7045	RISK DESCRIPTION	TREND	CURRENT	RESIDUAL
	SCI_SPA_Level 3_Radiation sources_3.8 Compton Scattering		Low	Not Assessed

RISK OWNER	RISK IDENTIFIED ON	LAST REVIEWED ON	NEXT SCHEDULED REVIEW
Manuel Emilio Pumarol Crestar	06/06/2018	06/06/2018	06/06/2021

RISK FACTOR(S)	EXISTING CONTROL(S)	PROPOSED CONTROL(S)	TREATMENT OWNER	DUE DATE
Leakage radiation - radiation from the source container poses an "External Exposure Hazard" to the whole body. At the surface of the container, a dose rate is 10-30 microSv/h. Students will be only a short distance from the container when they turn the beam control dial from OFF to ON and back. Students will either be a significant distance from the container (at least 500 mm) even for the short periods of time when making adjustments to the apparatus or, even further away (and with secondary shielding in between) at other times.	Control: The public are protected from accidentally being exposed to leakage as the apparatus is stored in 219, which is a dedicated lab area. _____ Control: The source is held in a lead container, and an extra lead shield is placed to reduce the exposure to the leakage. Students are expected (and instructed) to generally work from behind this extra shielding when they need to approach the source. _____ Control: The appartus is positioned in the corner of the room, preventing people from standing/wandering behind the extra shielding. The activity in the room behind the wall has been measured and _____ Control: Students are supervised by a TA. The training students receive includes instructions to remain away from the apparatus unless making adjustments. This minimises the time with exposure to high leakage radiation. _____ Control: Dosimeters are worn in order to monitor dosages.			

Exposure to the primary beam - misuse of the equipment may result in fingers/hands being exposed to the primary beam. There is a relatively high dose rate of the primary beam (200-600 micro Sv/h) The highest dose accessible to the primary beam is directly after the scatter target holder at about 400mm from the source.	Control: Accessibility to the primary beam is controlled by an alarmed Perspex lid. The alarm will activate if the latch door is opened and the source is turned ON. This alerts students that they are to not reach in front of the primary beam if they've forgotten to close the shutter. _____ Control: By design, the space through which the beam passes can, at worst, only fit the fingers and hands. This area is 400mm from the source. (This is the same area that is covered by alarmed perspex covers.) _____ Control: Written and verbal warnings are given to students to maintain a distance of at least 30 cm from the source (other than when handling with the tongs). _____ Control: Dosimeters are worn in order to monitor dosages.	
Exposure to secondary radiation Secondary radiation is generated when the primary beam strikes an object, and the whole body may be exposed to this secondary radiation. The dose rate at the surface of the beam collimator (the greatest source of secondary radiation) is 1-5 microSv/h. So the risk is definitely Low.	Control: When making adjustments to the apparatus (which would be within a 5 min – 1hr time interval) they will often be a significant distance from the collimator (on the order of 500mm). _____ Control: The collimator is shielded on the side the students will generally stand, meaning that the dose rate will typically be lower than the 1-5 micro Sv/h rating. _____ Control: As well as being supervised, the training students receive includes	

	instructions to remain away from the apparatus unless making adjustments. _____ Control: Dosimeters are worn in order to monitor dosages.	
Safety sealed disc sources Sources & energies (keV) 241Am 33.2, 59.6 133Ba 31(kα), 35(kβ), 81.0 22Na 511, 1270 137Cs 662	Control: TAs access the sources from a radiation safe in the Senior Lab Technician's office (room 204). _____ Control: We use 'safety sealed' disc sources from United Nuclear. The radioactive material cannot be removed from the disc, as the material is fused as part of the plastic/epoxy disc. _____ Control: TAs monitor the use of these sources and ensure their return. Students only use them during calibration before returning them. A logbook for signing sources in/out is used. _____ Control: Dosimeters are worn in order to monitor dosages.	