



Department of Energy
Washington, DC 20585

June 19, 2002

Mr. Alan Parker
[]
Kaiser-Hill Company, L.L.C.
Rocky Flats Environmental Technology Site
10808 Highway 93, Unit B
Golden, CO 80403-8200

Subject: Building [] Uptake Event of October 5, 2001

Dear Mr. Parker:

This letter refers to the Department of Energy's evaluation of facts and circumstances concerning the October 2001 unplanned uptakes of radioactive material by two Radiological Control Technicians (RCT) in Building []. These issues were reported into the Noncompliance Tracking System (NTS) by your staff (NTS-RFO--KHLL-[] 2002-0001) on February 11, 2002.

One RCT received a committed effective dose equivalent (CEDE) of 1.6 rem, and the remaining RCT received 240 millirem (mrem) CEDE. While these exposures do not exceed the regulatory limit, they were significant in that the exposures were unplanned, and they may have been preventable. The Office of Price-Anderson Enforcement (OE) recognizes that in performing hazardous decontamination and decommissioning (D&D) work, some radiological exposures are inevitable. However, the principles of As Low As Reasonably Achievable (ALARA) are required by 10 CFR 835 and are expected to govern your work such that radiation exposures are prevented or minimized to the extent practical. OE's review of this event found weaknesses in the preparation and planning for this work, specifically (1) in the reliance on survey information that had questionable applicability to the area where the work was to be conducted, (2) in the failure to provide adequate monitoring for airborne radioactivity to ensure compliance with the Radiological Work Permit (RWP), and (3) in the initial response to this event in determining no special bioassay was needed for the RCTs despite a continuous air monitor (CAM) alarm indicating airborne radioactivity.

On October 5, 2001, two RCTs were tasked to survey the area and clean up paint chips and dust along the room [] north wall in order to prepare this area for painting to control radioactive contamination. The RWP specified that the use of respirators was conditional, based upon the actual or anticipated airborne radioactivity levels. Your investigation of this event stated the RCTs were informed by the Radiological Operations Supervisor to expect only low levels of contamination. A prior survey taken

on September 24, 2001, showed the highest level of contamination was 180 disintegrations per minute per 100 centimeter squared (dpm/100 cm²). However, OE's review identified that the survey conducted on September 24 did not evaluate radiological conditions along the north wall of room [] where the October 5 work was being conducted. In addition, surveys performed on September 18 and 19, 2001, along the north wall identified much higher levels of radioactive contamination. On September 18, removable contamination up to 9,000 dpm/100 cm² was found on the floor and a portable Specific Alpha Air Monitor (SAAM) alarmed several times with air concentrations as high as 35 derived air concentrations (DAC). This area was then decontaminated and painted. The next survey of this area on September 19 still found levels of removable contamination up to 12,000 dpm/100 cm². During this survey, a portable SAAM in room [] again alarmed and the air concentrations were calculated to be 5 DAC. No subsequent survey of the work area along the north wall was performed to validate the assumption this area had low levels of contamination. Radiological surveys of room [] performed on September 20 and 24, 2001, did not include the work area along the north wall.

RWP #01-[]-1031 was used for the October 5 tasks and has a work suspension limit of 0.1 DAC for workers without respirators. In performing the work on October 5, the RCTs were not wearing respirators and a portable CAM was not set up to monitor the workers' breathing zone. The nearest CAM was in an adjacent room, approximately 30 feet away, and the CAM alarm in the adjacent room sounded approximately 10 minutes after the work in room [] was completed. Subsequent analysis found that airborne levels in room [] exceeded the RWP's work suspension limit. Fixed airhead sampler results for the period September 28 through October 5 identified 0.48 DAC in room [], which is almost five times the RWP work suspension limit. The CAM alarm in the adjacent room was verified to be positive with 98 dpm on the filter and a high volume air sample indicated the room air concentration was 0.13 DAC.

Based upon the above facts, OE's review found the planning, hazards analysis and control for this work to be less than adequate. Using the September 24 survey results, rather than surveys from September 18 and 19, did not provide an adequate understanding of the radiological conditions in the work area. In addition, the failure to provide real time monitoring of the workers' breathing zone prevented the workers from recognizing the elevated airborne radioactivity and responding as required when the RWP's work suspension limit was exceeded.

One additional area of concern noted from OE's review was the sole use of the Potential Intake Factor (PIF) to determine no follow-up bioassay was necessary. While this tool may aid in decision making, OE is concerned that the calculated PIF for the workers in this event would not have required follow-up bioassay, since the PIF calculations did not take into account the dilution factor for the CAM alarm in an adjacent room. If one of the RCTs had not requested nasal swabs to be taken despite the calculated PIF, then the identification and notification to the individuals of their exposures would not have been timely. This system may require further review by the

contractor to ensure that unplanned exposures that are significant for individual monitoring and tracking are not missed.

Although OE's review of this event identified weaknesses in your ALARA practices for planning and controlling work and in the decision process for special bioassay, DOE is not planning to take enforcement action at this time. DOE will continue to monitor implementation of your corrective actions for the aforementioned NTS report and if your corrective actions in this area are not effective, DOE will consider additional options at that time. Should you have any questions concerning this letter, please contact Susan Adamovitz at 301-903-0125.

Sincerely,



Howard M. Wilchins
Acting Director
Office of Price-Anderson Enforcement

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