KEENE STATE COLLEGE
STANDARD OPERATING PROCEDURE

TITLE: NEW EMPLOYEE SAFETY ORIENTATION TRAINING DESCRIPTION: THIS SOP APPLIES TO NEW PHYSICAL PLANT HIRES CROSS REFERENCE: 29CFR1910, KEENE STATE COLLEGE SAFETY POLICY

1. Purpose: to provide a standard safety orientation training program for all new Physical Plant hires, consistent with OSHA requirements and Keene State College policies.

2. Applicability: for new Physical Plant hires and also staff hires in the KSC organization whose job responsibilities may include occasional work in Physical Plant areas or work with hazardous materials/waste.

3. Requirements: The Environmental Health & Safety Coordinator (or a designated employee) will review the following training program as detailed in the attached outline with new hires within 30 days of start date. In addition, the checklist must be completed by the trainer and employee supervisor. A copy of the training outline will be given to the new employee for his reference, and kept on site in the EHS office.

4. Responsibility: this SOP was developed by the Environmental Health & Safety Department and will be reviewed on an annual basis. The EHS Coordinator will maintain the original document and reissue the SOP if there are any changes requiring revision.

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Approved by: Date:	Technical Approval
Approved by: Date:	Management Review
Revision #: 0	

KEENE STATE COLLEGE NEW EMPLOYEE SAFETY ORIENTATION

I. INTRODUCTION

- Review Keene State College operations and history
- Briefly discuss specific job tasks that require training

II. KEENE STATE COLLEGE SAFETY POLICY

- Refer to Safety Policy in Safety Programs manual
- Review general Physical Plant safety rules:
  - ⇒ No smoking, except in designated areas
  - ⇒ No drugs or alcohol
  - ⇒ Safety glasses are required in all shop work station areas -contact lenses are NOT permitted
  - ⇒ Safety shoes are required by Physical Plant employees in all work areas
  - ⇒ Do not wear loose or dangling clothing or jewelry
  - ⇒ ALL injuries must be immediately reported to your supervisor
  - ⇒ Practice good housekeeping- keep work areas and aisles clean
  - ⇒ Use OSHA approved tools and the right tools for the job
  - ⇒ No tampering with any equipment or machinery
  - ⇒ Notify your supervisor of any leaks, spills or anything unusual
  - ⇒ Report to your supervisor any condition or procedure that may cause personal injury or facility damage
  - ⇒ Followup with EHS Coordinator if further support is needed
- Disciplinary action will be consistent with the College's rules of employment. Violation of Keene State College Safety Policy will subject the employee to disciplinary action up to and including termination. Each supervisor is responsible for the enforcement of the above.

III. ACCIDENT/INCIDENT REPORTING

- REPORT ALL INJURIES TO YOUR SUPERVISOR. Let your supervisor know if you think you need medical attention.

- First Aid kits are located at the Maintenance Desk, in the Break room, and at other locations in the Physical Plant. Ask your supervisor.

- Supervision will arrange for medical evaluation of employees whose injuries require the need for medical attention. HR at ext. 2484 can assist with the list of approved physicians.

- Employee's and Supervisor's Accident Reports should be completed as required. The appropriate forms can be accessed via the HR website. Lost Time injuries or injuries requiring hospitalization should be immediately reported to EHS at ext. 2879 and HR at ext. 2484.

IV. EMERGENCY RESPONSE

- The College has a Crisis Management Plan that outlines the actions to be taken in the event of a fire, serious injury to students/personnel, hazardous materials release, criminal activity or fatality.

- Crisis Management Plans are located in the EHS office, and Director of Physical Plant's office.

- College employees should dial 911 for a medical emergency/fire/hazardous materials release. The City of Keene has a trained and experienced team of Haz Mat Emergency responders that will respond to a spill. Campus Safety at ext. 2228 should be contacted for non emergency but an urgent need for first aid, security, or other support. Campus Safety can also help assess the situation if you are unsure. In the event of an emergency, personnel should be guided by the following:

  ⇒ Shut down any operating equipment/secure your work area IF YOU CAN DO SO WITHOUT RISK TO YOURSELF OR OTHERS

  ⇒ Walk quickly, do not run, to your designated evacuation point.

