

BF₃ BASED WASTE-DRUM ASSAY SYSTEM

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- ✓ Assay of alpha bearing waste is mandatory before its disposal to waste management facilities
- Conventional Methods:
 - ✓ Gamma spectrometry
 - ✓ Neutron based assay techniques.
- Gamma spectrometry - Limitation w.r.t Pu detection in high beta-gamma activity
- BF₃ is preferred due to its high gamma tolerance.

❖ A BF₃ based passive waste assay system has installed in RML at IGCAR for waste assay

❖ consists of 16 BF₃ detectors - Arranged in a circular geometry with associated nuclear electronics

- Detectors test: Using Am-Be neutron source
 - ✓ Bias Voltage & Operating Voltage optimized.
- Gamma tolerance test: Using ⁶⁰Co gamma source
 - ✓ Tolerance up to 0.1 Sv/hr

➤ Performance tests:

- ✓ Long term counting stability & efficiency test
- ✓ Good statistical performance.

➤ Waste drums were assayed & dispatched to waste management facility since 2013.

