Radiation \( ^{99m}\text{Tc} \) is a medium energy gamma emitter that presents a mainly external radiation hazard.

Handling tools and standard laboratory PPE (gloves, lab coat, safety glasses) should be used to minimise exposure.

Because of the relatively low gamma ray constant, lead shielding at a workstation will only be required where sources with activities greater than about 100 MBq are handled in an unshielded condition. Although \( ^{99m}\text{Tc} \) decays very rapidly, wastes stored in the laboratory containing more than about 50 MBq may require shielding with lead sheet. Wastes should be monitored with a survey meter to ensure radiation levels are acceptable.

**Radiotoxicity data**

\( ^{99m}\text{Tc} \) is classed as being of moderate hazard (Group 3) according to AS/NZS 2243.4.

The Annual Limit on Intake by ingestion (\( \text{ALI}_{\text{ing}} \)) is 910 MBq and the most restrictive inhalation limit (\( \text{ALI}_{\text{inhal}} \)) is 690 MBq.

**Dose rates**

The gamma ray dose rate constant for \( ^{99m}\text{Tc} \) is 33 \( \mu \text{Sv/h/GBq} \) at 1 m.

Dose rate to the basal skin cells from contamination of 1 kBq cm\(^{-2}\): 246 \( \mu \text{Sv h}^{-1} \).

Dose rate from a 1 kBq (0.05 ml) droplet on skin: 8.8 \( \mu \text{Sv h}^{-1} \).

**Shielding**

Half value layer (HVL) is less than 1 mm of Pb.

NB Perspex workstation shielding offers no protection from \( ^{99m}\text{Tc} \) Gamma radiation.