  ⇒ *For _____ the evacuation points are at _____ and_____..*

- Physical Plant fire/emergency alarms are located throughout the Physical Plant and are pulled when there is an accident, or fire that requires building evacuation.

- Emergency phone numbers-

POLICE/FIRE/AMBULANCE	DIAL 911 OR
Campus Safety	358-2228
EHS	358-2879

V. HAZARD COMMUNICATION/"RIGHT-TO-KNOW"

- Employers are responsible for informing employees of any hazards associated with materials located in the work place. An employee has the "right-to-know" what hazardous chemicals are in the workplace and what kinds of hazards are associated with these chemicals.

- Keene State College has a program in place to make sure chemical hazards are communicated through training, making Material Safety Data Sheets (MSDS's) available, and container labeling. A list of hazardous chemicals that are located on site is included as part of this program. Each work area throughout campus may also have additional MSDS's specific to their operation.

- The Right-to Know/HazCom program is required by both Federal (OSHA) and State NH law.

- Employee training includes the following:

    ⇒ Review example hazardous Keene State College chemicals and where they can be found in the work place

    ⇒ Read applicable MSDS's

    ⇒ Review what the chemicals look like and their odor

    ⇒ Release of these chemicals can be indicated by the following:

        ◊ Visual appearance of a leak, i.e. HCL will fume into a white cloud

        ◊ Odor of a gas (ex. chlorine)

        ◊ Odor of a solvent (ex. Acetone, mineral spirits)

        ◊ Activation of emergency alarm or detection alarms

⇒ Accidental release of the chemical from a damaged container or pipe could result in exposure to the chemical. Therefore, it is important to be able to recognize an accidental release and take the correct action. If you were to observe an accidental release:

- ◊ At a minimum, stop what you are doing and notify your supervisor if you can safely do so. For example, a paint spill.

- ◊ If it were a large chemical release in the Science Labs or a rupture of a raw sewage line, that could injure personnel, you would move away from the release, staying upwind, use the campus Emergency Phones or other phone to contact Campus Safety at ext 2228. Remember Emergency Response team members are the only personnel who respond to large emergency incidents.

⇒ HAZARD REVIEW

A primary hazard of a compressed gas (used in oxy acytelene torch work) is the pressure in the vessel. Cylinders releasing their contents quickly from a high pressure cylinder can cause considerable damage by "rocketing", where the cylinder is actually propelled by the escaping gas.

The primary hazard of common chemicals found on campus like paints, mineral spirits, acetone and alcohols is their extreme flammability.

In addition there are other hazards:

PHYSICAL HAZARDS

- ◊ Flammable materials--material that easily catch fire and burn ex's.- acetylene, methane, acetone, gasoline

- ◊ Pyrophoric materials-- materials that spontaneously ignite and burn when released to the atmosphere, ex. silane

- ◊ Oxidizers-- materials that accelerate combustion or cause readily combustible materials to ignite and burn. Oxidizers must be stored at least 20 feet from flammable and combustible materials., ex. fluorine, oxygen

HEALTH HAZARDS

- ◊ Carcinogen- studies have shown it can cause cancer, ex. ethylene oxide, benzene

- ◊ Hepatotoxins-liver damage--ex. carbon tetrachloride

- ◊ Nephrotoxins-kidney damage, ex. chlorine, fluorine

- ◊ Teratogen-- a substance to which exposure of a pregnant female can result in malformations to the fetus

- ◊ Mutagen-- a substance that is capable of altering the genetic material in a living organism

- ◊ Asphyxiants-if it displaces enough oxygen, can be fatal , ex. nitrogen, helium, argon

- ◊ Irritants- causes an inflammation of the skin, eyes, or respiratory tract

- ◊ Corrosive-cause destruction of human tissues they come in contact with. Acids like hydrochloric acid, nitric acid (Photography/Printmaking), hydrofluoric acid (Science Building)

⇒ The purpose here is to review the different kinds of hazards; not to confuse you or expect you to be expert in the different definitions. Each MSDS on each material contains in detail all the hazard information on a chemical. The MSDS is a huge information resource. MSDS's are always available for your review and are located throughout Campus and also in EHS office.

