

Section 9.8 Microtome/Cryostat (From the Yale Biological Safety Manual)

Due to the very sharp blade and the nature of the materials used with the microtome/cryostat, training is essential in the use of the equipment and in the hazards of the materials used with the equipment.

Users should be informed of the need to prevent cuts and scrapes as well as protect the eyes, nose, mouth and skin from exposure to the materials being used.

New personnel must be trained in the proper use and maintenance of the equipment and demonstrate proficiency prior to use. If using human tissue, microtome/cryostat users are required to attend Bloodborne Pathogens training.

Fixatives take time to penetrate tissue; the fixatives may not inactivate pathogens deep in the tissue. Freezing and drying do not inactivate most pathogens, so, as with fixative use, the pathogens that may be present in the tissue should be considered capable of causing infection.

Microtome/cryostat users shall also attend Chemical Safety Laboratory Personnel training due to the fixatives and dyes used in histology.

When purchasing new units, the available safety features should be taken into consideration prior to deciding on a manufacturer or model. Some available safety features are:

- Auto-decontamination cycle.
- Easy blade release for installing and changing blades.
- Retractable knife/blade to permit safe entry into chamber for cleaning, retrieving specimens, etc.
- Disposable blades. Never retrieve samples, change blades, or clean equipment by hand with the blade in place; always use appropriate engineering controls (i.e. forceps, tweezers, dissecting probes, and small brushes).

Things to remember when using and maintaining microtomes/cryostats:

- Always keep hands away from blades.
- Use extreme caution when aligning blocks, the blocks may be close to the blades. If available, make sure block holder is in locked position when loading/aligning blocks.
- Use knife-edge protectors/guards. Do not leave knife-edges that may extend beyond microtome knife holder unprotected. • Keep blocks wet when in the microtome to minimize airborne shavings during slicing.
- Use brushes to clean/brush equipment.
- Use engineering controls such as forceps when removing or changing the blade.
- Dislodge stuck blocks using mechanical means such as forceps and/or dissecting probes.
- Wear appropriate PPE such as a lab coat or gown, mask, safety glasses or goggles, surgical grade Kevlar gloves that provide dexterity and cut protection, and examination gloves to protect against biohazards.

- When changing blades, wear stainless steel mesh gloves to protect against cuts and scrapes.
- Avoid freezing propellants that are under pressure as they may cause splattering or droplets of infectious materials.
- Decontaminate equipment on a regular schedule using an appropriate disinfectant.
- Consider trimmings and sections of tissue as contaminated and discard appropriately.
- Do not move or transport microtome with knife in position.
- Do not leave knives out of containers when not in use.
- Do not leave motorized microtomes running unattended.