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Policy
for

Working Alone

REVISION

Rev No.	DCN No.	Change Summary	Release Date	DCN Initiator	Document Owner
8	DCN0995	Added information on extended lab hours for students and how to be granted approval for extended lab access.	12-6-13	C. Boisclair	R. Segura

Prior revision history, if applicable, is available from the Document Control Office.

1. PURPOSE AND SCOPE

1.1 Purpose

1.1.1 The purpose of this document is to establish the requirements for working alone in the College of Nanoscale Science and Engineering (CNSE) buildings.

1.1.2 To ensure that the hazards of the chemicals, gases, processes and equipment used at CNSE are evaluated; and that the information concerning their hazards is clearly identified and conveyed to those who work with or around these chemicals, gases, processes and equipment; and to determine whether such a person can work alone.

1.1.3 To ensure that all employees and students understand the requirements of this policy prior to entering their work area. Generally, it is prudent to avoid working alone in the cleanrooms, laboratories, or on high risk operations.

1.1.4 This policy does not cover emergency situations that occur outside normal operating hours. Such situations and response requirements are covered and responded to by the EHS, ERT and Facilities Departments and contracted outside agencies. Such organizations will ask Security to contact the appropriate primary owners, Directors, Professors, Supervisors and/or operators after the emergency has been addressed or contained.

1.2 Scope

1.2.1 This policy shall apply to all CNSE employees, tenant employees, students and interns, temporary employees, contractors and subcontractors.

1.2.2 This program applies to all areas or job functions performed at this facility which involve, are adjacent to, or could produce, a recognized hazard capable of overcoming or immediately incapacitating a person to the point where they are unable to directly control the hazard or summon help.

1.2.3 Cleanroom or laboratory operations involving hazardous substances are sometimes carried out continuously or overnight with no one present.

1.2.3.1 It is the responsibility of the worker to receive approval from the cleanroom/laboratory operations team prior to conducting such an operation and to design these experiments/processes so as to prevent the release of hazardous substances in the event of interruptions in utility services - such as electricity, cooling water, and inert gas.

1.2.3.2 Lights should be left on, and signs should be posted identifying the nature of the experiment/process and the hazardous substances in use.

1.2.3.3 If appropriate, arrangements should be made for other workers to periodically inspect the operation. See Section 6 for more information.

1.2.3.4 Information such as the Tool Responsibility Matrix should be posted indicating how to contact the responsible individual in the event of an emergency.

1.2.4 This procedure does not address emergency situations that are covered in detail in *EHS-00024 Evacuation Plan,* and *EHS-00019 ERT Organization and Charter*. In the event of an emergency the requirements set forth in this policy do not apply. Security will contact the ERT and/or Facilities on-call person, who will direct them to contact the appropriate laboratory/cleanroom or Tool Owners after the emergency has been addressed and secured.

2. HOURS OF OPERATION

2.1 The CNSE facility is a 24-hour operation; therefore hours of operation at the CNSE complex have been established as 12:00 am -12:00 am Monday through Sunday. Normal working hours are from 7:00 am – 5:00 pm Monday through Friday. Lab access for students is valid 7:00 am – 9:00 pm Monday through Friday, unless otherwise approved by EHS, the lab owner and the lab PI (see Section 4).

2.2 Non-hazardous activities using the Late Working Book (see Section 6), shall only be permitted to be performed during holidays or when the cleanrooms are offline. Work involving hazardous and extremely hazardous work activities and locations, shall not be permitted to be performed during holidays.

3. RESPONSIBILITIES

3.1 It is the responsibility of each Supervisor, Department Manager or Professor to ensure their employees and students are aware of this policy; and to know when and under what circumstances this policy applies.

3.2 It is the responsibility of each Supervisor, Department Manager or Professor, if they plan to deviate from this policy, to seek permission from a Director or Vice President, and inform EHS of this plan.

3.3 It is the responsibility of CNSE Security and the ERT to do rounds every night to verify compliance with this procedure.

3.4 It is the responsibility of each employee and student to inform others in the area regarding the extremely hazardous activities that they will be performing and to request a buddy, when necessary.

4. ACTIVITIES

4.1 **Non-hazardous Activities**: those activities where the risks are not significantly increased by the nature of the work other than those created by everyday living situations. In all circumstances such activities can be performed alone during normal operating hours. During holidays or an annual shut down the employee shall notify Security (518) 956-7082 in the NFE Rotunda of their presence on site and sign the Late Working Book also located in the NFE Rotunda. See Section 6.0 for further details of the Late Working Book.

