1. STANDARD OPERATING PROCEDURE

Use this form to document the Health & Safety information associated with the procedure.

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| **Procedure Title:** | | Personal Protective Equipment (PPE) requirements for work in a Laboratory | | | | | | |
|  | |  | | | | | | |
| **Dept:** |  | |  | **Bldg/Rm:** |  |  | **Supervisor:** |  |

**General:**

The Principal Investigator (PI) or Supervisor has conducted a risk assessment for hazards, selected appropriate PPE and provided equipment to employees. Use of PPE as described in this procedure and in the PPE program will be enforced in this Laboratory by the Laboratory Principal Investigator/Supervisor. This SOP identifies PPE needs and requirements in this laboratory.

**Procedures:**

**A. Eye Protection**

1. Safety glasses must meet the requirements of ANSI Z87.1 (latest edition).

2. Safety glasses with side shields or chemical safety goggles are required for employees or visitors who enter the laboratory and are potentially exposed to chemical or mechanical eye hazards.

3. Face shields with safety glasses underneath or chemical splash goggles are required when transferring or pouring acidic or caustic materials with exceptions as noted below.

4. Chemical splash goggles must be worn over contact lenses.

5. Before each use, eye and face protection is to be inspected for damage (e.g., cracks, scratches), cleanliness and proper operation. If deficiencies are noted, the equipment should be cleaned, repaired, or replaced before use.

6. The following eye protection will be used for the indicated tasks:

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| **Task** | **Eyewear Type** | **Location** |
| fill in task information. Examples follow: | Fill in eyewear type(s). Examples follow: | Fill in location where PPE is available. Examples follow: |
| extraction of acids with pipette or eyedropper for stabilizing water and air samples | 1. Safety glasses with side shields  2. Splash proof goggles, or  3. Face shield | PPE cabinet in lab and personally-assigned |
| dispensing acids to portable containers | 1. Splash proof goggles, or  2. Safety glasses with side shields and full face shield | PPE cabinet in lab and personally-assigned |
| any other chemical-handling in lab | 1. Safety glasses with side shields  2. Splash proof goggles, or  3. Face shield | PPE cabinet in lab and personally-assigned |
| entry into other labs for consultations, discussions, etc. | 1. Safety glasses with side shields, or  2. Splash proof goggles | PPE cabinet in lab and personally-assigned |
| Response to incidental hazardous materials spills | 1. Splash proof goggles, or  2. Full-face respirator | PPE cabinet in lab and personally-assigned |

**B. Gloves**

1. Chemical resistant gloves shall be worn whenever the potential for hazardous skin contact exists. The safety data sheet (SDS) for the substance or glove selection charts should be consulted to determine appropriate glove type/material. Glove selection resources will be consulted when employees are unsure what type of glove is necessary for protection against specific chemicals. ISU EH&S maintains glove selection resource at: <http://www.ehs.iastate.edu/occupational/ppe/resources/glove-guide>

2. Lab-specific standard operating procedures specify glove requirements for identified routine operations.

3. Gloves shall be removed before touching other surfaces (e.g., doorknobs, faucet handles, keyboards).

4. Heat resistant gloves shall be used for handling hot objects. Asbestos-containing gloves will not be used.

5. Abrasion resistant gloves (such as leather) should be worn for handling broken glass or for other potentially abrasive situations. They should NOT be used for handling chemicals. Gloves are not necessary if broken glass can be picked up with forceps, dustpan, etc.

6. Before each use, gloves are to be inspected for damage and contamination. If deficiencies are noted, the gloves should be cleaned, repaired, or replaced before use.

7. The following types of gloves will be used for the indicated tasks:

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| **Task** | **Glove Type** | **Location** |
| fill in task information. Examples follow: | Fill in glove type(s). Examples follow: | Fill in location where PPE is available. Examples follow: |
| acidification of water & air samples | 1. Two-mil nitrile, or  2. Neoprene, or  3. Viton | PPE cabinet in lab |
| entry into other labs for consultations, discussions, etc. | Two-mil nitrile | PPE cabinet in lab |
| Response to incidental hazardous materials spills | gloves compatible with spilled chemical (e.g., butyl, neoprene, Silvershield, Viton, natural rubber, nitrile, 4H, etc.) | PPE cabinet in lab or as available in DES responder’s bag |
| asbestos or lead bulk sampling | Two-mil nitrile | PPE cabinet in lab |

**C. Footwear**

1. No sandals or open-toed shoes are to be worn by employees entering lab facilities.

2. Safety shoes must be worn if there is potential for injury from heavy objects (e.g., handling drums, cylinders). The PI is responsible for procuring safety shoes if they are determined necessary.

3. Safety shoes must meet the requirements of ANSI Z41 (latest issue).

**D. Clothing**

1. Laboratory coats/aprons shall be worn by laboratory employees whenever there is potential for chemical exposure in the work area.

2. Laboratory coats must be cleaned regularly. If a spill occurs on the laboratory clothing, it must be decontaminated before reuse. Lab clothing should not be washed with other household clothing.

3. Disposable clothing should be considered when working with highly toxic materials, carcinogens, mutagens, or teratogens. The PI is responsible for determining the need for disposable clothing.

4. Before each use, clothing is to be inspected for damage, deterioration, contamination. If deficiencies are noted, the clothing should be cleaned, repaired, or replaced before use.

