Designation: D5928 – 18a

Standard Practice for Screening of Waste for Radioactivity[1]

This standard is issued under the fixed designation D5928; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice covers the screening for α–, β–, and γ radiation above ambient background levels or user-defined criteria, or both, in liquid, sludge, or solid waste materials.

1.2 This practice is intended to be a gross screening method for determining the presence or absence of radioactive materials in liquid, sludge, or solid waste materials. It is not intended to replace more sophisticated quantitative analytical techniques, but to provide a method for rapidly screening samples for radioactivity above ambient background levels or user-defined criteria, or both, for facilities prohibited from handling radioactive waste.

1.3 This practice may not be suitable for applications such as site assessments and remediation activities.

1.4 The values stated in SI units are to be regarded as the standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

C859 Terminology Relating to Nuclear Materials

3. Terminology

3.1 For terminology related to radioactive materials, see Terminology C859.

4. Summary of Practice

4.1 A sample is held within 6 mm of the detector window of a radiation survey meter, and the visible or audible reaction of the meter, or both, is noted. The user defines an application/project-specific "negative" and "positive" result criteria. A "negative" test result indicates radiation levels are below the user-established criteria; a "positive" test result indicates the radiation levels are above the user-established criteria.

5. Significance and Use

5.1 Most facilities disposing or utilizing waste materials are prohibited from handling wastes that contain radioactive materials. This practice provides the user a rapid method for screening waste material samples in the field or laboratory for the presence or absence of radioactivity at user-established criteria. It is important to these facilities to be able to verify generator-supplied information that radioactive or mixed wastes have not been included in shipments of waste materials.

6. Interferences

6.1 Needle deflections or audible clicks of the survey meter, or both, occur due to naturally occurring omni-directional background radiation. This level of ambient background radiation should be periodically assessed. See Section 10.

6.2 Possible sources of interference include pacemakers, X-ray-generating equipment, radium-based luminescent dials, polonium-based static eliminators, and smoke detectors containing a radioactive isotope-sensing mechanism. Such interferences can usually be traced to their source using the portable instrument specified in this practice.

6.3 A large amount of potassium in the waste sample may produce a positive result due to the natural presence of the radioactive isotope, potassium-40.

6.4 The sensitivity of this practice to beta and gamma radiation may be dependent on sample volume. A small sample volume with readings near background levels may give a false negative result.

[1] This practice is under the jurisdiction of ASTM Committee D34 on Waste Management and is the direct responsibility of Subcommittee D34.01.05 on Screening Methods.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.