

## Engineering Controls

### 1. Ventilation systems

- Negative and Positive Pressure Rooms
  - The room air pressure is set to keep the air moving in (negative) or out (positive) of the room to prevent transfer of viruses, bacteria, or other materials, such as pcr product, from entering or escaping a room.
  - Hospital maintenance is responsible for maintenance and the records of maintenance work performed.
  - Med. Sci. 1 & 2 the maintenance is handled by Plant maintenance (Randy Fox 7-8191) but records are to be maintained by each location.

### 2. Hoods

- OSEH certifies, monitors, and maintains the laminar flow hoods at the university hospitals and Medical Science buildings. Hospital maintenance can do minor repairs in the off hours with recertification by OSEH following the repair.
  - Biological Safety Cabinets
    1. <http://www.oseh.umich.edu/guidbsc.pdf>
    2. <http://www.oseh.umich.edu/cabinet.html>
  - Chemical fume hood
    1. The hood is to be used in accordance with OSHA rules and guidelines ([29 CFR 1910.1450](#))
    2. Do not store chemicals in the fume hoods, especially flammables.
    3. Keep the sash at or below the mark to ensure proper air flow.
    4. If the hood does not have a built in alarm system for monitoring air flow attach a strip of paper to the hood sash to hang down about 3" below to monitor inward air flow.
    5. The following website contains guidelines for proper fume hood use by OSEH. <http://www.oseh.umich.edu/guidfum.pdf>

### 3. Workstation design

- Design the workstation environment to separate the staff from as many dangers as possible, protecting them from repetitive motion injuries, and reducing chemical and biological exposures.
  - Insure proper coverage of sharp corners or edges on surfaces and equipment.

- Level of necessary access to equipment doors and refill areas are within average reach to reduce back stress and injury.
- Occupational Noise Exposure [29 CFR 1910.95\(b\)\(1\)](#) – to determine if sound reducing materials will be required.
- Make engineering controls available. This will usually be a combination of administrative and PPE's.

## 5. Procedural design

- Develop procedures with the work space in mind to reduce repetitive motion injuries and reduce staff injuries and fatigue.
  - Keep equipment or supplies near each other to reduce back stress due to twisting and turning to reach supplies or equipment.
  - Keep necessary safety equipment in place and easily accessible to perform the procedure.
  - Ensure availability of PPEs that are required to perform procedure.
  - Choose equipment with attention on safety features when all else is equal.

## 6. Tool and equipment design - checks and maintenance

- Biomedical engineering and/or Facilities maintenance (6-5058) are responsible for checking small equipment that does not require special set-up and tagging it as approved for service. They also do annual checks and maintenance on a predetermined schedule.
- Instrumentation that requires specialized maintenance is maintained according to instrument guidelines by Pathology staff or by approved contracted personnel.

## 7. Safety feature design

- Designing a safe work environment requires knowledge of the procedures, equipment, and chemicals used in the area to ensure that all of the safety features necessary are within a reasonable distance to the staff working in the area and meet established guidelines. Maintenance schedules and monitoring are as follows:

<u>Engineering Control</u>	<u>PM Frequency</u>	<u>UH</u>	<u>Med Sci 1/2</u>	<u>Traverwood</u>
Eye Wash	Weekly flush of eyewashes that have fixed plumbing are conducted by each laboratory.	Inspected and records kept by Maintenance.	Inspected and records kept by Plant Maintenance (7-2059).	Inspected and records kept by Zone 5 Maintenance (6-5053).


Emergency Shower	Monthly	Inspected and records kept by Maintenance.	Inspected and records kept by Plant Maintenance (7-2059).	Inspected and records kept by Zone 5 Maintenance (6-5053).
Fire Extinguisher	Annually	Inspected monthly for correct level of charge, proper placement, accessibility and physical condition by Maintenance. All extinguishers are tested annually by a technician.	Inspected by Plant Maintenance (3-3099).	Inspected by Facilities Management (6-5053).
Chemical Fume Hood	Annually	Inspected by OSEH (3-6973)	Inspected by OSEH (3-6973)	Inspected by OSEH (3-6973)

### References

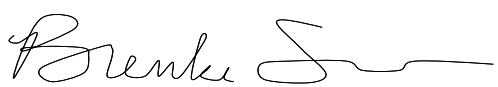
College of American Pathologists (2006, April 6). *Laboratory General Checklist*.

Gile, T. J. (2007, April). *Complete Guide to Laboratory Safety* (2<sup>nd</sup> ed.).  
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Date: July 15, 2008