

1. PERSONAL PROTECTIVE EQUIPMENT

Engineering and work practice controls shall be used to eliminate or minimize employee exposure. Where occupational exposure remains after institution of these controls, personal protective equipment shall also be used.

Multidisciplinary clinical, dental and research procedures conducted at NSU requires that personal protective equipment (protective clothing and safety apparatus/equipment) be used to protect the employees, students and researchers from contact with infectious, toxic and corrosive agents, excessive heat, cold, fire and other physical hazards. Suitable Personal Protective Equipment (PPE) also protects the patients or experiment from contamination. The extent and kind of clothing and equipment to be selected for any particular activity depends upon the clinical and research operations and levels of risk associated with the procedure. While PPE is an important component of any safety plan, PPE is used with the understanding that PPE serves as a second line of defense.

Good patient techniques and procedures as well as good laboratory procedures with the appropriate laboratory equipment are the primary barriers against potential exposure to hazardous agents.

Clothing:

Commonly used PPE items within the clinical and laboratory areas are special clothing. Both reusable and disposable clothing is available. Whichever is used, it must be durable, designed to provide protection and prevent exposure of the skin to harmful agents, as well as be compatible with the methods of decontamination employed.

PPE clothing serves to protect the wearer, the experiment, and environment against contamination. If proper precautions are not taken, contaminated clothing may carry infectious materials outside the clinical and laboratory areas and into other work areas, cafeterias, or the home. Infectious agents can remain viable on cotton and wool fabrics and be disseminated from these fabrics.

Some additional points:

- Overt exposure to agents at all levels of risk should be followed by immediate decontamination of the PPE and change into clean PPE to protect the worker, the experiments and the environment.
- Provisions should be made for PPE to be provided to visitors, maintenance or security personnel, if applicable.
- PPE worn within the clinical and laboratory areas should not be worn outside the facility to any places accessible to the public.
- Personnel should be encouraged to use disposable facial tissues instead of personal handkerchiefs.
- PPE should be placed in an appropriately designated area or container for storage, washing, decontamination or disposal.
- All PPE should be decontaminated before being sent to the laundry or discarded. Treat contaminated areas of PPE with an appropriate disinfectant. Lab coats with extensive contamination may be placed in a biohazard bag and autoclaved.
- Do not take PPE home to launder; select a laundry service that follows universal precautions.
- Change PPE as soon as feasible whenever it is compromised, soiled or torn.
- Wear appropriate sizes and keep an adequate supply of PPE available in the clinical and laboratory areas.
- Wash hands whenever PPE is removed.
- Do not touch door handles, elevator buttons, telephones, computers or other clean surfaces or items with gloved hands.
- Wear closed-toe shoes and long pants to guard against skin contamination or chemical exposure. Do not wear sandals or shorts in the laboratory area.

Gloves:

Gloves should be comfortable and of sufficient length to prevent exposure of the wrist and forearm. Depending upon the intended use, the composition and design of the glove may vary to provide the desired level of flexibility, strength, impermeability, and resistance to penetration by sharp objects, as well as protection against heat and cold. Quality assurance is an important consideration. No one glove can be expected to be satisfactory for all intended uses. Gloves may be fabricated of cloth, leather, natural and synthetic rubbers, or plastics.

New formulations of synthetic rubber and plastic continue to be developed as research makes varied and changing demands on the protective capabilities of gloves. Changing applications lead to improved capabilities of impermeability, strength, flexibility, tactile sense and control.

Disposable (single use) gloves provide a barrier between infectious agents and the skin. Disposable gloves shall not be washed or decontaminated for re-use. Glove use is a basic precept of preventing infectious agent transmission. Breaks in the skin barrier of the hand (damaged cuticles, scrapes, micro-cuts, dermatitis, etc.) are common.

Gloves shall be removed and hands washed before exiting any clinical or laboratory area. Use the one glove method, or an appropriate secondary container, when transporting materials through common use areas.