5. Shorts will not be worn in the laboratory.

6. The following types of protective clothing will be used for the indicated tasks:

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| **Task** | **Type** | **Location** |
| fill in task information. Examples follow: | Fill in glove type(s). Examples follow: | Fill in location where PPE is available. Examples follow: |
| asbestos or lead bulk sampling | Tyvek disposable suit with attached hood and shoe coverings | corner cabinet in lab |
| entry into other labs for consultations, discussions, etc. | lab coat | coat hooks in lab |
| Response to incidental hazardous materials spills | Clothing compatible with spilled material and conditions of exposure. May include disposable Tyvek, poly-lined Tyvek | corner cabinet in lab or ESF dry storage area |
| handling any chemical materials in lab | lab coat | coat hooks in lab |

**E. Hearing Protection**

1. Hearing protection (earmuffs or plugs) is required whenever employees are exposed to noise levels of 85 decibels or greater as an 8-hour time weighted average (TWA). Industrial Hygiene workers exposed to noise levels in excess of 90 dBA will wear hearing protection regardless of the duration.

2. Hearing protection is to be inspected before each use, for tears and contamination. If deficiencies are noted, the hearing protector should be cleaned, repaired, or replaced before use.

3. Annual audiogram and other requirements of the ISU Hearing Conservation Program apply if full-shift noise exposures are 85 decibels or greater. The Program is available at:

<http://www.ehs.iastate.edu/sites/default/files/uploads/publications/manuals/hearing.pdf>

4. The following types of hearing protection will be used for the indicated tasks:

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| **Task** | **Type** | **Location** |
| fill in task information. Examples follow: | Fill in glove type(s). Examples follow: | Fill in location where PPE is available. Examples follow: |
| mechanical space | foam plugs or muffs | PPE cabinet in lab |
| assessment of possible high noise areas | foam plugs or muffs | PPE cabinet in lab |

**F. Respirators**

1. Respiratory protection is not required for any routine work conducted in the laboratory.

2. EH&S staff that are responsible for assessing chemical spill sites must ensure that they have respirators capable of controlling the particular chemical species and concentration. Emergency conditions (i.e., airborne contaminants in excess of established Immediately Dangerous to Life and Health concentrations) are to be handled by emergency response personnel.

3. All employees issued respirators for any reason must follow all the requirements set forth in the ISU Respiratory Protection Program. The Program is available at:

<http://www.ehs.iastate.edu/publications/manuals/respirator.pdf>

4. The following types of respiratory protection will be used for the indicated tasks:

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| --- | --- | --- |
| **Task** | **Type** | **Location** |
| fill in task information. Examples follow: | Fill in glove type(s). Examples follow: | Fill in location where PPE is available. Examples follow: |
| obtaining bulk asbestos or lead samples | half-face air-purifying respirator with P100 filters, or  full-face air-purifying respirator with P100 filters, or  full-face powered air-purifying respirator with P100 filters | respirators are individually fitted and assigned. Additional filters are available on shelves in the lab. |
| entering (asbestos) restricted areas or overseeing asbestos abatement activities in containment | full-face powered air-purifying respirator with P100 filters | respirators are individually fitted and assigned. Additional filters are available on shelves in the lab. |
| incident response | full-face air-purifying respirator with cartridges selected for specific contaminant, or  full-face powered air-purifying respirator with cartridges selected for specific contaminant | respirators are individually fitted and assigned. Additional filters are available on shelves in the lab. |
| mold assessment | N/R/P95, N/R/P99, or N/R/P100 disposable facepiece respirator, or  half-face air-purifying respirator with P100 filters, or  full-face air-purifying respirator with P100 filters, or  full-face powered air-purifying respirator with P100 filters | respirators are individually fitted and assigned. Additional filters are available on shelves in the lab. |

5. Specific information concerning respirator capabilities, filter selection, IDLH concentrations, etc., is contained in the ISU Respiratory Protection Program.

**Training:**

1. Employees using PPE must be trained in proper selection, care and use. The PI is responsible for providing training for protective eyewear, footwear, gloves and clothing.

2. Users of respirators other than filtering facepiece models must be trained annually by the Department of Environmental Health and Safety.

3. Users of hearing protection who are exposed to full-shift average noise levels over 85 dBA must be trained annually by the Department of Environmental Health and Safety.

4. The PI is responsible for ensuring that respiratory protection and hearing conservation training are provided when employees have a demonstrated need for entry into these programs.

**Using Substances Requiring Special Procedures?** No  Yes

(If Yes; identify authorized personnel, designate a use area and specify specialized safety precautions here. Refer to Section B in the ISU Laboratory Safety Manual for details.)

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| **Written By:** |  |  | **Date:** |  |
|  |  |  |  |  |
| **Approved By:** |  |  | **Date:** |  |

(PI or Lab Supervisor)

1. **HAZARD ASSESSMENT**

Use the hierarchy of controls to document the hazards and the

corresponding control measure(s) involved in each step of the procedure.

Consider *elimination or substitution* of hazards, if possible.

*Engineering Control(s):* items used to isolate the hazard from the user (i.e. fume hood, biosafety cabinet).

*Administrative Control(s):* policies/programs to limit the exposure to the hazard (i.e. authorizations, designated areas, time restrictions, training).

*Required PPE*: indicate PPE including specific material requirements if applicable (i.e. flame resistant lab coat, type of respirator or cartridge).

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| **Hazard** | **Engineering Control(s)** | **Administrative Control(s)** | **Required PPE** |
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1. **Training Record**

Use the following table to record the training associated with this Standard Operating Procedure.

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| **Print Name** | **Signature** | **Date** |
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**Note: Attach to or file with written materials and methods**