 1910.1200)
- APPENDIX E: Satellite Accumulation Area (SAA) Guidelines
- APPENDIX F: Satellite Accumulation Area Designation Signage

	<p>NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102</p>
	<p>Document Control No.:</p>
	<p>Document Title: Chemical Hygiene Plan 29 CFR 1910.1450</p>

- APPENDIX G: List of Particularly Hazardous Substances (PHS)
- APPENDIX H: Waste Labels
- APPENDIX I: Hazardous Chemical Waste Disposal Chart
- APPENDIX J: Non-hazardous Waste Disposal Chart
- APPENDIX K: Biological Waste Disposal Chart
- APPENDIX L: Laboratory Safety Rules
- APPENDIX M: Generic SOP Library
- APPENDIX N: SOP Template
- APPENDIX O: Particularly Hazardous Substances SOP Template
- APPENDIX P: References and Resources
- APPENDIX Q: Safe Chemical Fume Hood use Guide
- APPENDIX R: Example of PHS Designated Area and Lab Door Signage
- APPENDIX S: Laboratory Inspection Checklist
- APPENDIX T: Pre-College Summer Program Guidelines
- APPENDIX U: Guidelines for Minors and Volunteers in Laboratories and Shops
- APPENDIX V: Laboratory Decommissioning Form
- APPENDIX W: Incident Report Form
- APPENDIX X: Chemical Segregation Table
- APPENDIX Y: Emergency Response Guidelines
- APPENDIX Z: Personal Protective Equipment Program
- APPENDIX 1: Hazard Assessment Form
- APPENDIX 2: NJIT Emergency Action Plan

	<p>NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102</p>
	<p>Document Control No.:</p>
	<p>Document Title: Chemical Hygiene Plan 29 CFR 1910.1450</p>

1.0 PURPOSE

Laboratories present unique safety and health hazards due to the nature of the activities conducted within them. During these activities, laboratory workers can be exposed to numerous potential hazards including chemical, biological, physical and radioactive hazards. Therefore, all work performed in New Jersey Institute of Technology (NJIT) facilities shall conform to applicable local, state, and federal regulations relating to occupational health and safety and environmental protection. To ensure compliance with these regulations, NJIT has developed this Chemical Hygiene Guide (CHG) with the general intent:

- To protect laboratory workers from potential health hazards associated with the use of hazardous chemicals in NJIT laboratories, and
- To assure that NJIT laboratory workers are not exposed to substances in excess of the permissible exposure limits adopted by the State of New Jersey Public Employees Occupational Safety and Health program (PEOSH) (*29 CFR 1910 subpart Z*).

PEOSH develops and enforces occupational health standards for public employees, and encourages employers and employees to improve their working environment. PEOSH adopted the Occupational Exposure to Hazardous Chemicals in Laboratories standard from the federal Occupational Safety and Health Administration (OSHA) (*29 CFR 1910.1450*) to establish the minimum requirements for chemical hygiene practices in New Jersey laboratories.


1.1 Scope

All teaching and research laboratories are required to have a written plan which satisfies the requirements of PEOSH Occupational Exposure to Hazardous Chemicals in Laboratories Standard (*29 CFR 1910.1450*). This Standard applies to laboratories that are engaged in the laboratory use of small quantities of off-the-shelf hazardous chemicals in which multiple procedures or chemicals are used and manipulated on a non-production basis. Laboratory personnel and students who may be exposed to hazardous chemicals in the course of their work or use protective laboratory practices and equipment to minimize the potential for employee exposure to hazardous chemicals must also comply with regulatory requirements.

This CHG does not cover work with radioactive materials or biological agents. Procedures for work with these materials are addressed via NJIT's Radiation Safety Guide and Biological Safety Guide, respectively.

1.2 Responsibilities

Personnel with responsibilities associated with the Plan include NJIT's Environmental Health and Safety (EHS), Faculty/Principal Investigators, lab workers to include students

	<p>NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102</p>
	<p>Document Control No.:</p>
	<p>Document Title: Chemical Hygiene Plan 29 CFR 1910.1450</p>

and researchers, and the Facilities Department. Their specific responsibilities are described below.

1.2.1 Administration

NJIT is responsible for ensuring the safety of its employees and for complying with all related requirements of state and federal regulations. Because of the importance the university places on safety, the administration encourages employees at all levels to promote positive attitudes regarding safety, to incorporate safety into their work practices, and to cooperate fully in the implementation of safety-related programs.


1.2.2 Faculty/Principal Investigator

The Faculty/Principal Investigator (PI) has responsibility for the health and safety of laboratory personnel working in his/her laboratory. The Faculty/PI may delegate the safety duties for which he/she is responsible, but must make sure that any delegated safety duties are carried out. In NJIT laboratories, the Faculty/Principal Investigator assumes the role and responsibilities of Chemical Hygiene Officer (CHO). In certain departments, these responsibilities may have been delegated to specific staff and/or faculty members.

The Faculty/Principal Investigator (PI) is charged with adapting and implementing a lab-specific Chemical Hygiene Plan (CHP). This includes maintaining a chemical inventory, ensuring access to material safety data sheets, developing written standard operating procedures (SOPs) for use of highly hazardous chemicals, enforcing safety practices, providing or scheduling employee training, and reporting hazardous conditions to the Department’s Safety Representative or Chemical Hygiene Officer. The lab supervisor must also review the lab-specific SOPs and Chemical Hygiene Plan annually and update the documents as necessary.


The Chemical Inventory should be updated whenever new hazardous materials are brought into the laboratory and the updated list should be forwarded to the EHS Department.

Each July the EHS Department completes the NJ Worker and Community Right to Know Survey. Following the Right-to-Know chemical inventory in July, laboratories may request updated chemical inventories from the EHS Department. However, these inventories need to be updated by individual laboratories throughout the year.


	<p>NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102</p>
	<p>Document Control No.:</p>
	<p>Document Title: Chemical Hygiene Plan 29 CFR 1910.1450</p>

Responsibilities of Faculty/PI under the CHP include, but are not limited to the following:

- Ensuring that appropriate protective equipment is available, in working order and used, and that appropriate training has been provided.
- Contacting the EHS for assistance in determining the required levels of protective apparel and equipment whenever there is the potential for a chemical exposure.
- Being responsible for compliance with the current legal requirements concerning regulated substances used in the laboratories under his/her direction.
- Assessing the hazards associated with materials being ordered, and based on this assessment, ensuring that facilities and training for use of the material are adequate.
- Ensuring that safety and health considerations are incorporated into laboratory procedures involving the use of hazardous chemicals.
- Identifying hazardous conditions or operations in the lab, determining safe procedures and controls, and implementing and enforcing standard safety procedures.
- Establishing standard safety operating procedures (general and protocol specific) and performing literature searches relevant to safety and health that is appropriate for the work.
- Obtaining prior approval for the use of Restricted Chemicals and/or Particularly Hazardous Substances in the laboratory facilities under their supervision.
- Consulting with laboratory personnel on their use of higher-risk chemicals, such as Particularly Hazardous Substances or highly reactive chemicals, or conducting higher-risk experimental procedures, so that special safety precautions may be taken.
- Assisting the Department of Environmental, Health and Safety (EHS) with the yearly laboratory chemical inventory.

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

- Providing laboratory personnel under his/her supervision with access to the CHP and any individual Laboratory Safety Plans or Standard Operating Procedures (SOPs) specific to the laboratory under their supervision.
- Training laboratory personnel to work safely with potentially hazardous chemicals, equipment, processes and operations. Maintain records of training all laboratory-based training provided by the Faculty/PI or their designee. This includes informing laboratory personnel of the location and availability of Hazard Information described in the Hazard Information and Training Section.
- Maintaining copies of Safety Data Sheets (SDS) or providing access to SDS and Hazardous Substance Fact Sheets.
- Maintaining in functional working order appropriate work place engineering controls (e.g., fume hoods) and safety equipment (e.g., emergency showers/eyewashes, fire extinguishers, first aid kits), with emphasis on controls for Particularly Hazardous Substances. This includes coordination with the EHS Department and the Facilities Department to ensure that necessary repairs are completed in a timely manner.
- Providing adequate Personal Protective Equipment (PPE) suitable for all potentially hazardous materials being utilized in the laboratory.
- Conducting periodic laboratory inspections and maintaining records of inspections.
- Prompt reporting of laboratory accidents and injuries to Public Safety, Risk Management, and EHS using the [NJIT Incident and Injury Report Form](#).
- Referring laboratory personnel for medical consultation or examination when warranted.
- Informing facilities personnel, other non-laboratory personnel, and outside contractors, of potential lab-related hazards when they are required to work in the laboratory environment. Identified potential hazards should be minimized to provide a safe environment for repairs and renovations.
- If minors are working in the laboratory, complying with the requirements set forth in the document NJIT, Guidelines for Minors and Volunteers in Laboratories and Shops, (Updated April 2016).


	<p>NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102</p>
	<p>Document Control No.:</p>
	<p>Document Title: Chemical Hygiene Plan 29 CFR 1910.1450</p>

1.2.3 Lab Workers

Lab Workers are responsible for observing all appropriate practices and procedures contained in the Chemical Hygiene Plan as well as other general safety practices, for attending designated training sessions, and for reporting hazardous or unsafe conditions to the PI, departmental safety officer, or EHS. Any deviation from procedures involving hazardous chemicals requires prior approval.

Lab Workers are responsible for planning and conducting laboratory operations in accordance with the CHP. Responsibilities of laboratory employees under the Plan include, but are not limited to the following:

- Develop good personal chemical hygiene habits and exercise prudent and careful work practices to ensure their personal safety as well as the safety of their fellow workers;
- Notify their Faculty/PI, either orally or in writing, of any potential health or safety concerns.
- Following this CHP, regulatory standards, and laboratory safety rules and operating procedures required for the tasks assigned.
- Keeping the work areas safe and uncluttered.
- Reviewing and understanding the hazards of materials and processes in their laboratory research prior to conducting work.
- Utilizing appropriate measures to control identified hazards, including consistent and proper use of engineering controls, PPE, and administrative controls.
- Understanding the capabilities and limitations of the PPE issued to them.
- Gaining prior approval from the Faculty/PI for the use of Restricted Chemicals.
- Consulting with Faculty/PI before using certain higher risk chemicals, such as Particularly Hazardous Substances or highly reactive chemicals, or conducting certain higher risk experimental procedures.
- Promptly reporting accidents and unsafe conditions to the Faculty/PI.
- Completing all required health, safety and environmental training.

