



Department of Energy

Washington, DC 20585

September 22, 2014

Dr. Paul Hommert
President and Laboratories Director
Sandia Corporation
Sandia National Laboratories
1515 Eubank SE
Building 802/Room 3180
Albuquerque, New Mexico 87123

NEL-2014-02

Dear Dr. Hommert:

The Department of Energy's (DOE) independent Office of Enterprise Assessments' Office of Enforcement evaluated the facts and circumstances surrounding the unauthorized work with technetium-99 (Tc-99) in Building 823, B59B laboratory (*Sandia Tomography and Radionuclide Transport Laboratory*) and the associated spread of contamination into the previously categorized Contamination Area (CA) and Radiological Buffer Area (RBA) within the laboratory. Sandia Corporation (Sandia) reported this issue into DOE's Noncompliance Tracking System (NTS--SS-SNL-NMSITE-2014-0001, *Work with Unauthorized Radioactive Materials*) on March 11, 2014.

On January 16, 2013, a Sandia principal investigator (PI) made a request to the cognizant laboratory manager to modify the Technical Work Document (TWD) pertaining to the PI's work to include working with Tc-99. Similar work had already begun in the B59B laboratory concerning the remediation of strontium-90 (Sr-90).

On October 16, 2013, the PI began conducting work with Tc-99 in the laboratory. The TWD referenced Tc-99 as a radiological hazard. However, the hazards associated with Tc-99, in quantities greater than 100 micro-curies, were not appropriately evaluated and the TWD was not modified to authorize the work. In addition, the PI acknowledged that he did not read the existing TWD, prepared by the laboratory manager, prior to signing the document.

On October 29, 2013, a Sandia radiation control technician (RCT) reported that contamination was detected in the B59B laboratory. Radiological surveys were taken and analyzed. At that time, there was confusion over the source of the contamination. Communication at the time of the event among the RCT, PI, a technologist, and associated managers did not raise the possibility that the



contamination could be Tc-99. Sandia originally determined that the contamination was cesium-137; later, it was thought to be Sr-90. Following routine radiological surveys of the B59B laboratory on January 15, 2014, contamination was found in the designated CA and RBA of the laboratory; two days later, Sandia determined this contamination to be Tc-99. Recognizing the potential linkage between the contaminations detected in October and January, Sandia re-analyzed the surveys taken in October and, on February 6, 2014, and determined the B59B laboratory contamination to be Tc-99. In response to the January 2014 discovery of Tc-99 contamination, Sandia suspended all work in the B59B laboratory and promptly conducted sampling and forensic work to include radiological surveys in the surrounding laboratory space, halls, and offices. In addition, dosimeter readings and bioassays were performed. To date, all results indicate no spread of contamination beyond the CA and RBA, and no radiological exposure to personnel has been detected.

Longer-term corrective actions have been developed by Sandia to address the causal factors identified in the causal analysis report dated May 23, 2014. However, Sandia was unable to conclusively identify the events that led to the January contamination. Therefore, the causal analysis and corrective actions may not be appropriately directed to prevent recurrence. This is particularly pertinent with regard to communication among the PI, his management, and responsible radiation protection staff regarding changes to the TWD.

Based on a review of this issue, the Office of Enforcement identified potential noncompliances with 10 C.F.R. Part 830, *Nuclear Safety Management*, and 10 C.F.R. Part 835, *Occupational Radiation Protection*. These include: (1) failure to adequately identify and correct the unauthorized and unanalyzed work with Tc-99 when contamination in the laboratory was detected on October 29, 2013; (2) failure to use approved instructions or procedures while performing work with Tc-99; and (3) failure to maintain and verify that appropriate controls were taken, through the development and use of a TWD, to prevent the inadvertent transfer of removable contamination to locations outside of radiological areas under normal operating conditions.

The Office of Enforcement considers processes to properly evaluate and approve research with radionuclides essential to protecting workers from the potential harm posed by exposure to these materials. While no actual safety consequences resulted from the unauthorized work with Tc-99 in the B59B laboratory, the potential for adverse consequences to Sandia personnel was present from the spread of contamination and resultant potential for radiological exposure, and because Sandia's safety barriers proved ineffective in preventing the unanalyzed and unauthorized work. Considering that the contamination did not spread outside of the RBA, the relatively low energy Tc-99 emissions, and the actions taken by Sandia immediately following the event, the Office of Enforcement has elected to exercise its discretionary authority and not pursue further enforcement consideration of this issue at this time. The Office of Enforcement, in conjunction

with the National Nuclear Security Administration, will continue to closely monitor Sandia actions taken to prevent recurrence.

No response to this letter is required. If you have any questions, please contact me at (301) 903-7707.

Sincerely,

A handwritten signature in black ink that reads "Steven C. Simonson". The signature is written in a cursive style with a large, prominent initial 'S'.

Steven C. Simonson
Director
Office of Enforcement
Office of Enterprise Assessments

cc: Geoffrey Beausoleil, NA-SN
Donald Brady, NA-SN
Gabriel King, SNL
Richard Reback, DNFSB