

Summary of key items related to working under aseptic conditions

As the guidelines on current good radiopharmacy practice (cGRPP) state, all personnel in the hotlab should appropriately apply aseptic techniques throughout the handling of radiopharmaceuticals for injection, including the radiolabelling of kits. This implies the use of special clothing (masks, sterile gloves), sterile vials, sterile syringes, sterile needles and sterile diluents.

All preparations should be performed in a LAF cabinet or Isolator grade A. The cabinet has to be cleared of any materials from previous preparations. It should be as empty as possible. The cabinet is not the right place to store any medical supply such as needles, syringes, empty lead vials etc. This could block the required airflow in the cabinet.

Turn on the LAF cabinet (ideally 10 minutes before starting the preparation). Disinfect gloves. Working area and walls need to be disinfected with 70% ethanol. All supplies you will use in the LAF cabinet should also be disinfected with 70% ethanol. This includes:

- Sterile syringes in protective wrapping
- 10-ml syringe shield
- Sterile needles (sheathed) in their protective wrapping
- Needle sheath holder
- Two 10 ml vials of sterile 0.9% saline solution
- Disinfecting swabs in their protective wrapping
- One pair of forceps and one pair of tong
- MDP or HDP labelling vial
- Lead vial shield for the MDP or HDP labelling vial
- Eluation vial with Tc-99m

According to the Virtual Course in Radiopharmacy (IAEA) the working area of the LAF cabinet should be covered with sterile absorbing material. As all other materials are disinfected instead of sterilized a dust free absorbent should be a good alternative.

This can either be put directly in the LAF cabinet or you can choose to use a tray with a dust free absorbent to select all appropriate materials. Don't use disposable incontinence pads, they do not belong in a LAF cabinet. Make sure that the absorbing material can be changed very quick and easy. Don't place a lead castle on it.

The air intake grate should always stay free. Don't place anything on the grates so the airflow doesn't get disturbed. Try to have a 'clean' and a 'dirty' side. The dirty side may contain the waste containers (radioactive, non radioactive, sharps).

All rubber stoppers, including those on the eluate vials, must be wiped with a disinfecting agent immediately before puncture. The solution of the disinfecting agent should be allowed to evaporate completely before puncture, as the introduction of this agent may influence kit performance. The elution shield and the shields for vials and syringes must be checked for contamination and cleaned inside and outside before use, preferably with 70% ethanol or isopropyl alcohol.

Assemble syringe and needle in a sterile method. Use the correct method to open the protective wrapping. Never touch the needle cone (colored part of the needle), opening of the syringe sheath (needle cap) or the syringe opening. Never tear open the protective wrapping. This will make your needle and syringe unsterile.

When puncturing the rubber closure make sure not to touch any other structure, such as the aluminium of the vial or the lead vial shield.

In the hotlab we have to recapture the needle several times. During this procedure it is also very important not to touch the opening of the needle sheath. A lot of technologists have the habit to put the needle sheet on top of the protective absorbent but this should be avoided! The protective absorbent is not sterile. This means your needle sheath is unsterile once you put it down. To avoid this, you can use a needle sheath holder or disinfecting swab to put your needle sheath on top.

Microbiological environmental monitoring of the LAF cabinet should be performed periodically. This can be done using contact and settling plates.