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450


- Participating in a medical surveillance program, if and when required.
- Informing the Faculty/PI of any work modifications ordered by a physician as a result of medical surveillance, an occupational injury, or exposure.

1.2.4 Environmental, Health and Safety Department

The NJIT Environmental Health and Safety (EHS) Department is responsible for administering and overseeing the institutional implementation of the CHP Plan, not specific activities in individual laboratories. The Faculty/PI is responsible for specific activities in the laboratories under their supervision. The EHS Department provides technical guidance to personnel at all levels of responsibility on matters pertaining to laboratory use of hazardous chemicals as well as other issues related to environmental, health and safety.

Specifically, the EHS Department is responsible for:

- Assisting the Faculty/PI in the selection of appropriate safety control requirements, which include laboratory practices, PPE, engineering controls, and training.
- Monitoring engineering controls to determine proper operations and assist with scheduling necessary repairs.
- Performing hazards assessments, upon request.
- Maintaining area and personal exposure-monitoring records.
- Reviewing and providing advice on Laboratory SOPs, upon request.
- Reviewing laboratory protocols involving minors, volunteers, pre-college, and undergraduate students participating in various research and instructional laboratory activities.
- Providing technical consultation and investigation, as appropriate, for laboratory accidents and injuries.
- Helping to determine medical surveillance requirements for laboratory personnel, if required.
- Coordinating with NJIT’s medical providers when laboratory personnel request to review their medical records.
- Reviewing plans for installation of engineering controls and new laboratory construction/renovation, as requested.
- Reviewing and evaluating the effectiveness of the Chemical Hygiene Plan at least annually and updating it as appropriate.

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

The EHS Department may also provide support to the CHP by providing management, oversight, or assistance in chemical compliance, transport, hazardous waste management, chemical inventory, and hazardous materials spill/release response.

1.3 Laboratory-specific Chemical Hygiene Plan


This plan applies to all laboratory personnel that have the potential to be exposed to hazardous chemicals. When lab-specific procedures are combined with the general lab procedures, as outlined in this document, it comprises a comprehensive Chemical Hygiene Plan designed to protect lab personnel from the chemical hazards of that particular laboratory and meet the minimum regulatory requirements for laboratory use of hazardous chemicals.

The Faculty/PI is charged with adopting and implementing a Laboratory-specific Chemical Hygiene Plan that includes:

- Maintaining a chemical inventory,
- Ensuring access to safety data sheets (SDSs),
- Developing written standard operating procedures (SOPs) for use of highly hazardous chemicals or processes,
- Enforcing safety practices and the procedures in this plan,
- Providing or scheduling employee training, and
- Reporting hazardous conditions to the Department’s Safety Representative, Chemical Hygiene Officer, or EHS.

The Faculty/PI must:

- Update their chemical inventory with the addition of new chemicals, changes in chemical quantities, and/or the removal of chemicals no longer used by the laboratory, accordingly.
- Establish SOPs for chemicals with special hazards that are present in the laboratory. Information shall be laboratory or department specific and may be added to this Plan, as appropriate, so that the text reflects the type of operations which are performed in the laboratory.
- Review the chemical inventory, lab-specific SOPs, and Chemical Hygiene Plan at least annually or following any revisions, and update the documents as necessary.

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

- o Use the contents of the Laboratory-specific Chemical Hygiene Plan to inform and train employees, researchers, students and volunteers who will be working in their lab about the specific safety procedures that must be followed.

2.0 STANDARD OPERATING PROCEDURES

The NJIT Environmental Health and Safety Department (EHS) acknowledges that the NJIT Chemical Hygiene Guide is generic in nature and cannot be specific to all laboratory activities occurring in each individual NJIT research or instructional laboratory. Therefore, it is required that Principal Investigators and Laboratory Supervisors insert laboratory-specific Standard Operating Procedures (SOPs) into this plan that are specific to the work being performed in the particular laboratory’s covered by the plan. Laboratory personnel working autonomously or performing independent research are responsible for developing SOPs appropriate for their own work. EHS is available for consultation on the development of laboratory-specific SOPs. In addition, **Appendix M** contains NJIT’s [Generic SOP Library](#).

Priority for SOP development should be given to any operation involving restricted chemicals; unattended experiments such as use of a rotational evaporator; and certain higher hazard chemicals such as Particularly Hazardous Substances and Highly Reactive Chemicals.

2.1 Training Requirements


All staff, students, and visitors who work in NJIT laboratories are required to complete general lab safety training on an annually basis. The EHS Department conducts *General Laboratory Safety Training* that covers the OSHA Occupational Exposure to Hazardous Chemicals in Laboratories (the Lab Standard) and N.J. Hazard Communication Standard, including applicable provisions of the N.J. Worker Community Right-to-Know Act as well as general laboratory safety rules. Laboratory workers are required to attend initial training prior to engaging in work activities or upon job assignment.

The Faculty/PI is responsible for providing *Lab Specific Training* for all laboratory employees. This training is based on the contents of the Chemical Hygiene Plan that includes lab-specific SOPs for highly hazardous chemicals.

NOTE: All visitors are required to complete the appropriate NJIT safety trainings prior to working in NJIT facilities.

Work Directed by Faculty/PI

For work directed by a Faculty/PI, Faculty/PI must provide laboratory personnel with information and training at the time of initial assignment to the laboratory, and prior to assignments involving new exposure situations, work with Particularly Hazardous Substances, or other hazardous operations.

	<p>NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102</p>
	<p>Document Control No.:</p>
	<p>Document Title: Chemical Hygiene Plan 29 CFR 1910.1450</p>

The frequency of refresher information and lab-specific training will be determined by the Faculty/PI and the Department's Safety Representative and/or Chemical Hygiene Officer to ensure continuing education of lab workers and compliance with workplace regulations regarding training.

All required training will be documented by the Faculty/PI. Documentation will include the name of the person trained, date(s) of training, topics covered and name(s) of the person(s) conducting the training. Laboratory personnel must receive general and laboratory-specific training as follows:

2.1.1 General Training

Faculty/PI must ensure that laboratory personnel, working under their supervision, attend annual training on the CHG. This is accomplished by having laboratory personnel attend the regularly scheduled *General Laboratory Safety Training* provided by EHS which covers:

- Chemical Safety for Laboratories,
- Chemical Hygiene Plan,
- NJ Worker & Community Right to Know/Hazard Communication,
- Occupational Exposure to Hazardous Chemicals in Laboratories,
- General Laboratory Safety,
- Laboratory Emergency Response, and
- Laboratory Waste Management.


Additional trainings are available from EHS.

- Biosafety Training
- LASER Safety Training
- Radiation Safety Training
- Shop/Industrial Safety Training
- Other Hazard-specific trainings

2.1.2 Laboratory-Specific Training

Laboratory-specific training is to be provided by the Faculty/PI or his/her designee, addressing the specific chemical hazards present and emergency procedures specific to the laboratory. Also, any lab-owned equipment may require specialized training to prevent injury/illness and equipment damage. This can be achieved via review of or training on the following lab-specific documents and procedures:

- Chemical Hygiene Plan;
- Local/building safety information;

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

- Standard Operating Procedure(s) involving hazardous chemicals;
- Particular safety procedures or hazards encountered in the laboratory environment;
- Proper use and maintenance of safety equipment;
- Signs/symptoms of exposure; and
- Designated areas for exceedingly hazardous substances.

Laboratory–specific training shall be documented using the forms available at the beginning of this CHG.

2.1.3 Work Conducted Autonomously or Independently

Faculty/PI shall provide access to the CHP and any individual Laboratory Safety Plan, if one is developed, to persons working autonomously or performing independent research before they undertake work in NJIT laboratories.

Persons working autonomously are responsible for ensuring that they have any other training that is appropriate to the work they conduct in NJIT laboratories and shall fulfill all the responsibilities set forth in Sections 1.2.2 and 1.2.3, including providing appropriate oversight, training, and safety information to any laboratory personnel they supervise or direct.


2.1.4 Recordkeeping of Safety Training

All health and safety training records are to be maintained by EHS, the departmental safety representative, and the Faculty/PI or designee for at least three years. All lab-specific training records must be maintained by the departmental safety representative, the Faculty/PI or designee for at least three years.

2.2 Laboratory Security

If you do not recognize someone in your lab, ask who they are and their reason for being there. If necessary, request to see identification if safe to do so and/or immediately notify Public Safety of their presence.

If the laboratory contains any materials of concern such particularly hazardous substances, Select Agent toxins, controlled substances, or radioactive materials, the laboratory doors shall be lockable, and self-closing pending regulatory requirements. Some of these materials may also require lockable storage units to enhance the level of access control.

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

2.3 Laboratory Door Signage

All entrances and access ways to laboratories must have a "Caution" door sign posted on it. The sign shall include the name and phone number of the current PI and any alternate contacts as well as the GHS pictograms representative of the hazardous materials in the lab, and the hazard ratings for the highest rated hazardous substance in the lab. If any personal protective equipment (PPE) must be worn or special procedures implemented before entering the room, this information shall also be posted.

CDC-NIH Biosafety in Microbiological and Biomedical Laboratories requires a sign incorporating the universal biohazard symbol be posted at the entrance to any laboratory where infectious agents are present. For BL-2 laboratories, this sign must also include the laboratory's biosafety level, the supervisor's name (or other responsible personnel), telephone number, and required procedures for entering and exiting the laboratory.

Please contact EHS for assistance in developing, or reviewing laboratory caution signs.

2.4 Laboratory Safety Inspections

Laboratory inspections are an essential function to identify and address potential health and safety deficiencies and to fulfill regulatory compliance requirements.

2.4.1 Laboratory Self-Inspections

Laboratories must be self-inspected at least quarterly by the Faculty/PI or designee using Lab Inspections Checklist in Appendix S. Completed self-inspection checklists and the actions taken to correct identified unsafe conditions must be maintained by the Faculty/PI or their designee for the length of time specified for each type of inspection.

2.4.2 EHS Laboratory Inspections


Using a risk-based approach, EHS conducts visits of laboratories to assist labs in assessing their implementation and compliance with core health and safety issues, including but not limited to: storage, use, and disposal of higher hazard chemicals; correct management of controlled substances; and select agent toxins.

