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August 24, 2005

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U.S. Nuclear Regulatory Commission
Director, Office of Nuclear Material Safety and Safeguards
Attention: Document Control Desk
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Subject: 30-Day Written Follow-up Report to NRC Event Number 41879 Reported July 28, 2005 to Nuclear Regulatory Commission Operations Center
Docket No. 04003393, License No. SUB-526

Honeywell Chemicals, Specialty Materials, Metropolis Works (MTW) facility reported to the Nuclear Regulatory Commission (NRC) Operations Center as per 10CFR40.60 as an unplanned contamination event that required access to be restricted for more than 24 hours by imposing additional radiological controls. This letter is a required follow-up report to address specific items required by the regulations.

NRC Event Number 41879 dated July 28, 2005, reported:

An unplanned contamination event occurred on 25 July 2005. This is a reportable event in accordance with 10 CFR 40.60 sub paragraph (1) based on additional radiological controls being required for more than 24 hours. The additional control imposed was the requirement to wear air purifying respirators in the Feed Materials Building. The location of the event was the Feed Materials Building. The Feed Materials Building is where milled uranium oxide material is converted to uranium hexafluoride. Located on the sixth floor, the Ash Vacuum Cleaner filters failed which allowed spar and dust filter fines containing uranium to exit the discharge from the Ash Vacuum Cleaner. Due to the proximity of the Ash Vacuum Cleaner discharge and the inlet to the building ventilation, some the material was picked up by the ventilation system and distributed throughout the Feed Materials Building. A dust plume was noted coming from the discharge line of the Ash Vacuum Cleaner at approximately 0918. At approximately the same time, personnel in the building noted dust being emitted from the building ventilation system registers. The Ash Vacuum Cleaner was secured at approximately 0920. Personnel recognized the potential for airborne radioactivity and immediately required respiratory protection for all personnel in the building. Special bioassay samples were required for 19 people who were present in the building during the occurrence. The results of the special bioassays indicated no uptake of radioactivity by the personnel sampled. Fixed air samplers analyzed after the event on all floor indicated air activity in the range of 5×10^{-11} microcuries/ml to 60×10^{-11} microcuries/ml. Air samples and contamination surveys

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performed downwind were background levels. Cleanup of the granular material in the Feed Material Building commenced immediately.

The isotope release was U^{238} , the chemical form is UF_4 , and the physical form is granular.

The Feed Materials Building has now been cleaned of contamination that was due to this event. The licensee has notified NRC Region II (Hartland), NRC HQ (Raddatz) and NRC Regional Inspector (Gibson).

10CFR40.60 (c) (2) Written 30-day follow-up report required:

(2)(i) *A description of the event, including the probable cause and the manufacturer and model number (if applicable) of any equipment that failed or malfunctioned*

An unplanned contamination event, resulting in no measurable off-site radioactivity, occurred at approximately 0918, July 25, 2005. This is a reportable event in accordance with 10CFR40.60 subparagraph (1) based on additional radiological controls being required for more than 24 hours. The additional control imposed was the requirement to wear air purifying respirators in the Feed Materials Building (FMB) where the event occurred. Milled uranium oxide material is converted to uranium hexafluoride in process equipment contained within the FMB.

Located on the sixth floor, three BHA-tex laminated (Teflon[®]), corrugated polyester media filter cartridges within the Ash Vacuum Cleaner filter failed at the tube sheet to cartridge interface, allowing spar and dust filter fines containing uranium to be discharged from the Ash Vacuum Cleaner. Due to the proximity of the Ash Vacuum Cleaner discharge stack and the inlet plenum to the building ventilation, some of the discharged material was entrained by the ventilation system and discharged throughout the FMB. The Ash Vacuum Cleaner filter elements (part number 400-3209-GV, model number TA-625) are made by BHA Group, Inc. The filter elements within the unit had been in service since April 2003.

