Compton Scattering Lab Safety

Lead Safety Procedure

Do not touch the lead bricks without disposable gloves.

After coming in contact with the lead,
Do not touch eyes or mouth
Do not touch the computer
Do not touch your lab notebook

The table with the lead housings and the scintillator should only be touched by the student wearing gloves. The student without gloves is in charge of running the scans and taking notes in both lab notebooks. At the end of the lab, anyone working on this lab must wash their hands.

Radiation Safety Procedure

Dosages: 1 Curie (Ci) = 3.7×10^{10} decays/second. Roentgen equivalent man (rem) is used to measure the biological effects of ionizing radiation; an area exposed to 2 mrem/hour of radiation is considered restricted, an area exposed to 5 mrem/hour of radiation is considered radioactive.

Factors to limit radiation exposure: time, distance, and shielding.

Time: Limit the amount of time you are exposed to radiation. Only have the sources out while you are running a scan. Only have 1 source out at a time. You are allowed to have the sources out in between consecutive scans.

Distance: Keep the sources at least 12 inches away from your neck, head, and chest. Limit the amount of time you are holding the sources.

Shielding: Shielding the sources with the lead will greatly reduce the amount of exposure you receive. Always store the sources in the lead housing. Placing a lead block between you and the source when it is out is a smart idea.

Calibration Sources

All sources are sealed in a plastic/epoxy disk and have special handling requirements of disposable gloves.

Cesium-137	
Chemical Symbol:	Cs-137 or ^{137}Cs
Atomic Number:	55
Mass Number:	137 (55 Protons + 82 Neutrons)
Photopeak Energy:	661.7 keV

Barium-133	
Chemical Symbol:	Ba-133 or ^{133}Ba
Atomic Number:	56
Mass Number:	133 (56 Protons + 77 Neutrons)
Photopeak Energy:	356.0 keV

Cobalt-60	
Chemical Symbol:	Co-60 or ^{60}Co
Atomic Number:	27
Mass Number:	60 (27 Protons + 33 Neutrons)
Photopeak Energy:	1.17 MeV, 1.33 MeV

Sodium-22	
Chemical Symbol:	Na-22 or ^{22}Na
Atomic Number:	11
Mass Number:	22 (11 Protons + 11 Neutrons)
Photopeak Energy:	511.0 keV