Department of Energy
Washington, DC 20585

November 20, 2026

Dr. Stephen K. Streiffer
Laboratory Director
UT-Battelle, LLC
Oak Ridge National Laboratory
1 Bethel Valley Road
Oak Ridge, Tennessee 37830

WEL-2026-03

Dear Dr. Streiffer:

The Office of Enforcement has completed its evaluation into an August 4, 2025, event in which a borosilicate glass scintillation vial containing 8-molar nitric acid, approximately 200 millicuries of promethium-147 (Pm-147), immersion oil, and residual ligands ruptured inside a radiological fume hood. UT-Battelle reported this event into the U.S. Department of Energy (DOE) Noncompliance Tracking System under NTS-SC-OSO-UTB-X10CENTRAL-2026-0011338, dated January 30, 2026. Based on this evaluation, the Office of Enforcement identified concerns that warrant management attention by UT-Battelle.

The rupture of the Pm-147 vial contaminated five workers: two who were working adjacent to the hood in 4500S, Lab F255, and three nonadjacent workers who sustained contamination on the soles of their shoes. The event also spread radiologically contaminated liquid and glass outside the posted contamination area. The two adjacent workers were performing a Pm-147 recovery process at the time. The staff member working directly at the fume hood was contaminated on the head, face, and neck at contamination levels up to 22,727,250 disintegrations per minute/100 cm^2.

Based on an evaluation of the facts and circumstances surrounding this event, the Office of Enforcement identified concerns with UT-Battelle's implementation of the requirements in Title 10, Code of Federal Regulations (C.F.R.) Part 835 (Part 835), *Occupational Radiation Protection*, and 10 C.F.R. Part 851 (Part 851), *Worker Safety and Health Program*, in the areas of hazard identification and assessment, hazard communication, and training and information. Specifically:

- UT-Battelle did not ensure that management policy guidance and expectations were well-defined, understood, or enforced. The management system lacked explicit, repeatable processes for defining, reviewing, and verifying work controls for radiological and chemical bench-top work. The Research Safety Summary (RSS) and associated guidance relied on qualitative and interpretive language, lacking objective criteria for reviewer selection, required expertise, or verification that reviewers possessed the appropriate qualifications and expertise.

- UT-Battelle did not effectively implement the Activity-Based Hazard Analysis (ABHA) process. The transition from historically open, beaker-based work to a small, sealed vial was not recognized as a hazard-significant change. Consequently, this transition did not trigger an ABHA or a formal evaluation of chemical compatibility and hazards associated with performing the activity in a confined vessel, or whether additional radiological shielding and confinement controls were appropriate.

- UT-Battelle's hazard analysis did not adequately evaluate the specific work configuration involving a reused, capped vial containing reactive and immiscible components (immersion oil, promethium-147, residual ligands, and nitric acid). The RSS provided only generic hazard information and did not identify delayed reactions, gas generation, over-pressurization, or vial rupture as credible hazards. Although personnel generally understood that concentrated nitric acid can react with organic materials, the Safety Data Sheet for the immersion oil was not reviewed before the dissolution process, and the potential reactions of the nitric acid with the immersion oil and other constituents were not adequately evaluated. Consequently, the chemical hazards associated with the activity were not adequately identified or controlled.

- UT-Battelle applied an informal "skill-of-the-craft" concept to scientific research operations where more formalized work controls and training were warranted. There was no formal procedure or training for the vial washing and dissolution process, as it was considered a "typical R&D [research and development] process." The work-control process did not adequately account for first-time performance of this specific activity or provide defined process controls to address the associated unfamiliarity. Instead, the activity relied on informal judgment and past practice, and appropriate controls were not selected and implemented consistent with the hierarchy of controls in 10 C.F.R. § 851.22, *Hazard prevention and abatement*.

The Office of Enforcement acknowledges that UT-Battelle promptly notified DOE's Oak Ridge Site Office, performed a causal analysis, and developed a corrective action plan. However, the corrective action plan does not fully address the systemic work-control weaknesses that allowed this activity to proceed without an ABHA or additional hazard evaluation. Although UT-Battelle plans to establish a formal ABHA process for R&D activities within the Radioisotope Science and Technology Division, the corrective actions do not clearly establish the criteria or triggers for determining when changes to research activities warrant additional hazard evaluation or an ABHA. Consistent with 10 C.F.R. § 851.21, *Hazard identification and assessment*, UT-Battelle should strengthen its work-control processes to ensure that workplace hazards are identified and assessed, including through routine job activity-level hazard analyses, as often as necessary.

The Office of Enforcement has elected to issue this Enforcement Letter to convey concerns with the August 4, 2025, Promethium-147 vial rupture and associated personnel and laboratory contamination event. Issuance of this Enforcement Letter reflects DOE's decision to not pursue further enforcement activity against UT-Battelle at this time.

This letter imposes no requirements on UT-Battelle, and no response is required. If you have any questions, please contact me at 301-903-7707, or your staff may contact Dr. Shannon Holman, Director, Office of Worker Safety and Health Enforcement, at 301-903-0100.

Sincerely,

Shannon Holman *for*

Robin M. Keeler
Acting Director
Office of Enforcement
Office of Enterprise Assessments

cc: Tracy Chance, UT-Battelle, LLC
Trey Wheeler, SC-OSO