

School of Life Sciences and Chemical Technology
Ngee Ann Polytechnic

GOOD LABOATORY PRACTICES

Prepared by the LSCT Safety Committee

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GUIDELINES FOR HANDLING BIOHAZARDOUS MATERIALS

1. All bio-hazardous and potentially bio-hazardous operations shall be performed in a Class II Biohazard hood.
2. Workbenches shall be decontaminated with 70% alcohol before and after every experiment.
3. Spillage shall be dealt with immediately by flooding with 70% alcohol or an equivalent decontaminating solution, wiping up the disinfected material with C-fold towel using gloved hands. The soiled towel shall be kept in a biohazard bag followed by autoclaving before disposal.
4. Laboratory coats must be worn over street clothes while working in the laboratory. Laboratory coats shall not be worn outside the laboratory area.
5. Aseptic technique must be practiced throughout the laboratory sessions (complete with gloves, laboratory coats, long-hair tied back and covered shoes).
6. Cultures, stocks and other regulated wastes shall be decontaminated by autoclaving before disposal.
7. All procedures shall be performed so as to minimize the creation of aerosols. Any step that generates aerosols shall be carried out in a class II biohazard hood.
8. Sharps including used syringes, microscope slides and injection needles shall be placed into the Biohazard Sharps Bin, which shall be incinerated.
9. Extreme care shall be taken when handling injection needles and syringes to avoid self-inoculation and generation of aerosols during use and disposal.
10. Hands shall be washed before and after handling microorganisms, cells, viable materials and animals.
11. No one shall eat, drink, smoke, apply cosmetics or handle contact lens in the laboratory.
12. Mechanical pipetting devices shall be used for all procedures. Mouth pipetting is strictly prohibited.
13. Fans are not recommended in the laboratory as they stir up dust and they could be a significant source of cross-contamination. Fans shall only be used in order to ventilate the laboratory in case of build-up of fumes.

GUIDELINES FOR THE HANDLING OF EQUIPMENT OR APPARATUS IN MICROBIOLOGICAL LABORATORIES

1. Refrigerators and freezers
 - a. Refrigerators and freezers' interior shall be clean and free of spillage.
 - b. The internal temperature of refrigerator (4 degrees) and freezer (-20 degrees) shall be monitored with a calibrated partial immersion thermometer.
2. Autoclaves
 - a. Autoclaves shall be able to maintain an internal temperature of 121°C under a pressure of 15psi.
 - b. Autoclaves shall be equipped with pressure and temperature gauges on the exhaust side and install with an operating safety valve.
 - c. Autoclaves shall be serviced annually. A service record shall be maintained.
 - d. Autoclaves shall be monitored for effectiveness with appropriate biological indicators.
3. Class II Biohazard hoods
 - a. All procedures involving pathogenic organisms shall be conducted in a class II biohazard hood.
 - b. All procedures involving cell manipulations, which may create aerosols whether or not the procedures required sterility, shall be performed in a class II biohazard hood.
 - c. The interior of biohazard hood shall be wiped before and after each use with 70% alcohol or an equivalent liquid disinfectant.
 - d. The performance of biohazard hood shall be monitored regularly by exposing nutrient agar plates to the air flow for 1 hour. After incubation of the plates at 35°C for 24 or 48 hours, they shall be checked for colonies. There shall be no colonies present.
 - e. Where possible, ultraviolet lights shall be installed to control the spread of microorganisms as an overnight decontamination process.
 - f. Biohazard hood shall be serviced annually. A service record shall be maintained.

4. Microscopes

- a. Microscopes shall not be moved from laboratory to laboratory.
- b. Microscopes shall be protected by dust covers or kept in boxes when not in use.
- c. Microscopes shall be serviced annually. A service record shall be maintained.
- d. The stage of the microscopes shall be lowered and the low-power objective placed in the light path when it is not in use.

GUIDELINES FOR THE HANDLING AND USE OF MICROBIOLOGICAL MATERIALS, MEDIA AND REAGENTS

1. An inventory record shall be maintained for all materials, chemicals and dehydrated media.
2. Only dyes certified for microbiological purpose shall be used.
3. Containers of media and chemicals shall be dated during receipt.
4. Expired media, chemicals, sera and reagents shall be discarded.
5. Dehydrated media and chemicals shall be kept in tightly closed containers protected from dust, excessive humidity and direct sunlight.
6. Laboratory pure water shall be used in the preparation of all media.

GUIDELINES FOR THE HANDLING OF STOCK CULTURES

1. Stock strains of bacteria and other microorganisms shall be checked for purity and authenticity before use.
2. Stock cultures shall be maintained under long-term and short-term conditions to assure viability and stability of biochemical, serological and pathogenic characteristics.

GUIDELINES FOR THE HANDLING OF ANIMALS

1. Only animals free of latent and overt clinical diseases shall be purchased.
2. Appropriate anaesthetic, tranquilizers, sedatives and/or analgesic drugs shall be used for procedures where pain or distress is likely to be caused to the animals.
3. Animal cages shall be large enough to avoid over crowding. Cages shall be labeled and identified properly.
4. Animal feed and water shall be changed twice or trice a week.
4. All injected mice, even those that survive the experimental inoculations, shall be euthanized, if necessary, and autoclaved. Mice that have died from apparently natural causes, as well as from unexplained causes, must be autoclaved. Autoclaved animal carcasses must be incinerated. Recommended conditions are >30 minutes at 121°C. [Euthanization is a method of killing mice by cervical dislocation.]