

BLOODBORNE PATHOGENS EXPOSURE CONTROL PLAN

Microfluidic devices for Biological Research

PRINCETON UNIVERSITY DEPARTMENT OF PHYSICS AUSTIN GROUP

I. INTRODUCTION

Princeton University maintains an ongoing effort to provide a safe working environment. As part of that effort, the Austin Group has implemented a plan that is intended to reduce the risk of exposure to bloodborne pathogens for all those working in the Group who may have such exposure as part of their official duties. This written plan is intended to comply with the requirements of the federal Occupational Safety and Health Administration (OSHA) Bloodborne Pathogens Standard (29CFR 1910.1030).

II. REVIEW OF EXPOSURE CONTROL PLAN

The Austin Group is responsible for the review and updating of this Exposure Control Plan at least annually and whenever necessary to reflect new or modified tasks that have an impact on individual exposure. A copy of this plan is posted on the facility door (Rm 112, Jadwin Hall) for access by university members and representatives of OSHA.

Date of Preparation__Sept 22nd 2005_____
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Reviewed/Revised by whom_David Inglis_____
Revision Date_____ _____
Reviewed/Revised by whom_____ _____

III. DEFINITIONS

A. *Exposure:*

Reasonably anticipated skin, eye, mucous membrane, or parenteral (injection or puncture) contact with blood or other potentially infectious materials (OPIM) as a result of performing official duties.

B. *Other Potentially Infectious Materials (OPIM):*

These human body fluids: any body fluid that is visibly contaminated with blood and all body fluids in situations where it is difficult or impossible to tell the difference between body fluids. Any unfixed tissue or organ (other than intact skin) from human (living or dead).

III. EXPOSURE DETERMINATION

The Austin Group has determined that the following job classifications and tasks have the potential for exposure to bloodborne pathogens, regardless of whether protective equipments is used by the employee.

A. Job classifications that include staff who all have occupational exposure:

- None

B. Job classifications that include staff some of whom have occupational exposure:

- Research Staff Members

I. Tasks, procedures, or groups of closely related tasks/procedures in which occupational exposure occurs to some of the employees listed in (B):

- Preparation of blood samples for analysis in microfluidic devices
- Preparation of blood samples for light microscope analysis

IV. METHODS OF COMPLIANCE

The following practices, procedures and control measures are used to minimize or eliminate exposure to blood:

A. UNIVERSAL PRECAUTIONS – All blood is assumed to be infected and is treated as such. Individuals who at any times have direct contact with tissue must take the necessary precautions to protect themselves from infection.

B. WORK PRACTICE AND ENGINEERING CONTROLS

1. Handwashing facilities with soap and disposable towels are available and accessible in the lab, and researchers are expected to wash their hands after removing gloves or after any other contamination of hands.
2. Contaminated needles must not be bent, recapped, removed, sheared or broken.
3. There is no eating, drinking, smoking, applying cosmetics or lip balm, or handling contact lenses in work areas with possible exposure.
4. Food or drink is not to be brought into possible exposure areas and must never be stored in laboratory refrigerators.
5. Sample preparations is performed in a manner designed to minimize splash, spray, spattering, or generation of aerosols.
6. All containers or potentially infectious material, blood, will be opened and closed in the biosafety cabinet.
7. Mouth pipetting is not allowed.
8. Any new members involved with the work will be guided through the In-lab Biosafety Orientation Checklist (attached).

9. All employees conducting research with blood samples are required to complete Princeton University's Web-based Bloodborne Pathogens Training Module before starting research and annually thereafter for the duration of the research.
<http://web.princeton.edu/sites/ehs/biosafety/bloodpathogens/Training/BBPIntro.htm>

C. PERSONAL PROTECTIVE EQUIPMENT

1. Personal protective equipment (PPE) appropriate to the tasks being performed is provided and must be used. PPE is made available in appropriate sizes and is readily accessible.
2. Any cleaning, laundering, repairing, and disposing of PPE is the responsibility of the Austin Group. Clean Rental Services Inc. will launder dirty lab coats. Call 800-825-3266 to arrange a pick up. The Group must inform the service that the laundry is a potential biohazard
3. The PPE equipment checked below has been provided:
 - Gloves
 - Lab Coats
 - Face Shields/Masks
 - Splash Goggles
 - UV Goggles

