**Policy:**
It is essential to have adequate knowledge of the various types of equipment used including operation, maintenance and initial trouble shooting. New, modified, or repaired equipment shall be checked for safe operation before being placed into service.

**Purpose:**
A program of preventative maintenance including function and safety will ensure proper equipment safety.

**Responsibility:**
Manufacturer, management and employee

**Key Elements:**
- General principals of equipment safety
- Specific equipment safety

**Related Documents:**

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| ELECTRICAL SAFETY | MI\LS\20\v01 |
| LABORATORY DISINFECTANTS | MI\LS\34\v01 |

**Procedure:**

**General Principles of Equipment Safety**

1. Reasonable efforts should be made to ensure that all equipment has appropriate safety features and that such features are properly utilized.
2. A program of preventative maintenance including function and safety checks should be developed and monitored as appropriate for all equipment.
3. The choice of location for an item of equipment should consider also its environmental implications (noise, fume / vapour generation etc.).
4. Equipment, which can be left unattended, should be monitored by occasional inspection to determine any significant malfunctions.
5. Consider safety, cleaning and maintenance requirements prior to purchase.
6. Review and follow manufacturers' instructions to ensure proper set-up.
7. Establish and maintain preventive maintenance schedules as per manufacturers' recommendations
8. Keep complete and detailed service records for each piece of equipment.
9. Decontaminate all equipment appr opriately prior to servicing.

| **SPECIFIC EQUIPMENT** | |
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| Centrifuges | • Use only centrifuges with sealed centrifuge buckets / compartment / rotors. Use the safety buckets in the correct manner.<br>• Use only centrifuges with interlocks.<br>• Do not operate centrifuges in a biological safety cabinet because the motor may produce strong air currents and turbulence, which may disrupt the laminar air flow.<br>• Procedure for handling a broken tube<br>▪ Do not open centrifuge for 30 min if centrifuge does not have sealed buckets / compartment<br>▪ Open sealed centrifuge bucket in biological safety cabinet<br>▪ Wearing nitrile gloves, remove unbroken tubes and wipe exterior with 1.0% hypochlorite. Remove broken glass with forceps and discard into sharps container<br>▪ Soak bucket / rotor in non-corrosive disinfectant. Disinfect centrifuge parts with a non-corrosive disinfectant. (Virox 5) |
| Water baths | • Unplug before filling or emptying.<br>• Clean on a regular basis and document<br>• Check continuity of the ground on a regular basis and document |
| Mixers, homogenizers, sonicators, lyophylizers | • Take steps to minimize generation of aerosols<br>▪ Open in biological safety cabinet<br>▪ Filter vacuum pump exhaust where appropriate |
| Suction equipment | • Use a trap containing 0.1% hypochlorite when using suction equipment. |
| Pipetting devices | • Take steps to minimize generation of aerosols (expel liquids down the side of the tube, perform in biological safety cabinet)<br>• Clean and disinfect pipettes and pipetting aids when contaminated and on a regular basis.<br>• Shorter pipettes may be helpful for work in a biological safety cabinet.<br>• Use appropriate pipetting aids and use in the correct manner |
| Microscopes | • Wipe the stage, eyepieces and focus adjustment controls with an appropriate disinfectant routinely and in the event of spills or contamination.<br>• Inspect cords, plugs, etc., regularly.<br>• To change a fluorescent high pressure mercury bulb, e.g., immunofluorescence microscope, wear a face shield and gloves and follow directions carefully. |

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| Automated equipment | • Ensure that waste line discharges meet municipal regulations<br>• Clean spill trays regularly<br>• Disinfect lines on a regular basis as recommended by the manufacturer |
| Microtomes | • Use safety guards<br>• Always lock the handwheel when microtome is not attended<br>• Remove blades or knives when microtome is not attended. |
| Electrophoresis | • Check continuity of the ground on a regular basis and document<br>• Post warning sign regarding voltage. |
| Equipment with flames<br><br><br><br>Refrigerators | • Ensure tubing connected to gas cylinder and instrument is secure<br>• Inspect hose connections regularly<br>Examples: Atomic absorption spectrophotometers, Bunsen burners<br><br>• Do not store flammable or combustible liquids in a domestic refrigerator. Use only an explosion-proof refrigerator. |
| Autoclaves | • To be effective the steam must penetrate the wrapping. The length of time required for sterilization of biological material is determined by the quantity of the load, the volume of liquid in the load and the density of the material.<br>• Read the operating manual carefully<br>• Post the operation procedures near the autoclave<br>• After the pressure has been released, open the door only slightly to allow steam to escape before unloading<br>• Wear insulated gloves when unloading the material<br>• Monitor all autoclaves routinely for efficacy and maintain records. |