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Standard Terminology Relating to Nuclear Materials[1]

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1. Scope

1.1 This terminology standard contains terms, definitions, descriptions of terms, nomenclature, and explanations of acronyms and symbols specifically associated with standards under the jurisdiction of Committee C26 on Nuclear Fuel Cycle. This terminology may also be applicable to documents not under the jurisdiction of Committee C26, in which case this terminology may be referenced in those documents.

2. Terminology

absorbed dose, D, [L^2 T^{-2}], *n*—absorbed dose is the mean energy imparted by ionizing radiation to a unit mass of specified material.

DISCUSSION—The SI unit for absorbed dose is the gray (Gy), defined as 1 J/kg.

abundance sensitivity, *n*—in methods of chemical analysis, the ratio of the ion beam intensity of the major isotope, *M*, to the background current at the adjacent mass positions.

$$\text{Abundance sensitivity} = \frac{\text{ion current at mass } M}{\text{ion current at } M \pm 1} \quad (1)$$

activity, A, [T^{-1}], *n*—the measure of the rate of spontaneous nuclear transformations of a radioactive material. The SI unit for activity is the becquerel (Bq), defined as one transformation per second. The original unit for activity was the curie (Ci), defined as 3.7×10^{10} transformations per second.

alpha radiation, *n*—is the spontaneous emission of an alpha particle, composed of two protons and two neutrons with a positive charge of plus two, during the nuclear transformation process.

DISCUSSION—An alpha particle is the same as a helium atom with no electrons.

alteration, *n*—any change in the form, state, or properties of materials.

analyte, *n*—in method of chemical analysis, a sample component whose presence and concentration is of interest.

becquerel (Bq), [T^{-1}], *n*—the SI unit of measure for activity, defined as one transformation per second.

beta radiation, *n*—an electron that was generated in the atomic nucleus during decay and has a negative charge of one.

canyon, *n—in the nuclear industry*, a long, narrow, remotely operated, radiological facility.

DISCUSSION—A large, heavily-shielded facility where nuclear material is processed or stored.

continuing calibration blank check solution (CCB)—in methods of chemical analysis, a standard solution that has no analyte and is used to verify blank response and freedom from carryover.

continuing calibration verification check solution (CCV)—in methods of chemical analysis, a standard solution (or set of solutions) used to verify freedom from excessive instrument drift; the concentration is to be near the midrange of a linear curve.

crushed glass, *n*—in a glass leach test, small particles of glass produced by mechanically fracturing larger pieces of glass.

curie (Ci), [T^{-1}]—the original unit of measure for activity, defined as 3.7×10^{10} transformations per second.

determination, *n*—the process of carrying out a series of operations specified in the test method whereby a single value is obtained.

dose equivalent, [L^2 T^{-2}], *n*—a measure of the biological effects of radiation dose from all types of radiation expressed on a common scale.

DISCUSSION—The SI unit for dose equivalent is the sievert (Sv), which is equal to 100 rem (specialized unit for human dose equivalent). Radiation dose equivalent is often expressed in terms of microsieverts (μSv) or millirem (mrem).

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[1] This terminology is under the jurisdiction of ASTM Committee C26 on Nuclear Fuel Cycle and is the direct responsibility of Subcommittee C26.01 on Editorial and Terminology.

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