4. PPE Use:

Gloves are worn whenever hand contact with tissue can be reasonably expected and when handling or touching contaminated items or surfaces. Disposable gloves must be replaced or changed as soon as practical when contaminated, torn, or punctured. Disposable gloves must not be washed or decontaminated for reuse. Masks or face shields in combination with primary eye protection, such as goggles, are worn whenever there is significant potential for eye, nose, or mouth contamination. All PPE must be removed prior to leaving the work area and stored in the work area.

D. HOUSEKEEPING

The worksite will be kept clean, orderly and sanitary. It is the responsibility of the Austin group to ensure this.

Housekeeping Procedures

1. Researchers will replace disposable protective equipment covering after any contamination.
2. Work surfaces, potentially contaminated equipment, tools, and reusable micro devices are cleaned and disinfected upon completion of sample preparation and at least daily while work is in progress. Disinfection is performed with a 1:10 dilution of bleach and water or a 70% ethanol solution.
3. Contaminated broken glassware, or silicon pieces is to be picked up with a brush and dustpan, tongs, or forceps: **NOT WITH THE HANDS**

V. POST EXPOSURE EVALUATION AND FOLLOW UP

In the event of an exposure incident, the following post exposure procedures must be enacted:

The exposed researcher will cleanse the wound or exposed surface immediately with soap and water or flush exposed mucous membranes with water. The individual must notify his/her supervisor, if available, and then proceed to **Employee Health at McCosh Health Center, phone 8-5035**. Any remaining sample involved in the incident will be saved for subsequent testing. The exposed individual's blood is to be collected as soon as feasible and tested (pending consent). Collected blood will be held for up to 90 days awaiting consent for HIV testing if consent is not given initially. Testing of the baseline sample will be done if consent is given within the 90-day period.

During the post exposure evaluation and examination at McCosh, the route and circumstance of exposure will be determined and recorded. Environmental Health and Safety will conduct an accident investigation, as necessary. Every attempt will be made to determine the source of the blood and have it tested for HBV and HIV infection and document the results of testing. The results of the source blood testing will be made available to the exposed individual along with information about the laws concerning disclosure of the identity and in factious status of the source individual.

Post-exposure prophylactic treatment, when medically indicated: counseling; and evaluation of reported illnesses will be provided by McCosh Health Center and documented in the individual's medical record.

VI. COMMUNICATION OF HAZARADS

Warning labels using standard biohazard symbol, wording, and coloration are provided on containers of regulated waste; contaminated equipment; refrigerators and freezers containing blood; other containers used to store, transport, or ship tissue, except that red bags or red containers may be used instead of labels. Individual containers of potentially infectious material placed in a labeled container for storage, transport, shipment or disposal need not be individually labeled. Regulated waste that has been decontaminated need not be labeled.

VII. RECORD KEEPING

A. Medical Records for all exposed individuals are maintained by McCosh Health Center for the duration of the individual's employment plus 30 years. These records include:

- The name and social security number of the individual
- The individual's Hepatitis B vaccine status
- A copy of information provided to the outside health care professional
- A copy of all results of examinations, medical testing, and follow-up procedures
- A copy of the health care professional's written opinion.

B. A researcher's medical records are available upon request of that staff member, anyone having written consent of the staff member, and representatives of OSHA.

- C. Training records are maintained in the Employee Health Services Database. These records include the following information:

The date of training

- D. Training records are accessible in online form to researchers and employee representatives and will be provided as requested by representatives of OSHA.

VIII. ADMINISTRATIVE RESPONSIBILITIES

A. Department

1. Determine those at risk of exposure.
2. Complete and implement Exposure Control Plan
3. Provide for annual review and revisions of Plan, as necessary
4. Ensure that those exposed attend the required initial and annual training
5. Maintain a copy of the current Exposure Control Plan and training records
6. Provide the necessary PPE and engineering controls to eliminate or reduce exposure