Please see **Appendix S** for a copy of the [Laboratory Inspection Checklist](#).

2.5 Laboratory Decommissioning & Vacating Process

The laboratory decommissioning process permits a laboratory to be decontaminated and prepared in a safe and timely manner for construction projects and new occupants.

Prior to vacating or renovating a laboratory, the Faculty/Principal Investigator is responsible for following:

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

- The proper disposal or relocation of all hazardous and non-hazardous materials.
- The proper disposal or relocation of any equipment.
- Ensuring all equipment and surfaces are decontaminated prior to re-occupancy, disposal, or relocation.
- Ensuring EHS is notified no later than 2 weeks in advance of departure or renovation.

EHS will conduct a final walkthrough of the area, and post a sign stating the laboratory has been decommissioned once all requirements have been met. If the EHS sign certifying the lab was decommissioned is not posted, then contractors, housekeeping, and/or facilities are not permitted to perform work activities. Please see **Appendix V** for the [Laboratory Decommissioning Form](#).

3.0 PROCUREMENT, INVENTORY, LABELING & STORAGE

3.1 Procurement

Prior to, or at the time of receipt of a chemical substance, information on proper handling, storage, and disposal should be known to those who will be involved. No container should be accepted without a proper identifying label and an available Safety Data Sheet (SDS) for the product. The chemical inventory should be checked to ensure that the chemical is added to the department or site inventory. The SDS should be forwarded to EHS.


3.2 Chemical Inventory

3.2.1 All Hazardous Chemicals

Each July EHS submits a RTK chemical inventory/survey to various regulatory agencies. Therefore, a chemical inventory must be maintained for all chemicals stored in the laboratory as required in OSHA 1910.1200 Hazard Communication. Each laboratory must update their chemical inventory at a minimum of every 12 months. Please contact EHS for the latest chemical inventory for your lab; if your lab is relocating; or if there are changes to your inventory.

Additional benefits for maintaining an up-to-date inventory include:

- Ability to identify unneeded materials that can be culled from laboratory storage, reducing overall chemical laboratory risks.
- Can better rely on the inventory to find needed materials, possibly avoiding unnecessary redundant purchases.

	<p>NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102</p>
	<p>Document Control No.:</p>
	<p>Document Title: Chemical Hygiene Plan 29 CFR 1910.1450</p>

- Reduce compliance risks pertaining to the State of New Jersey Right To Know hazardous materials storage and reporting requirements.
- Aid in identification of the relative hazards of the chemicals in the inventory.

3.2.2 Select Agent Toxins

Faculty/PIs working with Select Agent Toxins must ensure that permissible amounts are not exceeded by promptly updating their inventory after every container of Select Agent Toxin is acquired, depleted, or inactivated.

To possess and use Select Agent Toxins, all Faculty/PIs must:

- Submit a *Registration Document For Biohazards Form (EHS010)* for review by the NJIT Institutional Biosafety Committee (IBC);
- Comply with the requirements of the Federal Select Agent Program; and
- Develop a written SOP for the use of the toxin.

3.2.3 Controlled Substances

Faculty/PIs enrolled under the institutional DEA Controlled Substance Program must also maintain a continuous usage log using NJIT's Controlled Substance Usage Log.

To possess and use Controlled Substances, all Faculty/PIs must:


- Apply for a DEA controlled substance license, and
- Register with the NJ Department of Justice.

Please contact EHS if you possess or wish to use Select Agent Toxins, Controlled Substances, or any other regulated materials to ensure we are in compliance with applicable regulatory standards, and safety and security measures have been properly evaluated.

3.3 Labeling

Labels and Safety Data Sheets (SDSs) are the primary sources of information regarding the hazards of chemicals. Persons who work in the laboratory will be provided with information and training on these resources.

- Do not remove or deface labels on incoming containers of hazardous chemicals.
- Report containers without labels to the Faculty/PI.
- Faculty/PIs will be responsible for ensuring that labels including the identity of the chemical, CAS number and appropriate hazard warnings are added to

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

containers without labels and portable (daily use) containers. Refer to the Hazardous Waste Management Instructions for more information.

- The concentration, date a mixture was prepared or date a material was transferred should be included, if appropriate.
- When select carcinogens, reproductive toxins or chemicals of high acute toxicity are being used, post warning signs.
- Receiving personnel and Faculty/PIs shall ensure that SDSs received with incoming shipments of hazardous chemicals are forwarded to the EHS Department.


The following provisions shall apply to chemical substances developed in the laboratory:

- If the composition of a chemical substance produced for the laboratory's use is known, Faculty/PIs shall ensure that a determination is made about whether the chemical is "hazardous" as defined under OSHA's Laboratory Standard (29 CFR 1910.1450) and Hazard Communication Standard (29 CFR 1910.1200).
- For novel compounds produced by NJIT personnel, Faculty/PIs shall assume that the substances are hazardous, and handle accordingly. All lab personnel shall avoid dermal contact and inhalation exposure with the novel compounds by wearing suitable PPE, working within a chemical fume hood, and decontaminating the work surfaces after use.

3.4 Storage

Chemical inventory in the laboratory should be maintained at the lowest practical level. Larger quantities of frequently used solvents should be stored in approved flammable storage cabinets. These cabinets can be stored within the laboratories, but not in the corridors. Quantities will follow the guidelines listed in NFPA 30 for storage of flammable and combustible materials.

- All hazardous chemicals must be stored and labeled properly.
- Storage on bench tops and in hoods is not permitted.
- Never store hazardous materials at or above eye level.
- Exposure to heat or direct sunlight should be avoided.
- For Select Agent Toxins (*in permissible amounts*), the laboratory must provide one additional layer of physical security (i.e., Select Agent Toxin is secured within a locked freezer, or within a permanently fixed lock box).

	<p>NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102</p>
	<p>Document Control No.:</p>
	<p>Document Title: Chemical Hygiene Plan 29 CFR 1910.1450</p>

- Controlled Substances must be stored in a securely locked, substantially constructed cabinet, located where access is limited to those individuals with controlled substances authorization.
- Segregate toxic substances in well identified area with local exhaust, where practical. Segregate incompatible chemicals for storage using Table 1: Specific Chemical Incompatibilities and Table 2: Segregation of Acids and Bases as a guide.
- Highly toxic chemicals or other chemicals whose containers have been opened shall be tightly sealed and/or stored in unbreakable outer/secondary containers.
- Stored chemicals will be examined at least periodically by the Chemical Hygiene Officer or designee for deterioration and container integrity.
- Storeroom / stockroom must not be used as a preparation or repackaging area, should be open during normal working hours, and should be controlled by one person, or as specified in department procedures.
- Use storage trays or protective containers to minimize spillage in case of container breakage or leakage.
- Low flashpoint solvents and other flammable materials may not be stored in non-explosion proof refrigerators and freezers.

TABLE 1: SPECIFIC CHEMICAL INCOMPATIBILITIES ^a
 Chemicals in Groups A and B should be kept separate.

Group A	Group B
Acetylene and monosubstituted acetylene (R - C = CH)	Halogens Group IB and IIB metals and their salts
Ammonia and NH ₃ , OH	Halogens Halogenating agents Silver Mercury
Carbon, activated	<i>Oxidizing Agents ^a</i>
Hydrogen peroxide	Metals and their salts
Nitric acid	Metals Sulfuric acid Sulfides Nitrites, other reducing agents Chromic acid and chromates Permanganates
Mercury and its amalgams	Ammonia and NH ₄ OH
Oxalic acid	Silver Mercury
Phosphorus (yellow)	Oxygen <i>Oxidizing Agents ^a</i>
Phosphorus pentoxide	Water Halogenating agents
Sulfuric acid	Metals Chlorates Perchlorates Permanganates Nitric acid

^aOxidizing agents include the types of compounds listed in the entry for alkali and alkaline earth metals, etc.



	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

TABLE 2: SEGREGATION OF ACIDS AND BASES

Chemicals in Groups A and B should be kept separate.

Group A	Group B
Alkali and alkaline earth metals	Water
carbides	Acids
hydrides	Halogenated organic compounds
hydroxides	<i>Oxidizing agents</i> ^a
oxides	Chromates, dichromates, CrO ₂
peroxides	Halogens
	Halogenating agents
	Hydrogen peroxide and peroxide
	Nitric acid, nitrates
	Perchlorates and chlorates
	Permanganates
	Persulfates
Inorganic azides	Acids
	Heavy metals and their salts
	<i>Oxidizing agents</i> ^a
Inorganic cyanides	Acids, strong bases
Inorganic nitrates	Acids
	Metals
	Nitrites
	Sulfur
Inorganic nitrites	Acids
	<i>Oxidizing agents</i> ^a
Inorganic sulfides	Acids
Organic compounds	<i>Oxidizing agents</i> ^a
Organic acyl halides	Bases
Organic anhydrides	Organic hydroxy compounds
Organic halogen compounds	Bases
Organic nitro compounds	Organic hydroxy compounds
	Aluminum metal
	Strong bases
Powdered metals	Acids
	<i>Oxidizing agents</i> ^a

^a Oxidizing agents include the types of compounds listed in the entry for alkali and alkaline earth metals, etc.

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

4.0 CLASSES OF HAZARDOUS MATERIALS

Chemicals have inherent physical, chemical, and toxicological properties that require laboratory personnel to have a good understanding of the related health and safety hazards. The main types of chemical hazards that lab personnel should be aware of are:

- Flammability
- Corrosivity
- Reactivity/Instability (including explosivity), and
- Toxicity (including irritation, sensitization, carcinogenicity, and reproductive toxicity)

Additionally, compressed gases and cryogenic liquids are common laboratory materials that present unique hazards. Below is a brief discussion of these major classes of hazardous chemicals.

4.1 Flammable and Combustible Liquids

Flammable and combustible liquids are classified according to their flash point, with flammable liquids having a flash point at or below 199.4 °F (93 °C) and combustible liquids having a flash point above 199.4 °F (93 °C). Both flammable and combustible liquids are considered fire hazards.

4.2 Corrosive Materials

Corrosive materials cause irreversible destruction of living tissue through chemical action at the site of contact. Since corrosive chemicals can be liquids, solids, or gases, its corrosive effects can affect the skin, eyes, and respiratory tract. Examples of corrosive chemicals include sodium hydroxide, hydrochloric acid, and phenol.


