

MALRAD SCENARIO 7



Background

During a police raid on a suspected radical group, a number of materials are seized and declarations by suspects and the context of the find indicate the potential for some of the materials being radioactive. A 10 g aliquot of a fine brown powder is presented to the relevant authorities for analysis with the request that as much information as possible be obtained as to the material. The unknown material was counted on a standard coaxial HPGe detector in a plastic cylindrical geometry at a distance of 10 cm. The apparent density of the material was 10.95 ± 0.1 . In order to calibrate the detector, an aqueous solution of the following nuclides was presented to the detector in the same geometry and at the same distance as was to be used for the unknown. ^{241}Am – 30000 Bq, ^{57}Co – 10000 Bq, ^{60}Co – 10000 Bq, ^{54}Mn – 10000 Bq, ^{65}Zn – 10000, ^{88}Y – 10000 Bq, ^{137}Cs – 10000 Bq and ^{109}Cd – 10000 Bq and counted in the same configuration (ie. 10 cm above the detector).

Note: background has not been simulated. Activities of the calibration solution are those at the time of counting of the spectrum.

Materials provided:

Two spectra in a number of formats are provided

Scenario_7_calibration.(range of formats) - the spectrum from the calibration solution

Scenario_7_source.(range of formats) – the spectrum from the unknown material.