

Development of Voluntary Consensus Standards and Measurement Support for NORM / TENORM Applications

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In the United States, Naturally Occurring Radioactive Materials (NORM) and Technologically Enhanced Naturally Occurring Radioactive Materials (TENORM) are predominantly regulated by the state in which the organization is managing the material. This can result in a wide variety of approaches to NORM / TENORM across the United States. Our ASTM International D19.04 Subcommittee (Water / Methods of Radiochemical Analysis) is primarily focused on voluntary consensus standards to assist in appropriately characterizing the radioactive constituents of NORM / TENORM.

The ASTM D19.04 Subcommittee has been advised that organizations needing to manage (NORM) and (TENORM) may benefit from using existing approved standards and the development of new voluntary consensus standards on the topic. As may be needed by a relevant sector, specific collections of applicable ASTM standards can be periodically made available in hard-copy or digital formats for easier use.

To support traceable measurements for NORM/TENORM characterization, Eckert and Ziegler Analytics, Inc. (EZA) has established a program for providing relevant reference materials, calibration standards, and proficiency testing samples. Uranium, thorium, radium and ²¹⁰Pb containing materials can be available for NORM/TENORM applications. Uranium and thorium materials in equilibrium with their respective decay products are under evaluation. Solid matrices for the preparation of calibration standards and proficiency testing samples are available in a 0.5 – 3.5 g/cm³ density range, including Olivine (low NORM material, Σ NORM isotopes < 12 mBq/g). There is a capability to manufacture 1mx1m flat sources to facilitate custom indoor/outdoor in-situ calibrations and proficiency testing measurements. The possibility of needing to calibrate and perform measurements with drone-based instrumentation will also be considered. The EZA NORM Program is being developed under a ISO 9001, ISO 17025, ISO 17034 and ISO 17043 environment. MARLAP, MARSSIM and MARSAME recommendations are also being considered.

ASTM D19.04 and EZA are determined to assist the organizations managing NORM / TENORM to do so in a consistent and responsible manner.