4.3 Highly Reactive and Unstable Materials

Highly reactive and unstable materials are those that have the potential to vigorously polymerize, decompose, condense, or become self-reactive under conditions of shock, pressure, temperature, light, or contact with another material. Examples of such substances are explosives, peroxides, water reactives, self-reactives, and pyrophorics.

4.4 Compressed Gases, Cryogenic Liquids, and Toxic Gases

Compressed gases and cryogenic liquids are similar in that they can create pressure hazards as well as health hazardous and/or flammable atmospheres. One special property of compressed gases and cryogenic liquids is that they undergo substantial volume expansion when released to air, potentially depleting workplace oxygen content to hazardous levels.

Toxic gases pose additional potential acute health hazards to laboratory personnel and the public, and as such, are considered NJIT “Restricted Chemicals” that require prior

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

approval by the Faculty/PI, Department Chair and Safety Committee. The use, handling, distribution and dispensing of toxic gases requires detailed SOPs to be reviewed and approved in advance of use. In addition, the SOPs contain specific provisions mandating facility permitting, engineering controls, protective equipment, storage requirements, emergency response plans, warning systems and employee training based on the type and quantity of toxic gas used. As usage of toxic gases may require special permits, contact EHS for further guidance.

4.5 Particularly Hazardous Substances

Select carcinogens, reproductive toxins, and chemicals with a high degree of acute toxicity are considered to be high-risk materials and are treated by NJIT as Particularly Hazardous Substances. Additional provisions for working with Particularly Hazardous Substances are described in Section 5.1.

4.5.1 Select Carcinogens

Carcinogens are chemicals or physical agents that cause cancer or tumor development, typically after repeated or chronic exposure. Their effects may only become evident after a long latency period and may cause no immediate harmful effects. See Appendix A for the definition of a Select Carcinogen.

4.5.2 Reproductive Toxins


Reproductive Toxins are chemicals which affect reproductive capabilities. Possible effects include chromosomal damage (mutations), effects on fetuses (teratogenesis), adverse effects on sexual function and fertility in adult males and females, as well as adverse effects on the development of the offspring. Many reproductive toxins cause damage after repeated low-level exposures. Effects become evident after long latency periods.

4.5.3 Acutely Toxic Substances

Acutely Toxic Substances are categorized based on their LC50 or LD50 values. Substances with a **high degree of acute toxicity** have the ability to cause adverse effects after a single exposure/dose or multiple exposures/doses within a 24 hour period. Many of these chemicals may also be characterized as toxic gases, Select Agent Toxins, corrosives, irritants, or sensitizers.

4.6 Sensitizers

A sensitizer is a substance that can cause exposed people to develop an allergic reaction in normal tissue after repeated exposure to the substance. Examples of sensitizers used in laboratories include formaldehyde, many phenol derivatives, and latex proteins (commonly found in latex lab gloves).

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

4.7 Irritants

Irritants are substances that cause reversible effects (e.g., swelling or inflammation) on skin or eyes at the site of contact. A wide variety of organic and inorganic compounds are irritants; thus, skin and eye contact with all laboratory chemicals should be avoided.

4.8 Restricted Chemicals

If not properly considered, managed, and overseen, the use of certain chemicals can result in conditions of higher risk for laboratory personnel and to Facilities personnel. The approval of the Faculty/PI and CHO is required when certain Restricted Chemicals that carry a higher risk due to their inherent hazardous property are used in NJIT laboratories. Laboratory personnel may not use Restricted Chemicals in any NJIT laboratory without obtaining the prior written approval of the Faculty/PI or his/her delegate and the CHO.


Please contact EHS prior to acquiring any restricted chemicals and for assistance with determining if a substance is a restricted chemical.

4.9 Nanomaterials

A nanoparticle is a collection of tens to thousands of atoms approximately 1 to 100 nanometers in diameter. Nanoparticles that are naturally occurring (e.g., volcanic ash, forest fires) or are the incidental byproducts of combustion processes (e.g., welding, diesel engines) are usually physically and chemically heterogeneous and often termed ultrafine particles. Engineered nanoparticles are intentionally produced and designed with very specific properties related to shape, size, surface properties and chemistry. These properties are reflected in aerosols, colloids, or powders containing these nanomaterials. Engineered nanoparticles may be bought via commercial vendors or generated via experimental procedures by researchers in the laboratory. Examples of engineered nanomaterials include: carbon buckyballs or fullerenes; carbon nanotubes; metal oxide nanoparticles (e.g., titanium dioxide); and quantum dots, among many others. The health effects of exposure to nanomaterials are not fully understood at this time. Until more definitive findings are made regarding the potential health risks of handling nanomaterials, researchers planning to work with nanomaterials must implement a combination of engineering controls, work practices, and personal protective equipment to minimize potential exposures to themselves and others.

4.10 Select Agent Toxins

Select Agent Toxins are certain toxins of biological origin which are subject to stringent regulatory requirements under 42 CFR 73 for their potential to pose a severe threat to public, animal, or plant health, or to animal or plant products. These toxins, along with specified biological agents (viruses, bacteria, fungi), fall under the oversight of the National Select Agents Registry (NSAR) Program which requires registration for

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

possession, use, and transfer of the listed Select Agents. However, possession of small amounts of Select Agent Toxins as described below is exempt from registration with the NSAR Program. Contact EHS for additional information.

4.10.1 Possession of Permissible Amounts of Select Agent Toxins

The following Select Agent Toxins are not regulated if the amount, under the control of a principal investigator, does not exceed, at any time, the amounts indicated in the table below.

Select Agent Toxins / HHS Toxins	Amount (mg)
Abrin	100
Botulinum neurotoxins*	0.5
Short, paralytic alpha conotoxins	100
Diacetoxyscirpenol (DAS)	1000
Ricin	100
Saxitoxin	100
Staphylococcal Enterotoxins (Subtypes A, B, C, D, and E)	5
T-2 toxin	1000
Tetrodotoxin	100


*As of September 24, 2015, Botulinum neurotoxin use in a research setting is also regulated by Life Sciences Dual Use Research of Concern Oversight Policy.

Additionally, the following Select Agent Toxins are excluded:

1. Any Select Agent Toxin that is in its naturally occurring environment provided it has not been intentionally introduced, cultivated, collected, or otherwise extracted from its natural source.
2. Nonfunctional Select Agent Toxins. Use of these Select Agent Toxins in permissible amounts requires strict adherence to NJIT’s requirements that address critical safety and compliance information including safe use, storage/security, and inventory management.

4.10.2 Possession of Select Agent Toxins Above Permissible Amounts

Possession of Select Agent Toxins in amounts above permissible amounts requires prior approval from the Sr. Vice Provost for Research and registration with the National Select Agent Registry (NSAR) Program. Also note, that effective 12/4/12, botulinum neurotoxins are categorized as Tier 1 agents, which trigger additional regulatory requirements. Failure to register with the NSAR Program is potentially punishable by up to five years in prison and/or large monetary fines. (*Public Health*

	<p>NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102</p>
	<p>Document Control No.:</p>
	<p>Document Title: Chemical Hygiene Plan 29 CFR 1910.1450</p>

Security & Preparedness Response Act of 2002, Section 231(c), 18 USC 175(b), & Public Law (USA Patriot Act) 107-56 Sec. 817). Contact the EHS Department for assistance.

To possess or use Select Agent Toxins or any other toxins of biological origin, in any amount, a [Registration Document For Biohazards](#) Form shall be submitted to the NJIT Institutional Biosafety Committee (IBC).

5.0 PRIOR APPROVALS and SPECIAL PRECAUTIONS

The following methods are available to the Faculty/PI to grant prior approval:

- A. Faculty/PI reviews and approves a written SOP.
- B. Faculty/PI signs and dates the laboratory personnel's laboratory notebook and indicates approval for the process, procedure, or activity.
- C. Faculty/PI provides other written approval (e.g. via email or memo).

Records of prior approval must be retained for at least one year. Laboratory personnel shall obtain approval from the Faculty/PI (or his/her delegate) prior to conducting work involving the following:

5.1 Use of Particularly Hazardous Substances (PHS) and Restricted Chemicals


Laboratory personnel shall seek the Faculty/PI (or his/her delegate) for prior approval of any chemical usage involving PHS and the following Restricted Chemicals:

- Toxic gases (e.g., Diazomethane, Hydrogen cyanide, Hydrogen fluoride (anhydrous), Nickel carbonyl)
- Dimethyl mercury

A completed [Particularly Hazardous Substances Form](#) shall be submitted to the Faculty/PI and EHS for review and approval. When establishing special precautions for Particularly Hazardous Substances, consideration shall be given to the following:

1. Establishment of a designated area (see **Appendix R** for an [Example of Designated Area Signage](#))
2. Use of containment devices such as fume hoods or glove boxes
3. Procedures for safe removal of contaminated waste
4. Decontamination procedures

When developing appropriate handling procedures, it should be noted that a process is not necessarily hazardous merely because of the use of a hazardous chemical. In cases where existing procedures are supported by industrial hygiene monitoring data or evaluation, the data shall be documented to show compliance with relevant exposure limits, and only minor modifications to procedures may be necessary in order to comply

	<p>NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102</p>
	<p>Document Control No.:</p>
	<p>Document Title: Chemical Hygiene Plan 29 CFR 1910.1450</p>

with the requirements of the Laboratory Standard.

5.2 Use of Human Materials, Pathogens, and Select Agents & Toxins

All work with human materials, pathogens, Select Agents & Toxins must be registered with and approved by the IBC via the [Registration Document For Biohazards](#). Faculty/PIs working with Select Agents and Toxins must ensure that permissible amounts are not exceeded by promptly updating their inventory after every container of Select Agent Toxin is acquired, depleted, or inactivated. Use of biological materials requires the completion of Laboratory Safety Training and Biological Safety & Bloodborne Pathogens Training.

5.3 Use of Radioactive Materials

Prior approval is required for the use of ionizing radiation generating machines (e.g. x-ray machines), ionizing radiation, and sealed sources. Use of these equipment and materials may require registration with New Jersey Department of Environmental Protection (NJDEP). Lab workers are required to complete Laboratory Safety Training and Radiation Safety Training.


