HISTOLOGY LABORATORY

SAFETY EQUIPMENT

CONTENTS

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1 Personal protective apparel

A variety of specialized clothing and equipment is available for use in the histology laboratory. All personnel should be familiar with the location and use of protective apparel.

1.1 Aprons

Plastic aprons are provided for protection from splashes. In case of a fire, aprons could prove to be a hazard. Plastic aprons can cause static electricity and caution should not be used when working around flammable material. They are not acid proof, but they will provide a temporary barrier. Aprons should be worn when

- working with or around formaldehyde (specimen grossing)
- making solutions
- working around fresh unfixed tissue or body fluids

1.2 Face shields

Face shields should be used when there is a potential for splashing, spattering or spraying of chemicals or solutions to the face. Faces shields should be ANSI approved.

1.3 Gloves

Skin contact is a potential source of exposure to toxic materials and biohazards. It is important to wear the right glove for proper protection. To avoid permeation, change gloves often.

Nitrile gloves (N-Dex®) are resistant to solvents and formaldehyde. They will also protect from acids for up to five minutes. Nitrile gloves should be worn when working with chemicals or reagents.

Latex gloves (surgical) should be worn when handling tissue specimens. It is not essential that gloves be worn when working with paraffin processed tissue samples unless the sample is a known biohazard. Latex gloves protect from biohazards and formaldehyde for up to 14 minutes.

1.4 Cotton liners

Cotton liners may be used under gloves to prevent dermatitis.

1.5 Safety glasses and goggles

Safety glasses must comply with the standard set by the American National Standards Institute (Z87.1). The standard specifies a minimum lens thickness of 3 mm, impact resistance requirements, passage of a flammability test, and lens-retaining frames. The glasses also must have attached side shields. Eye protection should be worn when

- making solutions
- distributing solutions from one container to another
- changing solutions on equipment
- grossing specimens

1.6 Lab coats

Are intended to prevent contact with dirt and minor chemical splashes. They do not significantly resist penetration by organic liquids, and if they are significantly contaminated, lab coats should be removed immediately.

1.7 Masks (nuisance odor)

Masks do not remove all particles. They are approved by National Institute of Occupational Safety & Health for use only when contamination is below the permissible exposure limit of hazardous materials. They are not to be used for large spills. When contamination exceeds permissible levels, respirators should be used. Masks should be worn when making solutions and cleaning up small spills.

Two types of masks are used in the histology laboratory:

- The dust particle mask (yellow) should be used when weighing out powders.
- The charcoal mask protects against organic solvent fumes. It should be worn when changing or pouring solutions.

1.8 Sleeves (Tyvek®)

- Sleeves are disposable garments worn to protect the arms from contact with biohazards and chemicals. They also

offer some moisture protection. Sleeves should be worn when working with carcinogens and grossing specimens.

1.9 References

Laboratory safety catalogue. 1992.

National Research Council. 1981. *Prudent practices for handling Hazardous Chemicals in Laboratories*. Washington, D.C.: National Academy Press. 154-161.

2 **Fire safety equipment**

2.1 Fire blankets

The purpose of a fire blanket is to smolder a clothing fire by wrapping the victim or rolling them on the ground. Blankets will trap heat and increase the severity of burns. Fire blankets can be used around a person who has to pass thorough a burning area. They can also be used as a first aid measure for shock.

2.2 Fire extinguishers

ABC type fire extinguishers should be used. They should be checked annually and dated. The hospital engineering department should be contacted if there are any problems or if an extinguisher needs to be recharged.

2.3 References

National Research Council. 1981. *Prudent practices for handling Hazardous Chemicals in Laboratories*. Washington, D.C.: National Academy Press. 162-164.

University of Utah Safety Services. *University of Utah safety & health manual.*

3 **Fume hoods**

Laboratory hoods are used to prevent hazardous vapors from entering the general laboratory area. With the sash down, they can also be used as a physical barrier against chemical reactions. The hoods have a constant airflow (there is no on/off switch) and are vented to the roof.

3.1 Maintenance

The engineering department is responsible for maintenance and certifying that hoods are operating properly. This is performed annually; each hood has a label indicating when it was last inspected. Engineering should be notified if a hood is not working.

3.2 Quality control

Safety hoods are monitored daily by histology personnel and results are recorded on the monthly quality control chart. Align the arrows by adjusting the sash. The vaneometer should read 100 lfm (linear feet per minute).

3.3 Policy

- If hood performance is inadequate hazardous vapors may enter the laboratory and the hood should not be used. Call engineering for servicing.
- Hoods should be on legs to allow airflow underneath them. Keep paper and other items from blocking the airflow.
- The sash should be pulled to the arrows when using the hood and closed when it is not in use.
- Work 6 inches from the hood opening. Moving an apparatus 6 inches from the front edge of the hood can reduce the vapor concentrations at the face by 90%.

3.4 Use of the hood

Always use the hood when

- microwave staining, leave hot solutions inside the hood until cooled;
- making heated solutions;
- grossing specimens, especially formalin fixed specimens;

3.5 References

National Research Council. 1981. *Prudent practices for handling Hazardous Chemicals in Laboratories*. Washington, D.C.: National Academy Press. 199-200.

University of Utah Safety Services. 1991. *Public safety, lab safety & health reporter.*

4 Safety showers and eyewash stations

All histology personnel are to know the location and use of safety showers and eyewash stations

4.1 Quality control

Safety showers and eyewashes should be kept in proper order; showers should be checked every month, and eyewashes should be checked weekly. Any problems should be reported to engineering for maintenance. Additionally, eyewashes should be flushed weekly to remove bacteria. Inspections of showers and eyewashes are documented in the Temperatures and Safety Maintenance chart in the histology quality control report.

4.2 Procedure

4.2.1 Safety showers

1. For most safety showers, pull the chain to turn on the water and release it to stop the flow.
2. First aid calls for removal from contact as promptly and completely as possible. All contaminated clothing should be removed, including shoes, socks, undergarments, and watchbands. A blanket or coat should be held up for privacy.
3. Affected areas of skin should be promptly and freely flushed with water.
4. Do not consider chemical antidotes. Reactions producing further injury may be set up in this way. If later an antidote is to be applied, it should be only as directed by a physician.
5. Seek immediate medical attention.

4.2.2 Eyewash stations

1. Acid or caustic solutions in the eyes should be washed for 15 minutes.
2. Keep eyes open during washing to be sure the eyeball is properly washed.
3. In cases of eye injuries, you must depend on each other for fast assistance. Help should be given in opening the eye lids and keeping the head down into the water flow.
4. Seek medical help immediately.

2.3 Reference

National Research Council. 1981. *Prudent practices for handling Hazardous Chemicals in Laboratories*. Washington, D.C.: National Academy Press. 169.