



Department of Energy

Washington, DC 20585

March 5, 2012

Dr. Paul Hommert
President and Laboratories Director
Sandia Corporation
Sandia National Laboratories
P.O. Box 5800, MS 0101
Albuquerque, New Mexico 87185-0101

WEL-2012-01

Dear Dr. Hommert:

The Office of Health, Safety and Security's Office of Enforcement and Oversight evaluated five occupational exposure events that have occurred since June 2010 at the Sandia National Laboratories (SNL), in Albuquerque, New Mexico. Four of the five events involved worker exposures to airborne contaminants in excess of requirements contained in 29 C.F.R. Part 1910, *Occupational Safety and Health Standards*; the American Conference of Governmental Industrial Hygienists (ACGIH) 2005 Threshold Limit Values (TLV); or 10 C.F.R. Part 850, *Chronic Beryllium Disease Prevention Program*. The fifth event caused uncontrolled beryllium contamination from waste handling operations. Each of these events created circumstances that resulted in the potential for adverse health impacts for the exposed employees as follows:

- On June 4, 2010, Sandia Corporation (Sandia) conducted monitoring of airborne beryllium for workers at the Z-Machine during unloading, refurbishment, and other routine activities following a beryllium shot. The monitoring result for one worker indicated an exposure of airborne, inhalable beryllium in excess of the ACGIH TLV.
- During a sewer re-lining project in Technical Area III on September 1, 2010, a Sandia subcontractor exposed an employee to airborne styrene at a level approximately five times the ACGIH Short Term Exposure Limit. This overexposure could cause short and long term health effects for the unprotected employee. The subcontractor relied on a deficient activity description and pre-job analysis, which resulted in the use of inadequate mechanical ventilation and no respiratory protection.
- On September 2, 2010, Sandia identified significant levels of beryllium surface contamination in building 6921 resulting from Campaign 10-27 when workers transferred classified waste into a 55-gallon "macro" drum. According to Sandia's investigation, the contamination occurred because



personnel placed undue reliance on an inaccurate historical disposal request that did not properly characterize beryllium. Additionally, the industrial hygiene (IH) exposure assessment process did not fulfill the Sandia requirements for subject-matter-expert involvement in the job safety analysis (JSA). Further, IH personnel relied too heavily on waste facility personnel to identify the beryllium sample locations and methodology. As a result, Sandia did not recognize the potential for beryllium and assess potential exposures.

- On July 23, 2011, during removal of a Kevlar® blast blanket and cleaning of the pyro-shock test area in Building 963, Sandia exposed a worker to airborne lead approximately 88 times the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) and the ACGIH TLV. Even though the worker used a full-face respirator with an assigned protection factor (APF) of 50, the airborne concentration was so high that the worker was still exposed to lead about 1.8 times the permissible level which presents the potential for lead-related disease. Sandia overlooked the contamination of the reused/handled Kevlar® blankets in the job hazard analysis. Sandia was not able to adequately demonstrate that material substitution and engineering controls had been evaluated and implemented.
- On July 26, 2011, Sandia conducted air monitoring for beryllium at the Z-Machine following a test. Sandia reported that one worker exceeded and a second worker was “just below” the ACGIH TLV for beryllium. However, Sandia questioned whether the results were accurate because of “poor contamination control and handling of the cassette filter,” which indicated a lack of adequate IH oversight during the testing.

The Department of Energy’s (DOE) evaluation of the circumstances associated with these events disclosed potential violations of 10 C.F.R. Part 851, *Worker Safety and Health Program*, and its invoked standards in the areas of IH program implementation, oversight of field conditions, management of change, hazard assessment, and control procedures. These elements apply to one or more of the events as described below:

- Sandia did not maintain worker exposures to airborne beryllium, lead, and styrene below the applicable ACGIH TLVs and OSHA PELs.
- In at least one instance, Sandia IH personnel did not maintain the appropriate level of field oversight during air monitoring at the Z-Machine to ensure proper control and handling of sample media to yield defensible results.
- Sandia IH personnel did not anticipate foreseeable changes in workplace conditions when identifying hazards and assessing their impact. Sandia did not recognize the increased potential for lead contamination of Kevlar® blankets during reuse in pyro-shock test operations. Sandia did not anticipate

and recognize conditions affecting the subcontractor's exposure to off-gassed styrene during sewer re-lining in Technical Area III.

- Sandia did not ensure that the subcontractor used the appropriate engineering and personal protective equipment (PPE) controls during the sewer relining in Technical Area III. The subcontractor used mechanical ventilation that did not adequately clear airborne styrene and did not provide the exposed worker with a respirator.
- Sandia did not provide an appropriate respirator to the worker in the building 963 pyro-shock test area. The APF was not high enough to reduce lead exposure in inhaled air to levels at least below the ACGIH TLV and OSHA PEL. Sandia was not able to adequately demonstrate that the hierarchy of controls had been evaluated and implemented.
- Sandia IH personnel did not fulfill the work planning and related control/sampling requirements for subject-matter-expert involvement in the building 6921 Campaign 10-27 JSA development and implementation process.
- Sandia did not ensure that workers used the appropriate engineering and PPE controls during the building 6921 Campaign 10-27.

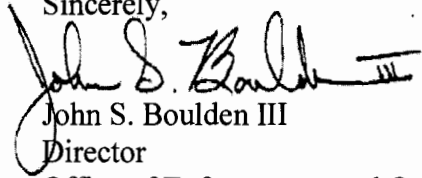
Sandia examined these events through fact finding investigations and causal analyses. Sandia then developed corrective actions that appear to address the findings and the related judgments of need for each of the individual events. Notwithstanding these actions, DOE is concerned that Sandia has neither assessed the overall effectiveness of its IH program in light of the five associated events (some sharing common characteristics) in a relatively short period, nor conducted an extent-of-condition review. The National Nuclear Security Administration (NNSA) Associate Administrator for Safety and Health reviewed these concerns as part of an occupational exposure assessment of the Sandia IH program conducted from January 24 through February 2, 2012, by the Senior Adviser for Environment Safety & Health. The NNSA review found areas of concern in the IH program similar to those described in this letter.

DOE believes that Sandia should examine relevant areas of its IH program implementation, including, but not limited to, specific considerations for proactive engagement by IH personnel in hazard recognition, exposure assessment, and the selection of effective controls, including material substitution and engineering controls, at the worksite. Additionally, Sandia should promote lasting improvements by evaluating the common programmatic nature of these events and the resulting potential for adverse health impacts at diverse worksites throughout SNL.

The Office of Enforcement and Oversight is issuing this letter to convey concerns about the level of rigor applied by Sandia and its subcontractors in planning and executing work safely and in accordance with DOE worker safety and health requirements. In recognition of Sandia's identification of causal factors and anticipated response, the Office of Enforcement and Oversight has elected to exercise its enforcement discretion and not pursue further enforcement activity against Sandia at this time. In conjunction with NNSA, including the Sandia Site Office, we will continue to monitor Sandia's efforts to improve IH performance.

No response to this letter is required. If you have any questions, please contact me at (301) 903-2178, or your staff may contact Kevin Dressman, Director, Office of Worker Safety and Health Enforcement at (301) 903-0100.

Sincerely,

A handwritten signature in black ink, appearing to read "John S. Boulden III". The signature is written in a cursive style with a horizontal line at the end.

John S. Boulden III

Director

Office of Enforcement and Oversight
Office of Health, Safety and Security

cc: Gabriel King, SNL
Richard Sena, SSO