5.4 Use of Animals

The use of hazardous materials when working with live animals requires prior approval by the Rutgers University Institutional Animal Care and Use Committee and NJIT Institutional Biosafety Committee. These committees provide institutional oversight of the animal care and use program.

5.5 Working Autonomously or Independent

In general, EHS discourages students from working in the laboratory independently. EHS does acknowledge that certain advanced and experienced graduate students may assume leadership positions in the laboratory and embark on independent laboratory research. Laboratory personnel working autonomously or performing independent research are also responsible for:


- Providing the Faculty/PI with a written scope of work for their proposed research and obtaining the Faculty/PI written approval.
 - Notifying and consulting with Faculty/PI, in advance, if they intend to deviate from their written scope or scale of work.
 - Preparing SOPs and performing literature searches relevant to safety and health that are appropriate for their work.
 - Providing appropriate oversight, training and safety information to laboratory personnel they supervise or direct.

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

- Working alone in the laboratory.
- Evaluating each circumstance on a case-by-case basis to determine if working autonomously will be permitted, considering:
 - Task and hazards involved in the work.
 - Consequences resulting from a worst case scenario.
 - The possibility of an accident or incident that would prevent the laboratory personnel from calling for help.
 - The laboratory personnel’s training and experience
 - The laboratory personnel’s physical conditions or handicaps [consult with local Human Resources Officer for guidance and compliance with Americans with Disability Act (ADA)].
 - Time the work is to be conducted --Normal business hours (*i.e. 7 am – 8 pm Monday through Friday*) versus off hours (*i.e. night or weekends/holidays*).
- Obtaining prior approval for other operations such as leaving experiments or equipment running unattended after hours.
 - The researcher shall ensure that all hose and other connections are secure, and pose minimal risk of accident.
 - Leave the lights on and post a sign describing any unattended processes on the exterior and interior laboratory doors as well as any equipment, bench, or area(s) of unattended operations. NOTE: Laboratory Contacts listed on the door sign should be familiar with the unattended operations. If not, the contact information for the person responsible for the research shall be listed.
 - Unattended operations involving heat generating equipment, flammable or particularly hazardous substances are discouraged. If it is necessary to run experiments outside of normal hours, permission is required by the Department’s Chair.

5.6 Generation of Mixed Waste

Effective hazardous waste management requires safe and sound practices as well as efforts to reduce the volume and toxicity of hazardous wastes. NJIT makes extensive efforts to minimize waste generation, and the hazards and environmental impact associated with chemical wastes. Mixed waste can present unique disposal, storage, and

	<p>NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102</p>
	<p>Document Control No.:</p>
	<p>Document Title: Chemical Hygiene Plan 29 CFR 1910.1450</p>

handling concerns. Therefore, EHS should be consulted prior to the generation of mixed waste such as radioactive and biological waste, radioactive and chemical waste, or chemical and biological waste.

5.7 Respiratory Protection

In accordance with federal regulations, the use of respiratory protection requires medical clearance, training, and fit testing. Therefore, the use of respiratory protection must be approved by EHS prior to use.

5.8 Minors and Volunteers in NJIT Laboratories


Minors (persons under the age of 18) and volunteers may be more susceptible to the health effects of certain toxic and hazardous agents and less aware of potential risks and hazards present in laboratories and shops. Therefore, special precautions must be taken when they are in the lab such as heightened supervision and oversight.

- The Faculty/PI must notify the Department Chair in advance that minors or volunteers will be working in their lab or shop.
- Minors may only be allowed in NJIT laboratories and shops as part of an organized event, program, or tour, or with written approval from the Department Chair and EHS.
- Minors may never be allowed in settings where research activities involving controlled substances are being performed or there is potential for exposure to particularly hazardous materials.
- All applicants must complete the Risk Management waiver forms and provide proof of medical coverage.

All NJIT personnel and students participating in the NJIT Pre-College Programs must comply with the program’s requirements. Minors may be present in laboratories as observers as part of officially sanctioned educational programs for high school or college students or other supervised, educational activities that have been approved in writing in advance by the Department Chair. Persons 12 years old or younger are not allowed into any Biosafety Level 2 or higher laboratory as per CDC-NIH guidelines. Please see **Appendix T** for [Pre-College Summer Programs](#), **Appendix U** for [Guidelines for Minors and Volunteers in Laboratories and Shops](#), and Human Resources’ [Minors on Campus Policy](#).

6.0 CONTROL METHODS

NJIT has developed a list of general safety rules for laboratories. For the general safety of laboratory personnel, all chemical usage must be conducted in adherence with the general safe laboratory practices. Please review the list of General Laboratory Safety Rules contained in

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

Appendix L. The methods used to specifically control chemical exposures are categorized in hierarchical order as follows: Substitution, Engineering Controls, Administrative Controls, and Personal Protective Equipment.

6.1 Substitution

The best method of reducing or eliminating potential exposure to hazardous materials is evaluating the experiment or operation to determine if the hazardous material can be eliminated or a non-hazardous or less hazardous material can be used. (e.g. mercury based thermometers can be replaced with non-mercury thermometers; using proprietary detergents instead of chromic acid for cleaning glassware; or, using toluene instead of benzene for liquid-liquid extraction or chromatography)

6.2 Engineering Controls


As general lab ventilation cannot be relied upon to protect personnel from localized exposures to hazardous levels of airborne chemicals, engineering controls such as laboratory fume hoods, glove boxes and other local exhaust systems (e.g., drop down flexible ducts, point exhaust, elephant trunks, etc.) are often necessary to provide additional exposure control. In general, laboratory fume hoods are recommended whenever using hazardous chemicals that:

- Have a high degree of acute toxicity, are carcinogens, or are reproductive toxins, except where there is very low risk of exposure (e.g., use of minimal quantities in a closed system).
- Have a permissible exposure limit of less than 50 ppm (or 0.25 mg/m³ for particulate matter).
- Are appreciably volatile (e.g., solvents) or are easily dispersible in air (e.g., dust).
- See **Appendix Q** for the [Safe Chemical Fume Hood Use Guide](#) that offers more information on proper use.

To assure that primary engineering controls and safety equipment provide proper and adequate performance, EHS and the Facilities Department provides performance verification checks on a routine basis.

6.3 Administrative Controls

Administrative controls are laboratory rules and work practices that are intended to control exposures in conjunction with engineering controls or when engineering controls are impractical or infeasible. Administrative controls for minimizing exposures to hazardous chemicals include:

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

- Isolating or enclosing an experiment within a closed system (e.g., glove box, sealed chamber).
- Microscaling the size of the experiment to reduce the amount of chemical usage.
- Ensuring all lab workers are properly trained on lab techniques, equipment, emergency procedures, waste management, and good lab practices.
- Ensuring self-inspections of laboratories are conducted regularly to ensure compliance and safety.
- Completing required initial and refresher safety trainings.
- Limiting exposure time to hazardous substances.

6.3.1 Hazard Information

Faculty/PI must inform laboratory personnel of the location and availability of the following information:

- NJIT’s Chemical Hygiene Plan per OSHA 1910.1450 Occupational Exposure to Hazardous Chemicals in Laboratories. The above referenced OSHA regulation requires employers to have a written Chemical Hygiene Plan. This Guide partially fulfills this regulatory requirement and is a resource for planning experiments and laboratory operations. Once the lab-specific SOPs are added to this Guide, it becomes a Chemical Hygiene Plan that meets regulatory requirements.
- “Permissible Exposure Limits (PEL) for Chemical Contaminants”, OSHA 1910.1000 Z Tables. If a PEL has not been established for a specific contaminant, contact EH&S for guidance.
- Web links to reference materials on the hazards, signs & symptoms of exposure, safe handling, and storage & disposal of hazardous chemicals can be found in **Appendix P**.


6.3.2 Recordkeeping

Records/documentation must be maintained in accordance with regulatory standards and/or NJIT’s Records Retention Policy whichever is more stringent.

[NJIT Records Retention Policy \(July 2016\)](#)

6.4 Personal Protective Equipment

Personal protective apparel and equipment (safety glasses, goggles, face shields, ear plugs, aprons, gloves, etc.) are provided, based on laboratory activities, to prevent injury.

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

The Faculty/PI is responsible for reviewing routine laboratory procedures and other planned procedures to ensure that PPE is appropriate to reduce the likelihood of employee exposure. See NJIT's Personal Protective Equipment (PPE) Program which contains information on:

- PPE Quick Guide
- Hazard Assessment Tool for PPE Determination
- Selecting Personal Protective Equipment
- PPE Training Requirements

6.4.1 Eye and Face Protection

Safety glasses with fixed side shields meeting the requirements of ANSI Z87.1-2015 are the minimum eye protection required for laboratory operations. In a laboratory, the Faculty/PI and/or EHS may grant an exception under the following conditions:

- In a specified area using an optical instrument (e.g. microscope) where the eye protection prevents proper eye positioning.
- In a specified area not in close proximity to chemicals designated by the Faculty/PI and/or EHS as an "office" where only office related tasks are conducted. Safety glasses shall be donned before leaving the designated office area.


Safety glasses must be available for lab workers in all research and instructional laboratories at NJIT. Safety glasses shall be donned before entering the laboratory whenever possible. The laboratory shall not be traversed to locate safety glasses.

Visitors shall be provided protective eyewear. Faculty/PI responsible for visitors are expected to make sure that visitors wear appropriate eye protection.

Chemical goggles or a face shield with safety glasses are required for bulk handling of chemicals (quantity ≥ 4 liters), when working with corrosive chemicals and molten metals, or when splashes are possible.

In general, EHS discourages the wearing of contact lenses in research laboratories. It is always preferred that safety glasses are worn over prescription glasses. However the use of contact lenses in a laboratory may be permitted provided the following:

- The rationale for the use of contact lenses is described in the lab's written Standard Operating Procedures (SOPs);

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

- Safety glasses with side shields are worn whenever potentially hazardous chemicals are handled in the lab; and/or
- Safety glasses with side shields are worn whenever potentially hazardous processes are underway in the lab; and/or
- Safety goggles are worn if hazardous chemicals are handled, particularly those with appreciable vapor pressure, those that generate excess heat, those that are strong corrosives, or where there is greater splash potential.