4.1.1 Non-hazardous activities include:

4.1.1.1 Desk work,

4.1.1.2 Computer operations or monitoring or programming,

4.1.1.3 Normal microscope use or inspection work performed in the Metrology laboratories in CESTM e.g. no pouring or refilling of liquid nitrogen, no system maintenance or repairs, etc,

4.1.1.4 Material handling/lifting,

4.1.1.5 Routine janitorial work e.g. sweeping, cleaning, mopping, garbage collection, floor stripping, etc,

4.1.1.6 Non-hazardous maintenance activities, and/or

4.1.1.7 Non-hazardous facilities activities that do not include activities listed under Section 4.2 and 4.3.

4.1.2 Student general access expires at 9 pm Monday-Friday. When involved in a non-hazardous activity listed under section 4.1.1, this access can be extended on a case by case basis by completing and submitting ANT-00001-F1 CNSE ID/Access Card Request Form to Access Control.

4.1.2.1 The student's PI and EHS must approve the access request prior to a student working past 9 pm.

4.1.2.2 When working past 9 pm, the student must sign in at security in the late working book. They must also sign-out upon their departure from the site. See section 6 for more information.

4.1.2.3 The ERT and Security will do rounds every night to verify compliance. If the policies described in Section 4.1.2 are violated, the requested extension for general access will be revoked and the individual(s) in violation are required to be retrained on general safety.

4.2 **Hazardous Activities**: those activities which present the potential for significant, although not life-threatening or incapacitating injury or illness. Such activities are only permitted to be performed alone using the communication system, if the Supervisor, Department Manager or Professor in consultation with the EHS Department has performed a hazard assessment of the work area and determined the necessary procedures to ensure that individuals working alone in those areas are provided with adequate emergency response capabilities, such as the ability to contain the situation and call Security for emergency assistance, otherwise the Buddy System will be utilized. In all circumstances, such activities are not permitted to be performed during holidays or annual shut downs, or when the Emergency Response Team is not available to provide emergency assistance. If activities must occur during an annual shutdown, EHS shall assess and approve such activities on a case by case basis and ensure that adequate emergency response is available. In the event that a site, system or tool emergency were to occur during a holiday or annual shut down, the Facilities on-call person and/or laboratory/cleanroom or tool owner arriving on site is permitted to perform the following activities alone using the communication system.

4.2.1 Hazardous Locations include:

4.2.1.1 CESTM, NFS, NFSX, NFN, NFC, and NFX cleanrooms

4.2.1.2 Laboratories or areas where one can perform any of the hazardous activities listed below.

4.2.2 Hazardous Activities include:

4.2.2.1 Working on enclosed chemical systems,

4.2.2.2 Refilling, pouring or transporting of cryogenic material,

4.2.2.3 Working in the water treatment, di-ionized water or acid waste neutralization plants,

4.2.2.4 Hot work operations,

4.2.2.5 Transporting, handling, pouring or using chemicals with a NFPA hazard rating of less than 3,

4.2.2.6 Transporting, handling or pouring hazardous waste,

4.2.2.7 Chemical bottle or drum washing,

4.2.2.8 Using air purifying respirators,

4.2.2.9 Working with Class 3B or 4 lasers,

4.2.2.10 Electrical testing of circuits greater than 30 volts, but less than 480 volts,

4.2.2.11 Working on high pressure (>100 psi) or high vacuum (<10-5 Torr) systems,

4.2.2.12 Using Forklifts,

4.2.2.13 Using Cranes,

4.2.2.14 Chemical shipping, receiving or delivering,

4.2.2.15 Work involving moving parts in open tools, and working while safety interlocks/devices are defeated, and/or

4.2.2.16 Working at unprotected elevations (working at 6 feet or more from grade without protection such as harnesses, guardrails, safety net, leading edge, etc).

4.2.2.17 Working with Biosafety Level 1 (BSL-1) or Biosafety Level 2 (BSL-2) materials.

4.2.3 Student lab access expires at 9 pm Monday-Friday. When working in a hazardous location (4.2.1) or involved in a hazardous activity listed under Section 4.2.2, this access can be extended on a case by case basis by completing and submitting ANT-00001-F2 CNSE ID/Access Card Request Form to Access Control.

4.2.3.1 The student's PI, the lab owner and EHS must approve the access request prior to a student working in the lab past 9 pm.

4.2.3.2 When working in a lab, the student must use the buddy system, meaning there must be another individual in the location with the individual who is qualified to respond in the case of an emergency. The buddy must be identified at the time of the request for extended lab hours (see Section 4.2.3)

4.2.3.3 When working past 9 pm, both the student and their buddy must sign in at Security in the Late Working Book. They must also sign-out upon their departure from the lab. See Section 6 for more information.

4.2.3.4 The ERT and Security will do rounds every night to verify compliance. If the policies described in Section 4.2.3 are violated, the requested lab

access will be revoked and the individuals in violation are required to be retrained on advanced safety.