See Appendix B - Glove Selection Chart.

a. Considerations for the selection and use of gloves:

- Gloves are not 100% leakproof; change gloves periodically and when soiled and always wash hands after removing gloves or other PPE.
- Gloves will not prevent needle sticks or other puncture injuries.
- Check gloves for visible tears before use.
- Avoid wetting examination gloves as water or disinfectants will encourage wicking and leaking.
- Do not reuse examination gloves; discard contaminated gloves in a biohazard bag immediately after use.
- Double glove or use household utility gloves when cleaning spills. Household utility gloves may be decontaminated and reused (replace when compromised.)

b. Procedure for Removing Gloves:

- Grip the outside of one glove at the wrist with the other gloved hand, pull the glove off and gather it in the palm of gloved hand.
- Place the index or middle finger of the ungloved hand on the wrist of the gloved hand, slide a finger under the glove opening and pull the glove off inside out.
- When removing PPE, remove the lab coat or solid front gown first, then remove gloves (aseptically), remove the face protection last to avoid touching your face with contaminated hands.
- If wearing double gloves, remove outer gloves before removing lab coat or solid front gown.

Shoes:

Shoes worn in the laboratory must be closed-toe. Protective shoes are required for certain work activities. When working with infectious agents it is advisable to wear shoe covers, which can be decontaminated (autoclaved) before disposal, over street shoes. For work in tissue culture laboratories it may be necessary to change from street shoes to specific laboratory shoes for protection of cultures from contamination.

In certain animal facilities, NSU requires personnel to wear overshoes to protect the animals in containment areas. Similarly, people who work with animals and do cage washing are required to wear protective shoes.

Gowns, Lab Coats, Jumpsuits, Aprons and Other Protective Clothing:

Gowns, lab coats and jumpsuits protect the wearer's clothing and skin from contamination. As with all PPE, the type of clothing needed depends on the task being performed and the degree of exposure anticipated. Solid front wrap-around clothing offers better protection than pull-over type clothing or clothing with front closures.

Lab coats are not 100% leakproof; change PPE when soiled, and always wash your hands after removing any PPE. Lab coats or other protective clothing will not prevent needle sticks or other punctures. Spills and splashes occur most often in the chest or lap area.

The contaminated surface must be touched during removal of a front closing jacket or lab coat. The contaminated portion often ends up in the wearer's face during removal of pullover clothing. Many workers prefer not to button up front closing jackets, which leaves street clothing exposed. If front closing jackets must be worn, strict measures shall be implemented to assure the clothing is closed at all times when performing procedures or tasks that may cause exposure.

Long sleeved garments with snug fitting cuffs are preferred over open or short sleeves. Snug fitting cuffs prevent splashes, splatters and aerosols from making contact with exposed skin on the lower arms. Longer single-use gloves can be pulled over snug fitting cuffs to seal out any infectious materials.

Plastic, vinyl or rubber aprons are usually worn over other protective clothing when extra protection is desired. Aprons are necessary for protection against liquids spilling or splashing on clothing. It is recommended that appropriate aprons be worn to protect against the potential harmful effects of liquid waste. Aprons may also be used to provide protection from steam and hot water in locations such as animal handling facilities, autoclave rooms and laboratory glass-washing rooms.

Face and Eye Protection:

Protection of the face and eyes is of prime importance in dental clinics and laboratories due to the potential for foreign material, both liquid and solid, to splash on the head, face and eyes or contact lenses. A variety of face shields, head covers/hoods, protective goggles, and lenses are available from safety supply houses. The selection is dependent upon materials of construction, fit, comfort, and compatibility with the work and the overall facial area requiring protection.

Some of the considerations for selection and use of face and eye protections are indicated below:

- Face shields and hoods protect the face and the neck from flying particles and sprays of hazardous material; however, they do not provide basic eye protection against impacting objects.
- Shields should cover the entire face, permit tilting back to clean the face if desired, and be easily removed in the event of an accident.
- If an eye hazard exists in a particular operation or experiment, the soundest safety policy would be to require that eye or face protection, or both, be worn at all times by all persons entering or working in the laboratory.
- Contact lenses do not provide eye protection. It is recommended that contact lenses not be worn when working around chemicals, fumes, and other hazardous material and dust particles since these items may become trapped in the space between the contact lens and the cornea. When contact lenses are worn, eye protection, such as tight fitting goggles, must be worn.