New Mexico Center for Nuclear Security

Fundamentals of Nondestructive Assay

COURSE DESCRIPTION

- This course is an introduction to the nondestructive assay (NDA) of uranium and plutonium-bearing materials using gamma-ray and neutron based measurement techniques.
- The fundamental principles of gamma-ray spectrometry and, neutron counting are covered in this course.
- The course is composed of lectures that describe underlying theories followed by hands-on laboratory exercises covering select measurement techniques.

NDA Concepts Covered:

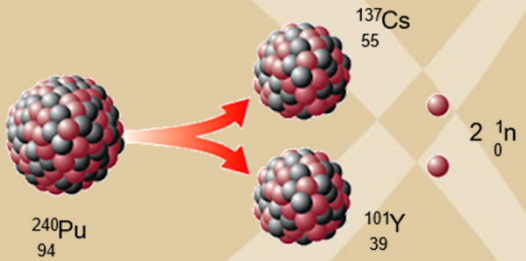
- ✓ Fundamental principles of gamma-ray spectrometry
- ✓ Uranium enrichment measurements with the enrichment meter technique
- ✓ Transmission-corrected gamma-ray assay measurements of plutonium
- ✓ Fundamental principles of neutron counting
- ✓ Active neutron coincidence counting of uranium
- ✓ Passive neutron coincidence counting of plutonium
- ✓ Introduction to calorimetry for safeguards applications

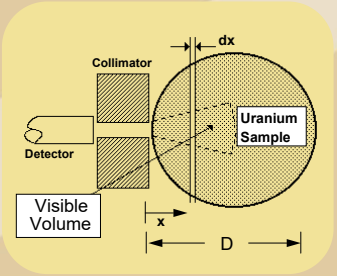
NDA Equipment Covered: NaI, HLNC, AWCC, HPGe (optional)

$$Rate = K \cdot \frac{Mass}{r^2} \quad (for\ r >> D)$$

Course Objective

To provide the participant with in-depth knowledge of generic nondestructive assay techniques and instrumentation used in accounting and control of nuclear materials and the ability to apply these concepts to the participant's needs.





Additional Information

Course Length: 4.5 days

Target Audience: Individuals that perform, manage, or supervise NDA measurements. Auditors, regulators, and policy makers may also benefit from attending this course.