6.4.2 Hand Protection


The hands shall be protected from hazards such as skin absorption of chemicals, chemical burns, severe cuts, lacerations or abrasions, punctures, and harmful temperature extremes.

- Nonconductive tongs, protective mittens, etc. shall be used when handling hot/cold materials.
- Routine handling of hazardous chemicals shall require the use of latex, latex / nitrile or nitrile gloves, at a minimum. When handling liquids with potential for spill or prolonged contact with hands, review Safety Data Sheets (SDSs) and contact the Faculty/PI, departmental safety representative, or the EHS Department for assistance with glove material selection. At the present time, there are no gloves which provide an effective barrier against all hazardous chemicals that may be used in laboratories.
- Due to potential allergies to latex rubber, non-latex glove alternatives must be available for potentially allergic lab workers.

The following factors should be considered when selecting a glove material for a particular application:

- Toxic properties of the chemical;
- Performance characteristics of the glove; and
- Work activities to be undertaken (degree of dexterity required, frequency and degree of exposure, etc.).

The following types of gloves are available to employees:

	<p>NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102</p>
	<p>Document Control No.:</p>
	<p>Document Title: Chemical Hygiene Plan 29 CFR 1910.1450</p>


Rubber Gloves	Natural (latex) or synthetic (nitrile), to prevent chemical contact. Lightweight gloves are used when dexterity or "feel" is important.
Reinforced Rubber Gloves	To protect the hands and lower arms from chemical action and also from abrasion.
Chemical Resistant Gloves	For use when rubber is incompatible with chemicals of concern.
Leather or Woven Gloves	For general use to protect the hands from cuts and abrasion.
Cryo-Gloves	To protect the hands and wrists from frostbite and cell damage in operations with low temperature freezers, dry ice or cryogenic atmospheres.
High Temperature Gloves	To protect the hands and wrists from burns in operations with autoclaves, working with high temperature baths, etc.

6.4.3 Clothing

- Laboratory coats are required over street clothes for routine laboratory work to prevent contact with dirt and minor chemical splashes or spills.
- Laboratory coats shall be hung on hooks just inside or just outside the laboratory.
- Laboratory coats are not to be worn in common areas such as the cafeteria, conference rooms, offices, wash rooms, libraries, or carpeted office space.
- Laboratory coats can be worn when traveling to or visiting other laboratories within the same facility but shall be removed before entering a common area.
- Chemical resistant aprons are recommended for operations involving the use of strong acids and other corrosive materials.
- Laboratory visitors shall be provided a laboratory coat. Employees responsible for visitors are expected to make sure visitors wear a lab coat when appropriate.
- Wearing shorts, capri pants, etc. in laboratory areas is prohibited.

6.4.4 Respiratory Protection

It is NJIT's policy to control contaminants in the laboratory through good engineering design and controls. Such engineering controls include ventilation, chemical fume hoods, equipment improvements and process changes. Therefore,

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

respiratory protective equipment is not required or necessary for most laboratory operations.

The use of respirators is limited to trained, medically qualified, and fit tested personnel only. Please contact the EHS Department for additional information concerning respiratory protection.

6.4.5 Other PPE

Foot Protection: Appropriate nonslip, closed-toe and closed-heel shoes are required for routine laboratory work. Open-toe and open-heel shoes will not be worn in laboratories.

Hearing Protection: At the present time, there are no laboratory locations at NJIT where the 8-hour time-weighted average noise level is greater than 85 decibels on the A scale (dBA), the OSHA Action Level for occupational noise exposure. If additional equipment is installed that significantly increases noise levels, exposure monitoring will be conducted to assess the need for hearing protection under OSHA’s Occupational Noise Exposure Standard, 29 CFR 1910.95.


7.0 LABORATORY SAFETY EQUIPMENT

Safety equipment provides protection and/or relief from exposure to physical, chemical, biological, and radioactive hazards while working inside the laboratory.

7.1 General Laboratory Ventilation

Each laboratory shall be provided with general ventilation that: (1) provides a source of air for breathing and makeup for local ventilation devices; (2) ensures that laboratory air is continually replaced to prevent increase of air concentrations of toxic substances during the work day; and (3) directs air flow into the laboratory from non-laboratory areas and out of the building through the chemical fume hood exhaust and the general ventilation exhaust system.

- **Special Ventilation Areas:** Exhaust air from glove boxes and isolation rooms where hazards exist shall be treated before release into the regular exhaust system, or may be exhausted directly to the external environment via a dedicated non-recirculating laboratory exhaust system.
- **Modifications:** Any alteration of the ventilation system will only be made after the Chemical Hygiene Officer, Faculty/PI, EHS, and Facilities determine that worker protection is not adequate or needs improvement.
- **Performance Rate:** If local exhaust systems such as hoods are used as the primary method of control, six (6) to twelve (12) room air changes / hour is

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

adequate ventilation, based on the requirements at the time of construction.

- **Quality:** General air flow shall not be turbulent and shall be relatively uniform throughout the laboratory. High velocity or static areas are not acceptable in the laboratory.
- **Evaluation:** The quality and quantity of general ventilation shall be evaluated on installation, and reevaluated whenever a change in local ventilation devices is made. The Facilities Department is responsible for the evaluation of ventilation system performance.

7.2 Chemical Fume Hoods

The EHS Department is responsible for ensuring that laboratory chemical fume hoods are inspected at least annually to ensure adequate performance. In addition, they are certified following any major HVAC renovation or unit servicing. The following items shall be reviewed during these inspections:

- Face velocity: an average face velocity of 80-120 feet per minute (fpm) must be maintained;
- Air flow into and within the hood must not be excessively turbulent;
- Materials stored in the hood are not obstructing vents or airflow;
- Hood sash and sensing devices are functioning properly; and
- Smoke test to determine whether hood has reflux problems.

The most recent inspection date will be posted on the hood. Records of inspections shall be maintained by the EHS and Facilities Departments.


The EHS Department is responsible for submitting maintenance work requests for fume hoods found to be in need of repair or maintenance. Hoods shall not be used if they are not operating properly.

7.3 Biological Safety Cabinets

The EHS Department shall arrange for annual inspection and testing of biological safety cabinets in accordance with applicable regulations and manufacturers' recommendations. In addition, they are certified following any major HVAC renovation, unit relocation or unit servicing. Records of inspection and repair shall be maintained by EHS. Cabinets shall not be used if they are not operating properly.

7.4 Emergency Equipment

All emergency equipment must remain free of clutter and obstructions.

	<p>NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102</p>
	<p>Document Control No.:</p>
	<p>Document Title: Chemical Hygiene Plan 29 CFR 1910.1450</p>

7.4.1 Fire Extinguishers

Fire extinguishers are selected based on the hazard of the area. Hazard classification, selection of extinguishers, and their locations will be the responsibility of the Facilities Department. EHS will provide training in the use of fire extinguishers.

7.4.2 Safety Showers

Each Lab Worker must know the location of the nearest safety shower before beginning work in a new area. The floor space under and leading to a safety shower must be kept clear at all times. Safety showers or drench hoses should be used to drench the victim in case of a chemical accident or clothing fire. The safety shower is operated by pulling downward on the overhead bar or chain. Clothing should be removed immediately while the victim is standing under the shower. Severe injury can result from leaving contaminated clothing in contact with the skin.


Any safety showers found by lab workers to be malfunctioning should be reported immediately to the Facilities Department for servicing. Safety showers must remain accessible at all times. Storage is prohibited beneath or immediately adjacent to safety showers.

7.4.3 Drench Hoses

Drench hoses are receiving additional attention in recent years, as a credible method for irrigating the skin following partial body coverage from a chemical spill. Affected skin should be irrigated for a minimum of 15 to 20 minutes. Drench hoses are typically adjacent to laboratory sinks and are freed up for use by pulling on a retractable hose. Lab Workers should become familiar with the location and use of a drench hose if present in their laboratory. Drench hoses must remain accessible at all times and should not be cluttered with lab ware.

7.4.4 Eyewash Stations

Each Lab Worker must know the location of the laboratory eyewashes before beginning work in a new area. Eyewash fountains shall be used to irrigate eyes in cases of chemical splashes to the eyes or face. For splashes to the eyes/face, immediately flush with water for at least 15 minutes. Eyelids should be held away from the eyeball to keep them open and the eyes should move up, down, and sideways to wash thoroughly behind the eyelids. Never attempt to neutralize chemicals splashed in the eye.

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

Eyewash equipment found by Lab Workers to be malfunctioning should be reported immediately to the Facilities Department for servicing. Eyewash equipment must remain accessible at all times and should not be cluttered or obstructed with lab ware. Eyewashes should be ran on weekly basis to ensure the lines run clear of sediment and there is accurate pressure.

7.4.5 First Aid Kits

First aid kits are located throughout the facility. Personnel trained in first aid and cardiopulmonary resuscitation (CPR) are available onsite during working hours (8:30 am to 5 pm). All work-related injuries should be reported to the Faculty/PI, NJIT Public Safety, and the EHS Department. It is good practice to inspect first aid kits at least annually to ensure adequate supplies and that the supplies have not expired or deteriorated.

7.4.6 Spill Kits

Always keep an appropriate spill kit available in the lab. Spill kits should contain absorbent material for containing a spill, and a neutralizing agent if applicable. Be sure to use each kit only for the materials designated on the kit container. All spills requiring the use of a kit should be reported to EHS. It is good practice to inspect spill kits at least annually to ensure adequate supplies and that the supplies have not expired or deteriorated.

7.5 Equipment Maintenance


Maintenance of equipment is critical to effective control of airborne contaminants. The EHS Department and the Facilities Department are responsible for establishing a regular maintenance program to verify that laboratory safety equipment is in working condition. **DO NOT use safety equipment if it is not functioning properly.** Contact EHS and/or Facilities as appropriate for equipment that needs maintenance and/or inspecting.

8.0 CHEMICAL ASSESSMENTS & EXPOSURE MONITORING

8.1 Chemical Assessments

Consistent adherence to general safe laboratory practices in conjunction with appropriate use of exposure controls are expected to keep laboratory chemical exposures to a safe level. Exposure risk is more likely to increase when handling hazardous chemicals outside of a chemical fume hood, especially those chemicals that:

- Have a high degree of acute toxicity, are carcinogens, or are reproductive toxins, except where there is very low risk of exposure (e.g., use of minimal quantities in a closed system).