- LABELING

⇒ All chemical containers and cylinders are labeled with the identity of the chemical and appropriate hazard warnings. Cylinders have tags with this information, stenciling, and DOT diamonds on the container.

⇒ Labels on incoming containers of chemicals entering the Physical Plant must contain the following:

- ◊ Chemical name

- ◊ Appropriate hazard warnings

- ◊ Name and address of the supplier

⇒ Receiving personnel are responsible for checking to see that the labels on incoming materials contain the required information. If there is any question about the label, the container is to be quarantined and the EHS Coordinator notified. If an appropriate label is not available at the Physical Plant, the EHS Coordinator will write a letter to the vendor requesting the proper label.

⇒ MSDS's for new chemicals (to the Physical Plant) must be received before the chemical can be used in the workplace. The area supervisor that ordered the chemical is responsible for approving the use of the chemical and ensuring that the MSDS is available and reviewed prior to use of the chemical.

VII. PERSONAL PROTECTIVE EQUIPMENT

- Safety glasses are required in all work areas of the Physical Plant or when performing certain jobs. Contact lenses are not permitted.

- Safety shoes are required with a reinforced steel toe. Keene State College will reimburse up to $60 per year for shoes.***

- Appropriate gloves are required during specific job tasks, i.e. certain carpentry work, handling chemicals, high voltage work (Check MSDS for PPE recommendations for different chemicals)

- No loose or dangling clothes or jewelry is permitted

- Additional PPE may be required depending on your work area/assignment.

- Respirators may be provided for certain jobs on a voluntary basis and to provide an extra level of comfort and protection. Respirators are not a requirement of any specific job classification. Please consult EHS if you feel you would like to wear a respirator.

VIII. FIRE PREVENTION

- Fire alarms are located at egress points. In the event of a fire outside the scope of use of a fire extinguisher (use 'the size of a wastebasket' as a rule of thumb), the alarm should be pulled, 911 dialed, the Crisis Management plan activated, personnel evacuated, and the Fire Department notified.

- Only trained personnel should respond to a small fire using a fire extinguisher.

- Fire evacuation procedures are posted in class buildings showing evacuation routes.

- General Fire Safety Guidelines:

    ⇒ There are 3 components that are necessary for a fire---

        ◊ Fuel

        ◊ oxygen

        ◊ ignition source (spark)

    ⇒ Different types of fires call for the use of different types of extinguishers.

        ◊ Class A extinguishers (water, dry chemical) should be used for wood, paper, or plastic fires

        ◊ Class B extinguishers (carbon dioxide, dry chemical, water fog) for flammable liquids or vapors

        ◊ Class C extinguishers (carbon dioxide, dry chemical) for electrical fires. NEVER USE WATER.

    ⇒ General fire safety tips:

        ◊ Use electrical cords that are in good condition--not frayed

- ◊ Do not use temporary wiring (unless by an authorized, qualified person in an emergency situation).
- ◊ Only qualified personnel shall work with wiring and electrical equipment
- ◊ Use flammable liquids in well ventilated areas-away from ignition sources
- ◊ Keep flammable materials in closed or covered containers, stored away from ignition sources and combustible materials
- ◊ Clean up any spills immediately
- ◊ No smoking except for in designated areas
- ◊ Flammable containers should be stored in approved cabinets

IX. EQUIPMENT USAGE AND SAFEGUARDS

- Guards should be in place on equipment whenever grinding or cutting work is performed. In addition, wraparound glasses, 6goggles must be worn or a face shield with safety glasses.
- Use tools that are grounded (have three prong plugs)
- Use the safety devices, if any, that are designed to be used with equipment
- Use the right tool for the job
- LOCKOUT/TAGOUT
  - ⇒ Lockout/tagout is an OSHA standard that outlines procedures to be followed to prevent accidents and injuries caused by the release of energy
  - ⇒ Failure to follow lockout/tagout procedures results in 10% of all serious industrial accidents and 28,000 lost work days/yr.
  - ⇒ The standard covers the servicing and maintenance of equipment where unexpected startup could harm employees, ex. repair work, making equipment changes. More examples: electrical or mechanical equipment, pumps, chillers, fans, circuit breakers, valves, circuits, etc. Does not apply to working on small tools that can be unplugged.
  - ⇒ A wide variety of energy sources where lockout/tagout must be used to prevent hazardous energy release include:
    - ◊ electrical
    - ◊ mechanical
    - ◊ pneumatic (air pressure)

