

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 3, 2004

MEMORANDUM FOR: J. K. Fortenberry, Technical Director
FROM: Michael J. Merritt, DNFSB Site Representative
SUBJECT: Lawrence Livermore National Laboratory (LLNL)
Report for Week Ending December 3, 2004

Heavy Element Facility Contamination Occurrence: A contamination event occurred (ORPS report OAK-LLNL-LLNL-2004-0065) in the Heavy Element Facility on November 30, 2004. The work being performed was to support the deactivation of the facility (see weekly report dated October 15, 2004) and involved the removal of equipment from a shielded glovebox (also referred to as a blue cave). The incident occurred when workers attempted to transfer a contaminated, heavy part from a hydraulic press through an open glovebox port to a thin-walled metal can with a slip-on lid (called an egg can). During this operation, the workers were wearing full-face respirators without anti-contamination hoods. One worker placed the metal item in the egg can through the glovebox port while another worker held the can. A third worker placed the lid on the can. The can then collapsed from the external forces required to support the weight of the can and the lid popped off. At this point, the can was in a position that was no longer receiving air flow from the negative pressure through the glovebox opening. The breach of the container resulted in an alarm from a continuous air monitor located in the work area. Four of the five individuals present in the room were found to have skin contamination on the head. The maximum skin contamination detected was 20,000 counts per minute alpha. The radioisotope involved was Americium-241.

Workers placed the metal part back in the glovebox and bagged the can. The individuals were decontaminated when they exited the room. Nasal smears were taken for one individual and were determined to be negative. Contamination surveys were performed and some decontamination was accomplished. A recovery plan is being implemented and the facility management is confident that the spread of contamination was very limited and that minimal decontamination will be required to reestablish conditions to resume work. The procedures and techniques being used for this activity were inadequate to prevent this type of event or to properly protect the worker from contamination. The egg cans are utilized at multiple facilities for material storage, but have little capacity to withstand external forces or impacts. The facility managers are reconsidering the types of containers that should be used for removing heavy items from gloveboxes. Additionally, the use of anti-contamination hoods should be considered when performing work that requires respiratory protection.

Based on the site representative's observations of radiological postings in the facility, it is likely that minor contamination incidents that occurred in March, May, and October of this year should have been reported in accordance with DOE Order 231.1A, *Occurrence Reporting and Processing of Operations Information*. No reports were filed by the facility.

Unreviewed Safety Question Procedure: The procedure that implements the Unreviewed Safety Question (USQ) process at LLNL is deficient. Implementation of the USQ process is required by 10CFR830, *Nuclear Safety Management*, and is an important element of LLNL's nuclear safety program. The Livermore Site Office (LSO) and DOE Office of Independent Oversight and Performance Assurance (OA) have identified procedural deficiencies that could result in inadequate evaluations of safety concerns or conditions. On November 15, 2004, LLNL proposed a revision to the USQ procedure, but the revision did not resolve important comments provided by LSO and OA. LLNL recognizes that major changes to the USQ procedure will be required, but has not reached agreement with LSO on how the issues will be resolved or on what schedule.