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

- Have a permissible exposure limit of less than 50 ppm (or 0.25 mg/m³ for particulate matter).
- Are appreciably volatile or are easily dispersible in air (e.g., fine powders).
- Are used in large volumes (e.g., greater than 1 liter).

For any concerns involving the laboratory use of hazardous chemicals, including the above scenarios, contact the EHS Department at (973) 596-3059.

8.2 Personal Exposure Monitoring

Personal monitoring may be conducted by the EHS Department if there is reason to believe that exposure levels for a substance exceeds the action level (or in the absence of an action level, the permissible exposure limit). Examples where personal monitoring may be conducted include:

1. The use of volatile chemicals outside of a fume hood and/or
2. Personnel develop signs or symptoms associated with possible hazardous chemical exposure.

The initiation, frequency, and termination of personal monitoring are done in accordance with the relevant regulation.

8.3 Communication & Documentation

Monitoring results are provided to laboratory personnel per the time requirements of the relevant regulation or within 15 days of the EHS Department's receipt of monitoring results. EH&S maintains copies of exposure monitoring per the regulatory requirement.


9.0 MEDICAL CONSULTATION, EXAMINATION & SURVEILLANCE

Lab personnel who work with hazardous chemicals will be provided the opportunity to receive medical attention/consultation when:

- Symptoms or signs of exposure to a hazardous chemical develop.
- Exposure monitoring reveals an overexposure.
- A spill, leak, explosion, or other occurrence results in a hazardous exposure (potential overexposure).
- A regulatory standard triggers medical surveillance.

9.1 Health Care Providers

Medical examinations will be conducted by licensed healthcare providers and will be provided at a reasonable time and place at no cost. Medical consultations and examinations for employees are provided via the NJIT Occupational Health provider (Concentra). Concentra will document and provide as appropriate the following:

	<p>NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102</p>
	<p>Document Control No.:</p>
	<p>Document Title: Chemical Hygiene Plan 29 CFR 1910.1450</p>

- Any medical condition that may place a lab worker or employee at increased risk to work place hazardous chemicals.
- Statement that lab worker or employee has been informed of the results.
- The written report shall not reveal any specific findings or diagnoses unrelated to occupational exposure.

Lab personnel are responsible for informing the Faculty/PI of any work modifications ordered by the clinician as a result of exposure.

NJIT students shall report to the Student Health Service at St. Michaels Hospital for services.

9.2 Information Provided To Physician

The EHS Department, the departmental safety representative/CHO, and/or the Faculty/PI will provide the following information to the physician:

- Identity of hazardous chemicals.
- Conditions of exposure, including exposure data, if available.
- Signs and symptoms of exposure.

9.3 Medical Records


Medical records will be maintained by the Occupational Health Provider for the duration of the employee's employment plus 30 years. Employees must have access to medical records within 15 days of request to the EHS Department per OSHA's Access to Employee Exposure and Medical Records (29 CFR 1910.1020).

10.0 WASTE MANAGEMENT

Experiments conducted in an NJIT laboratory have the potential to generate regulated chemical waste. Management of hazardous waste is critical to maintaining regulatory compliance and a safe workplace for laboratory personnel. To meet the compliance training requirements for hazardous waste regulations, all laboratory personnel are required to know the following:

1. The hazards of the waste chemicals in the lab.
2. How to properly contain and store the waste in the lab.
3. What to do in an emergency involving the lab waste.

Hazardous waste is defined by the Environmental Protection Agency (EPA) as waste material that is specifically listed as a known hazardous waste under the EPA's Listed Waste or meets the characteristics of a hazardous waste as described in the EPA's Characteristic Waste.


	<p>NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102</p>
	<p>Document Control No.:</p>
	<p>Document Title: Chemical Hygiene Plan 29 CFR 1910.1450</p>

Listed wastes are wastes from common manufacturing and industrial processes, specific industries and can be generated from discarded commercial products.

- The **F-list** identifies wastes from common manufacturing and industrial processes that can occur in different sectors of industry, and thus considered non-specific sources.
- The **K-list** identifies hazardous wastes from specific sectors of industry and manufacturing and are considered source-specific wastes.
- The **P- and U-lists** designate as hazardous waste pure and commercial grade formulations of certain unused chemicals that are being disposed. EPA defines a commercial chemical product for P and U list purposes as a chemical that is either 100 percent pure, technical (e.g., commercial) grade or the sole active ingredient in a chemical formulation. For a waste to be considered a P- or U-listed waste it must meet the following three criteria:
 1. The waste must contain one of the chemicals listed on the P or U list;
 2. The chemical in the waste must be unused; and
 3. The chemical in the waste must be in the form of a commercial chemical product.

Characteristic wastes are wastes that exhibit any one or more of the following characteristic properties:

- **Ignitability**
 - Liquids with flash points below 60 °C
 - Non-liquids that cause fire through specific conditions (e.g. friction, absorption of moisture, spontaneous chemical change, retained heat from processing, burns vigorously and persistently)
 - Ignitable compressed gases
 - Oxidizers
- **Corrosivity**
 - Aqueous wastes with a pH of less than or equal to 2
 - Aqueous wastes with a pH greater than or equal to 12.5
 - Based on the liquids ability to corrode steel
- **Reactivity**
 - Unstable under normal conditions
 - May react with water
 - May give off toxic gases

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

- May be capable of detonation or explosion under normal conditions or when heated
- **Toxicity**
 - Harmful when ingested or absorbed
 - May be able to leach from waste and pollute groundwater

Please see **Appendix G** for a List of Particularly Hazardous Substances or visit the EPA website for the complete list and regulations: [40 CFR section 261.31](#).

10.1 Container Labelling


Each container of hazardous waste needs to be properly labeled with the red and white NJIT Hazardous Waste label. See **Appendix H** for appropriate waste labels.

- Labels must be filled out correctly and completely.
- Complete chemical names must be written in English with no abbreviations and no chemical or molecular formulas.
- Mixtures must have each component listed with approximate percentages (components must total 100%).
- Lab contact information must also be included.

Do not date hazardous waste containers. Container dating refers to the date that the chemical waste is removed from the lab by the EHS department.

10.2 Container Management

- Store containers of hazardous waste in the lab's designated SAA.
- Containers must be compatible with the waste being stored in them. (*For example: Acid waste shall not be stored in metal containers.*)
- Hydrofluoric Acid cannot be stored in glass containers.
- Do not fill containers to the very top. Leave at least 1 inch of "head space" to allow contents to expand and contract.
- Containers must be in good condition.
- Lab personnel shall monitor waste containers daily for signs of leaks and container deterioration.
- Containers must be properly capped and closed except when adding waste.
- When there is risk of breakage or to separate containers with different hazard classes, containers must be stored in secondary containment.

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

Replacement waste containers and labels can be requested via the [EHS Waste Container Request Form](#) found on the EHS website. Complete the form and email it to EHS.

10.3 Waste Disposal

Request waste pickups via the [EHS Waste Removal Request Form](#) found on the EHS website. Complete the form listing each waste container to be removed and email the form to EHS.

Prior to pick up, ensure all waste containers:

- Have completed waste label affixed to it;
- Are securely capped;
- Are free of drips/residue;
- Placed in the designated waste accumulation area with similar or compatible waste streams; and
- Have secondary containment as required.

10.4 Satellite Accumulation Areas (SAA)


Each lab or group of labs has a waste accumulation area where hazardous chemical waste is maintained in the lab before it is picked up by the Environmental Health and Safety (EHS) department. The SAA is a group of plastic bins where individual containers of chemical waste are placed to await pick up. Each bin is dedicated to one compatible waste stream. The bins serve as physical barriers between potentially incompatible waste streams. The waste accumulation area is identified by a SAA poster (**see Appendix F**), and each laboratory with an established chemical waste accumulation area must have the Satellite Accumulation Area Guidelines (**see Appendix E**) conspicuously posted. The SAA Guidelines is a list of the main rules concerning hazardous waste management, and serves as a reminder for the waste generators.

10.5 Other Waste Streams

10.5.1 Universal Waste

Universal waste regulations encourage the collection and recycling of universal waste to reduce the amount of these wastes going into landfills. NJDEP considers the following waste to be universal waste.

- **Non Lead Acid Batteries** – wet, dry, intact, and broken batteries. Alkaline batteries are managed as non-hazardous solid waste.
- **Mercury-Containing Equipment** -thermostats, thermometers, barometers, and switches.

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

- **Mercury Lamps** – fluorescent, neon, metal-halide, mercury vapor and high-pressure sodium lamps.
- **Pesticides** – are to be managed by the landscaping or pest control vendors.
- **Consumer Electronics** – Computers, printers, copiers, cell phones, electronic pads, VCRs and TVs.
- **Oil-based Finishes** – Paints, lacquers, stains and aerosol paint cans.
- **Used Oil** - Vacuum pump oil and motor oil.

All Universal Waste must be properly labeled with a Universal Waste label, except Used Oil, and stored in a manner to prevent a potential release to the environment. Individual containers of Universal Waste shall be dated once waste is first placed in the container. Containers of Universal Waste may be stored on site for up to 1 year.

Used oil may contain toxic substances such as halogens, organics, and Polychlorinated biphenyls (PCBs) and/or metals such as lead, cadmium, chromium, arsenic from additives or processes. Containers of Used Oil may be placed in the bin labeled flammable with other flammable, ignitable, and combustible materials, and labeled with a “Used Oil” waste label.


See **Appendix H** for examples of appropriate waste labels. Please review [Universal Waste Management Instructions](#) for more information.

10.5.2 Biological Waste

Biological waste may be defined as:

- Liquid or solid waste contaminated with infectious or potentially infectious microorganisms;
- Tissue and cell cultures;
- All human derived materials including commercially available human cell lines;
- Recombinant DNA;
- Genetically engineered organisms, plants; or
- Products regulated by the CDC, NIH, USDA/APHIS, or other State and local authorities such as biological toxins.

These materials may be classified by the biosafety level (BL) of the contaminant. NJIT laboratories only manipulate materials regulated at BL-1 and BL-2. **No waste beyond BL-2 is permitted to be generated.**

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

Prior to disposal of BL-2 waste, adequate disinfection must be achieved by employing either:

- Physical means via autoclave processing which employs a combination of time, temperature, and pressure to achieve disinfection; or
- Chemical means via application of a chemical disinfectant with the appropriate properties and necessary contact time. Typically, a concentration of 10% liquid chlorine bleach in direct contact with the waste material for 20 to 30 minutes will be sufficient. *(NOTE: 10% Liquid chlorine bleach is a 1:10 solution of liquid household chlorine bleach and water.)*

Please review [Biological Waste Management Instructions](#) for more information.