4.3 **Extremely Hazardous Activities or Locations**: those activities or locations, which present the potential for immediate danger to life or incapacitating injury or illness. An individual cannot work on an extremely hazardous activity or in an extremely hazardous location unless the employee uses the Buddy System. The Buddy System in this case can be used if the employee is constantly within sight or sound of another individual, who is trained to react appropriately to the hazard(s) involved and call Security in the case of an emergency. In all circumstances such activities are not permitted to be performed nor entry permitted into such locations, unless the ERT is available to provide emergency assistance and the activity/location has been approved by the EHS department. If activities must occur during an annual shutdown, EHS shall assess and approve such activities on a case by case basis and ensure that adequate emergency response is available. In the event that a site, system or tool emergency were to occur during a holiday or annual shut down the Facilities on-call person and/or laboratory/cleanroom or tool owner arriving on site shall secure the situation; and once secured are permitted to perform the following extremely hazardous activities using the Buddy System.

4.3.1 Extremely Hazardous Locations include:

4.3.1.1 Laboratories or areas where one can perform any of the extremely hazardous activities listed below.

4.3.1.2 Hazardous Production Materials corridor, and

4.3.1.3 Central Utility and Hazardous Production Material Buildings.

4.3.2 Extremely Hazardous Activities include:

4.3.2.1 Working on live hazardous voltages of 480 volts or greater, or high ampere systems,

4.3.2.2 Working with highly corrosive, flammable or toxic chemicals or gases where, if released, the concentration and quantity present an immediate danger to life or incapacitating injury or illness. Such work would include:

- Delivery of highly corrosive, flammable or toxic gas cylinders or chemical drums/totes,
- Changing highly corrosive, flammable or toxic gas cylinders,
- Changing highly corrosive, flammable or toxic chemical drums/totes, and/or

- Transporting, handling, pouring or using chemicals with a NFPA hazard rating equal to or greater than 3.
- Using air-line or SCBA respirators,
- Replacing/disconnecting Valve Manifold Boxes (VMBs) and/or highly corrosive, flammable or toxic chemical/gas lines,
- Maintenance or cleaning of tools, tool chambers, support equipment or chemical dispense units that could result in the off gassing of a hazardous material, and/or
- Entry into permit required confined spaces,

NOTE: A ‘2 in’ - ‘2 out’ rule must always be utilized by the ERT when responding to an incident where unknown or known hazards exist.

4.3.3 Student lab access expires at 9 pm. When working with extremely hazardous materials in a lab, this access can be extended on a case by case basis by completing and submitting ANT-00001-F2 CNSE ID/Access Card Request Form to Access Control.

4.3.3.1 The student’s PI, the lab owner and EHS must approve the access request prior to the student working in the lab past 9 pm.

4.3.3.2 When working in a lab, the student must use the buddy system, meaning there must be another individual in the location with the individual who is qualified to respond in the case of an emergency. The buddy must be identified at the time of the request for extended lab hours (see Section 4.3.3)

4.3.3.3 When working past 9 pm, the student must also sign in at Security in the Late Working Book. They must also sign-out upon their departure from the lab. See Section 6 for more information.

4.3.3.4 The ERT and Security will do rounds every night to verify compliance. If the policies described in Section 4.3.3 are violated, the requested lab access will be revoked and the individuals in violation are required to be retrained on advanced safety.

4.4 Exception

4.4.1 The National Weather Service is permitted to work on the roof where they shall provide their own emergency assistance in case of an emergency.

5. WORK SYSTEMS

5.1 Use of the Buddy System

5.1.1 The Buddy System can be used if the employee is constantly within sight or sound of another individual, who is trained to react appropriately to the hazard(s) involved and call Security in the case of an emergency.

5.1.2 The purpose of the Buddy System is to provide rapid assistance to employees in the event of an emergency. Since certain recognized hazards related to operations (or hazardous areas) at CNSE could suddenly incapacitate a person, such operations are not to be performed (or entered) without the assistance or supervision of another individual who could immediately render assistance or summon help, if necessary.

5.1.3 Affected employees and responsible supervisors should ensure that those that are identified as the ‘buddy’ follow the Buddy System procedure and understand their responsibilities under it.

5.1.4 In the case of a request for extended lab or general site access, the buddy that will accompany the requestor must be identified at the time of the request on ANT-00001-F2 CNSE ID/Access Card Request Form and submit to Access Control.

5.2 Use of the Communication System

5.2.1 The communication system can be used in circumstances during hazardous operations if the Buddy System is not feasible. This can be achieved by contacting 24/7 Security (518) 956-7082 located in NFE Rotunda prior to beginning the project, providing your name, telephone number to reach you and your exact location.

5.2.2 It is then your responsibility, once you have had the initial communication, to contact Security at an agreed upon time period, e.g. every 10 minutes, half an hour, but not to exceed one hour, to let them know your status. A Supervisor, Department Manager or Professor can also fill this role, if available.