- ◊ hydraulic
- ◊ fluids and gases

⇒ A lockout device (lock, block, or chain) is installed at the power source so that equipment powered by that source cannot be operated.

⇒ A tag should also be applied to the lock--with the authorized person's initials and date clearly stating DO NOT OPERATE

⇒ NO ONE but the authorized person whose initials appear on the tag can remove the lock or tag. DO NOT REMOVE SOMEONE ELSE'S TAG OR LOCK.

⇒ GENERAL LOTO PROCEDURE

- ◊ Before shutdown, notify all affected employees. Locate all energy sources (look for hidden energy sources)
- ◊ Shutdown the machine by the normal method
- ◊ Isolate the machine by shutting down/off the main power switches (at the main power source) to that machine
- ◊ LOCKOUT-place locks on switches in the "off" position. Place appropriate tags with the locks.
- ◊ ENERGY RELEASE- release all potentially stored hazardous energy (electric, springs, air, gas steam). Get the equipment to a zero energy state.
- ◊ TEST. Authorized employee tests the equipment to make sure it does not start by attempting to restart the machine by pressing the "on" or "start" button

⇒ Group lockouts for large jobs would utilize each authorized person's lock and tag

⇒ Remember *only authorized personnel can remove a lock or tag.* All other personnel should not touch anything that is locked or tagged.

⇒ Specific large

- Material Handling--General

⇒ Try not to lift manually; if possible, use a forklift, dolly, or hand cart

⇒ If you have to lift manually, always employ the following safe lifting techniques:

- ◊ Size up a load before lifting. Get any necessary assistance.
- ◊ Bend at the knees---lift with your legs not your back

- ◊ Do not twist or turn your body once you have made the lift. Keep the load close to your body.

- ◊ Make sure you can carry the load where you need to go before attempting to move it--remove any obstacles or spills in your path

- ◊ Set the load down properly

- ◊ Always push--don't pull-- the object where possible

- Material Handling--Cylinders

- General Cylinder handling

  - ⇒ Report any leaking cylinders to your supervisor immediately

  - ⇒ Secure all cylinders when not in use

  - ⇒ All cylinders must be labeled or marked legibly to identify the contents. All other potentially confusing markings must be removed.

- Transporting Cylinders

  - ⇒ Before transporting any cylinders, all valve caps and/or plugs are to be in place.

  - ⇒ Wherever possible, transfer cylinders by cart and not by hand.

X. LABORATORY SAFETY

- General Lab Safety Practices

  - ⇒ Review MSDS's for information on chemical hazards. Note especially the PEL (Permissible Exposure Limit) or TLV (Threshold Limit Value) for the chemical being handled.

  - ⇒ Use appropriate PPE for the chemical being handled.

  - ⇒ Know the location of emergency alarms and equipment. Know the procedures to be followed for emergencies.

  - ⇒ Properly store chemicals when not in use.

  - ⇒ Work with carcinogens should utilize the smallest amounts possible. Purchase the minimum amount of chemical necessary to prevent uninterrupted work.

  - ⇒ Practice good personal hygiene:

    - ◊ Wash promptly for at least one minute if skin contact is made with any chemical.

    - ◊ Avoid inhalation of chemicals--do not "sniff" test chemicals.

- ◊ Do not mouth pipette anything-- use pipetting aids.

- ◊ Wash with soap and water before leaving the laboratory.

- ◊ Do not eat, drink, or smoke in any laboratory area. Do not bring food, beverages, or tobacco into chemical storage or lab areas (they can absorb chemical vapors from the air).

⇒ Housekeeping

- ◊ Keep aisles, stairs, and hallways clear.