****All experiments and work with materials of biological origins must be assessed and approved by NJIT's Institutional Biosafety Committee.****

10.5.3 Radioactive Waste

Please see the Radiation Safety Guide for more information or contact NJIT's Radiation Safety Officer (RSO).


10.5.4 Electrophoresis Waste

The electrophoresis process may utilize dyes and stains that may contain EPA regulated metals such as Silver or suspected mutagens such as Ethidium Bromide. Therefore, electrophoresis waste must be collected and disposed of through EHS. All containers of electrophoresis waste must have a completed Electrophoresis Waste label affixed to it.

10.5.5 Non-Hazardous Waste

Waste that does not fit into one of the waste categories above by characteristics or definition may be considered non-hazardous waste. Although non-hazardous waste may not be classified under a regulatory agency, it still requires proper management to support green initiatives such as recycling; to prevent human injury or exposure; to avoid release into the environment; and to deter mixing with regulated waste streams.

- 10.5.5.1 Broken Glass – Uncontaminated broken glass, unbroken glass bottles, and unbroken glass pipettes *(except Pasteur pipettes which must be disposed of as Sharps)*
- 10.5.5.2 Solid Waste – Uncontaminated gloves, paper towels, Kimwipes, weigh boats, spatulas, etc.

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

- 10.5.5.3 Recyclables – Cardboard, paper, news print, non-lab plastic, some packaging material
- 10.5.5.4 Fine chemicals – Magnesium sulfate, sodium bicarbonate, sodium sulfate, silica gel, salts, buffers, reagents, and most soils
- 10.5.5.5 Liquid Waste – Some active pharmaceutical ingredients (*such as baclofen, antibiotics, nimodipine*); enzymes (*such as pectinase, xanthine oxidase*), media (*such as agar*), albumin, amino acid, sugars (*such as glucose, sucrose*), buffers (*such as Tris buffer*), saline solution, glycerin, gelatin, pectin, certain photographic developers.

Affix a Non-Hazardous Waste label to the container when you begin to fill it. Please **do not** label empty containers.

All waste containers **must** have the full name of all the chemical components and the approximate percentage of each substance. The total should equal 100%. **Do not** use abbreviations, chemical formulas, or molecular structures. The label must be completed in its entirety with the necessary information including laboratory contact information.


Refer to the [Waste Management](#) website for guidance on general waste management practices, waste segregation, waste accumulation and storage, waste labeling, and waste removal.

11.0 EMERGENCY PROCEDURES

All incidents involving hazardous chemical spills and exposures require prompt action by the responders and the victims in order to control chemical exposures to personnel and to minimize impacts to the environment and property. All laboratories and shops shall have a completed Emergency Response Guidelines poster conspicuously displayed in their area. See **Appendix Y**.

In the event of a chemical exposure or injury, immediately DIAL 9-1-1 for NJIT Public Safety to active emergency response personnel. Please provide the following information.

- Location of Incident (*ex. Colton – Room 123, CKB – Stairwell 2 Level 3, etc.*)
 - If calling from a cellphone, state “Location NJIT” first, then proceed with specifying the building and room locations.
- Nature of Incident (*ex. 1 gallon of hydrofluoric acid spilled on the floor, 25g bottle of arsenic compound broke in the sink, etc.*)
- Status of Incident (*ex. Spill is contained, some of material went into the drain, etc.*)

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450


- Need for Emergency Medical Services (*ex. Medical assistance is needed, No injuries or exposures, etc.*)
- Number of Injured Person(s) (*ex. Two people has chemical burns on arm and hands, One person was splashed in the eye, etc.*)

REMEMBER: Your Safety Is Just As Important! Only assist injured persons if it is safe to do so. Stay in the area in a safe location until emergency response personnel arrives. Be concise and detailed when reporting incidents.

11.1 Exposures & Injuries

- BODY EXPOSURE
 - EYES: Flush eyes with eyewash or drench hose for at least 20 minutes.
 - BODY: Remove clothing and use safety shower.
- CONSCIOUS INJURED PERSON
 - Move any conscious injured person to a safe location and away from any immediate danger.
 - If possible, assist the injured person with addressing chemically exposed areas as stated above.
 - If the injured person is in shock, keep the person warm and lying down until emergency personnel arrives.
- UNCONSCIOUS VICTIM
 - If you were not present when the victim loss consciousness, Do Not Enter the Area. It could be dangerous. A lethal gas or hidden hazard may be present.
 - Wait for emergency personnel to determine the area does not present an inhalation hazard.
- ELECTRICAL INJURY
 - Avoid direct contact with the victim.
 - Disconnect the power source if it is safe to do so.
 - Move the victim away from the power source with a nonconductive material such as a wood board or a rope.
 - Wait for emergency personnel.
- FIRST AID AND CPR

Administer first aid, artificial respiration and CPR only if trained and certified to do so.

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

11.2 Spill Response

All laboratories, shops, or other facilities that use hazardous chemicals should have chemical spill kits appropriate for the chemicals used or stored in the area. The spill kits must be stored in an identified location that is easily accessible by all personnel. Lab-specific chemical hazard information such as a chemical inventory should be readily available to emergency response personnel. Hazard labels can be placed on the front of the Chemical Spill Kits to represent the different types of hazards that may be present within the lab. Information in the Chemical Spill Kits include:


1. Cover page with hazard symbols representing the different types of hazards within the lab.
2. NJIT's emergency contact information.
3. Chemical storage map.
4. The lab's chemical inventory printout.

11.2.1 Small Chemical Spill (≤ 1 Liter)

- ASSESS spill size, chemical type and available cleanup equipment.
- PREVENT spills from going down any drains if possible.
- EVACUATE the immediate area.
- WARN other personnel.
- WEAR appropriate protective clothing and equipment.
- CLEAN UP spill using appropriate spill kit if trained to do so.
- CONTAIN spilled material in a sturdy plastic bag or sealed drum. Apply a hazardous waste label and contact EHS for disposal.

11.2.2 Large Chemical Spill (> 1 Liter)

- ATTEND to injured persons, seek appropriate medical attention.
- PREVENT spills from going down any drains if possible.
- POST warning signs on the door if safe to do so.
e.g. "DO NOT ENTER – Chemical Spill"
- EVACUATE area/building.
- EXTINGUISH ignition and heat sources only if it is safe to do so.
- PREVENT spill from spreading only if it is safe to do so.
- CONTACT NJIT PUBLIC SAFETY for assistance. **Dial 9-1-1. State the location, "NJIT".**
- FILE a formal incident report. The report can be found on the EHS website.

	NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102
	Document Control No.:
	Document Title: Chemical Hygiene Plan 29 CFR 1910.1450

11.2.3 Acutely Hazardous Spill

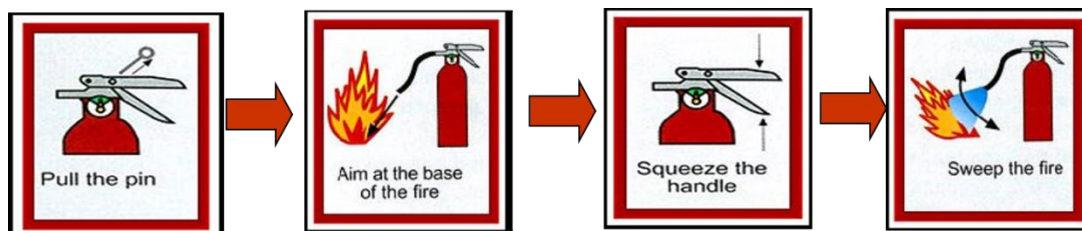
Any spill of an acutely hazardous chemical, regardless of size, must be considered a large chemical spill. An incident report must be filed.

REMEMBER: ONLY clean up a spill if you have the appropriate spill supplies and PPE; if it is safe to do so; if you've been trained; and if you're comfortable cleaning up the spill.

11.3 Fire Incident

- LEAVE the area of danger.
- PULL the fire alarm.
- CALL NJIT Public Safety. **Dial 9-1-1. State the location, "NJIT".**
- NOTIFY building occupants of the emergency and to evacuate.
- DO NOT attempt to extinguish the fire.


REMEMBER: Fire extinguishers are provided as an aid to assist you when escaping a fire. It is NOT provided for you to fight a fire. If you have never been trained on a fire extinguisher, the basic concept is P.A.S.S. (Pull-Aim-Squeeze-Sweep). See illustration below.



11.4 Incident Reporting

Laboratory personnel are to report all occupational injuries or illnesses to Faculty/PI immediately. The Faculty/PI and laboratory personnel must submit an [Incident Report Form](#) to NJIT Environmental Health and Safety for processing and distribution. Completed incident reports are distributed to NJIT Public Safety, Risk Management, and Human Resources.

- **NJIT Public Safety: 9-1-1 -- State the "Location NJIT".**
For severe incidents/injuries or incidents/injuries that occur after normal business hours.
- **NJIT Public Safety: (973) 596-3111**
For minor incidents/injuries or to report public
- **Environmental Health and Safety: (973) 596-3059** or healthandsafety@njit.edu

	<p>NEW JERSEY INSTITUTE OF TECHNOLOGY University Heights, Newark, New Jersey 07102</p>
	<p>Document Control No.:</p>
	<p>Document Title: Chemical Hygiene Plan 29 CFR 1910.1450</p>

All job related incidents must be reported to the employee’s immediate supervisor and the Human Resources Office within 24 hours. An Incident Report and the Supervisor’s Incident Investigation Report must be completed and returned to Human Resources.

If medical attention is required, the employee will be referred to NJIT’s occupational health provider. Medical authorization forms are required prior to treatment, and available in Human Resources.

If NJIT students require medical attention, they will be referred to Student Health Services during normal business hours. Visitors and volunteers will be referred to urgent care or the hospital. During off-hours, weekends, and in the event of a serious injury, the injured person(s) will be referred to the hospital.

Laboratory personnel are encouraged to report "near misses" as they are considered a precursor to actual incidents.