5.2.3 Do not use portable radios, walkie-talkies or mobile phones in areas where they have been prohibited.

5.2.4 If Security or your Supervisor, Department Manager or Professor is not contacted at the agreed upon time interval (not to exceed one hour), the ERT will be notified to respond to the area to investigate.

6. LATE WORKING BOOK

6.1 Access to the CNSE buildings during holidays is permitted only for non-hazardous areas and activities, where the Professor/Department Manager has given written consent and appropriate measures are in place to ensure that access is restricted to persons who have been previously authorized.

6.2 People using the CNSE buildings during holidays should record their entry and exit times in a building 'Late Working' Book maintained by Security in the NFE Rotunda. This is important in the event of an emergency incident, such as fire, when it is necessary to know the occupancy of a building.

6.3 This record can be made by: physically signing the book or by calling (518) 956-7082 with your name, company name, building name and room number.

6.4 In the case of a student working past 9pm, prior approval is required by the student's PI and EHS if performing any of the activities listed in sections 4.1.1. This approval is obtained using the procedures outlined in section 4.1.2. The student must sign in at Security using the Late Working Book prior to entering the site and sign-out upon their departure from the site. Security will work with the individual(s), at the time of sign-in, to establish a communication process to use while the student(s) are working after hours.

6.5 In the case of a student working past 9pm, prior approval is required by EHS, the lab owner, and the student's PI if entering any of the locations listed in Sections 4.2.1 or 4.3.1 or if performing any of the activities listed under Sections 4.2.2 or 4.3.2. This approval is obtained using the procedures outlined in sections 4.2.3 and 4.3.3. The student must sign in at Security using the Late Working Book prior to entering the lab and sign-out upon their departure from the lab. Security will work with the individual, at the time of sign-in, to establish a communication process to use while the student is working after hours.

7. TRAINING

7.1 Prior to beginning work in an area which utilizes chemicals; hazardous and extremely hazardous operations or processes, all new, rehired, temporary, contract and subcontract employees, students or interns shall receive CNSE Safety Orientation Awareness training which shall include the requirements set forth by this procedure.

7.2 The employee shall also receive Work Alone training specific to their job as specified by their Supervisor, Department Manager or Professor.

7.3 Existing temporary, contract and subcontract employees, students or interns shall receive the requirements set forth by this procedure and Work Alone training specific to their job from their Supervisor, Department Manager or Professor.

7.4 If the policies described in this document are violated, the general and/or lab access that was provided will be revoked and the individual must be retrained on general safety (if the general access policy is violated) and advanced safety (if the lab access policy is violated).

APPENDIX A

SAFETY PROCEDURES FOR WORKING IN THE NFX AIR RETURN CHASE

1. PURPOSE AND SCOPE

This appendix establishes safety procedures for employees working in the NFX Air Return Chase (room 249) to perform cleaning activities due to the area's characteristics:

1) large enough to completely enter;
2) not designed for normal occupancy;
3) descending/ ascending a ladder to enter/exit the space;
4) must duck under cross beams to access areas to perform job;
5) 3-foot clearance in central area that requires cleaning.

2. AREA REQUIREMENTS

These safety items are required in case power should go out in this work area and emergency egress is required.

2.1 **Reflective tape on cross beams** Cross beams and surfaces under which employees must duck to access cleaning areas are lined with reflective tape as a bump warning and to help facilitate egress during emergencies.

2.2 **Emergency Lights** are tied into generator power in case of power outage.

3. SAFETY RESPONSIBILITIES

3.1 Cleanroom Janitorial Staff

3.1.1 Never enter this area alone. Use buddy system whenever working. Buddies should stay within line of sight of each other at all times.

3.1.2 Employees should carry a mobile phone (that has reception in the work area) or other communication device whenever entering the area to provide a method of emergency communication.

3.1.3 Notify Security whenever entering and leaving this area by leaving your cell phone number and the number of your buddy in their log book at the

Security Desk. Security will call your cellphone in the event of an emergency or evacuation. In the cases where the individual does not have a cell phone or the cell phone does not get reception in that area, Security will issue a radio for the duration of the task.

3.1.4 Before entering area to work, post a sign on the door “Employees working inside.” Remove this sign once work is completed and employees have exited the space.

3.1.5 Employees working in this area should carry a portable emergency light source (e.g., flashlight attached to vacuum setup or head lamp on hard hat/cap) which would be used for emergency egress only.

3.1.6 Wear hard hat and safety glasses when working in this area.

3.2 CNSE Management Responsibility

Enforcing the requirements of this document.

3.3 Emergency Response Team Responsibility

During a building evacuation, perform sweeps of this area. Sweepers must go to floor level to be able to completely see all work areas.