

Breakage of a warm or hot lamp. Mercury burners operate at high pressure and temperature and there is a very low risk that one may unexpectedly burst, releasing toxic mercury vapour. Inhalation of high concentrations of mercury vapour for brief periods can cause acute pneumonitis, chest pain, shortness of breath, coughing, gingivitis, salivation and stomatitis, and may cause redness and irritation of skin and eyes.

Breakage of a cold mercury burner can result in release of liquid mercury.

Broken or used burners constitute Hazardous Waste.

Covering ventilation slots on mercury lamp housing can lead to fires.

There is a risk of burns or electric shock when using any electrical equipment.

Engineering controls:

All microscope systems have some inbuilt safety features to protect against exposure to UV light. Engineering controls include UV protection screens and shields, shutters and software controls. Some engineering controls require manual use. Refer to details in individual SOPs for the relevant microscope system.

The UV light source is contained and shielded in a box which cannot be opened accidentally. Stray-light protection is fitted to lamp housings to prevent UV light shining through slots in the housing.

Pre-centered lamps (for example Nikon Intensilight C-HGFIE) require no alignment, reducing the risk of overheating and explosion. There is no risk of incorrectly aligning a pre-centered lamp. The lamp does not have overpressure when cool.

Procedural controls:

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When aligning an HBO-style lamp, do not look directly at the UV light.

Explosion of lit burner:

Osram 50/100W short arc burners contain a maximum of 20 mg mercury.

With normal operation a lamp burst is very unlikely. However, in the unlikely event of a lamp exploding, inhaling mercury or mercury compounds in vapour or powder form can lead to serious health problems.

Post the following instructions next to a microscope equipped with a mercury burner:

Mercury burners operate at high pressure and temperature and very rarely may burst, releasing toxic mercury vapour into the room.

- Read the safe operating procedure.
- The lamp must be cold when it is turned on.

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When all personnel are evacuated shared air-conditioning can be reactivated to vent the building, under instruction of Emergency Services. Thoroughly ventilate the room for a minimum of 30 minutes (instruct Emergency Services to open door of room).

Once the lamp housing has cooled down and before it is used again, all residual mercury must be thoroughly removed from the inside (see instructions below for breakage of cold burner).

Breakage of cold burner:

Commercial mercury spill kits are available on the market.

Liquid mercury is toxic and can be absorbed through the skin. When dealing with broken lamps, avoid contact with the skin; wear safety glasses, goggle or face shield, and disposable puncture-resistant gloves to avoid glass cuts. After handling broken lamps, wash thoroughly before touching food or skin.

Follow the shut down procedure in the relevant microscope manual. Leave the mercury burner on if it is to be used again the same day. Turn the mercury burner off at the end of the day.

Used or broken burners are to be disposed of via Hazardous Waste as for liquid mercury, through a licensed waste agency.