- ◊ Keep all work areas and especially workbenches clean and clear of clutter and obstructions.

- ◊ Pathways to emergency showers and eyewashes should be clear and accessible.

- ◊ Place chemicals in proper storage by the end of the work day.

- ◊ Ensure containers are properly labeled.

- ◊ Promptly clean up any spills and dispose of properly

  * If the spill is large, activate the emergency response team/plan.

  * Wastes should be in proper containers with appropriate labeling, i.e. "hazardous waste"

  * If a person has been splashed with a chemical, wash affected area for at least 15 minutes, remove contaminated clothing and seek medical attention.

  NOTE: Any injuries or suspected exposures should be immediately reported to your supervisor.

- Fume and Exhaust Hood Operations

⇒ The laboratory fume hood is the major protective device available to lab workers.

⇒ Fume hoods should be used if a proposed procedure exhibits any of the following:

- ◊ Airborne vapor concentrations that approach the PEL.

- ◊ Flammable vapors that could approach 1/10th of the LEL (lower explosive limit).

- ◊ Materials of unknown toxicity are used or generated.

- ◊ Annoying odor is produced.

⇒ Class A Fume Hoods (Average face velocity of 125-150 linear feet per minute) --should be used for extremely toxic materials or volatile carcinogens (ex. benzene).

⇒ Class B hoods (Avg. 100 fpm face velocity)-- used for most materials and operations in the lab.

⇒ Class C hoods (Avg. 75-80 fpm)-- used for solvents with low toxicity and dusts ex. acetone.

⇒ Any hood not functioning properly should be tagged out and repaired.

⇒ The fume hood is a safety backup device for other devices that trap and collect vapors inside the hood (i.e condensers). The vertical sash should be lowered for full effectiveness.

⇒ Any apparatus inside the hood should be kept towards the rear of the hood.

⇒ Hoods are NOT storage areas.

⇒ Hoods should remain "on" at all times.

⇒ Proper hood maintenance should be performed (reference SAMA Standard).

- PPE Use

⇒ Safety glasses are required in lab areas. Goggles or face shields must be used when there is greater risk of eye damage from splashed chemicals or particles. Contact lenses are not permitted.

⇒ Long- sleeved lab coats provide skin protection against minor splashes and should be worn. A rubberized apron offers better protection against splashes, especially when working with corrosives.

⇒ Gloves made of the appropriate material for the chemical being handled must be worn.

- Flammable Liquid Storage

⇒ Flammable chemicals and containers will be stored in the flammable storage cabinet.

⇒ Flammable liquids will be used in a vented hood away from all ignition sources.

- Gas Cylinder Storage/Use

⇒ When in use or being stored, all cylinders should be secured.

⇒ Move cylinders only after the valve is closed and the cap is secured-- a cylinder can become a "rocket".

⇒ Use a handcart with safety chain in place when moving cylinders.

- Chemical Handling/Disposal

    ⇒ See Personal Hygiene and PPE Sections

    ⇒ No waste should be inadvertently poured down a drain. Locate the proper disposal locations for your lab.

    ⇒ Hazardous refuse should be specially handled- i.e., lab packed.

    ⇒ All expired lab standards should be lab packed for disposal.

    ⇒ Glassware contaminated with carcinogens and hazardous materials should be rinsed well before disposal, and labels removed.

    ⇒ Mixed carcinogen wastes should be lab packed.

All waste disposal of hazardous wastes should be done in compliance with RCRA regulations.

XI: Confined Space Entry

There is a procedure that must be followed for any Confined Space Entry. This procedure includes checking the atmosphere for adequate oxygen, and the presence of any flammable or toxic gases. Ventilation may need to be provided. In addition, the Keene Fire Department must be notified whenever there is a confined space entry, and a permanent safety attendant assigned to observe for any problems and notify backup rescue if necessary.

- Retrieval equipment for personnel must be set up and used.
- The EHS Coordinator must be contacted prior to any confined space entry.
- Typical examples of confined spaces include but are not limited to: tanks, manholes, boilers, diked areas, tunnels, sewers, stacks/chimneys, ducts, underground utility vaults, and steam condensers.