At approximately 0918, from outside the FMB, a dust plume was noted coming from the Ash Vacuum Cleaner discharge. At approximately the same time, personnel inside the FMB noted dust discharging from the building ventilation system registers. The Ash Vacuum Cleaner was shut down at approximately 0920. On-scene supervisors and operating personnel recognized the potential for airborne radioactivity and immediately required respiratory protection for all personnel in the building. Special bioassay samples were required for 19 people who were present in the building during the occurrence. The results of the special bioassays indicated no uptake of radioactivity by the personnel sampled. Fixed air samplers analyzed after the event on all floors indicated air activity between 5×10^{-11} $\mu\text{Cu/ml}$ and 60×10^{-11} $\mu\text{Cu/ml}$. Respiratory protection is required at floor averaged airborne activity levels of $\geq 5 \times 10^{-11}$ $\mu\text{Cu/ml}$. Air samples taken and contamination surveys performed downwind on-site and off-site indicated background levels. Cleanup of the granular dust material in the FMB was begun immediately.

An investigation, including physical disassembly of the Ash Vacuum Cleaner filter, was conducted. Three of seven filter cartridges were found to have deformed gaskets at the tube sheet area allowing dust and filter fines to bypass the cartridges. The remaining four cartridges were inspected and found to have the expected seal between the filter cartridge and the tube sheet. No evidence of improper installation was noted. The exact cause of cartridge failure is still under investigation. No instrumentation was previously

installed to provide differential pressure readings across the Ash Vacuum Cleaner system. Therefore, filter cartridge loading may have been excessive causing a high differential pressure leading to filter gasket deformation and effluent bypass. Additionally, filter cartridge replacement was based on past experience rather than quantitative measurement of filter loading.

(2)(ii) *The exact location of the event.*

The high airborne radioactivity throughout the FMB was initiated as a result of the failure of the Ash Vacuum Cleaner filter on the sixth floor of the FMB in the Honeywell-MTW facility at Metropolis, IL.

(2)(iii) *The isotopes, quantities, and chemical and physical form of the licensed material involved.*

The isotope released was U^{238} . The material was granular UF_4 . From the airborne contamination, an estimated 515 grams of U^{238} was discharged from the system. The amount of material released from the Ash Vacuum Cleaner system was not specifically determinable as no measurement of weight accumulation within the filter bodies is taken or required.

(2)(iv) *Date and time of the event.*

This event occurred at 0918, July 25, 2005.

(2)(v) *Corrective actions taken or planned and the results of any evaluations or assessments.*

The following actions have been taken or are planned in response to this event:

1. The radioactive contamination resulting from this release was cleaned from the FMB and airborne radioactivity levels returned to less than actionable levels at 1030 on July 26, 2005. COMPLETE
2. Following the release, appropriate radiological surveys were conducted in downwind areas, both on-site and off-site. No surface contamination or airborne contamination above background levels was found. Perimeter air samplers were analyzed and no radioactivity above background levels was found. COMPLETE
3. Differential pressure instrumentation has been added to the Ash Vacuum Cleaner system. This instrumentation will provide high and low differential pressure visible and audible enunciators at the Human-Machine Interface in the FMB Control Room to monitor filter effectiveness and to alert operations personnel of filter problems. COMPLETE
4. The inlet plenum of the FMB ventilation system and the discharge stack for the Ash Vacuum Cleaner system will be separated to preclude discharged Ash Vacuum Cleaner filter stack effluent from returning into the FMB via the ventilation system, in the event of recurrence of filter cartridge failure. ECD: During the annual shutdown (currently scheduled for 2Q06)

(2)(vi) *The extent of exposure of individuals to radiation or to radioactive materials without identification of individuals by name*

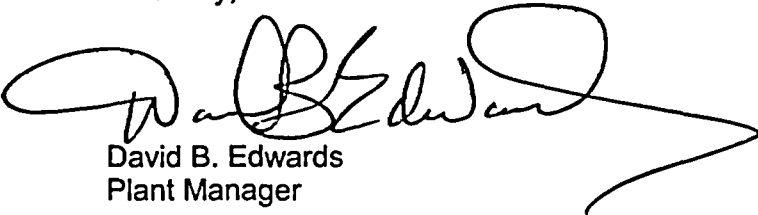
Following the release, special bioassay samples were collected from all 19 people who were present in the building during the occurrence. The most significant bioassay result was 9 µg/L which results in an exposure of < 10 mrem (CEDE).

Fixed air samplers on each floor in the FMB analyzed after the event, indicated air activity between 5×10^{-11} µCu/ml to 60×10^{-11} µCu/ml. The building floor average was 6×10^{-11} µCu/ml. Respiratory protection is required at a floor average of $\geq 5 \times 10^{-11}$ µCu/ml.

NRC Region II (D. Hartland), NRC HQ (M. Raddatz) and NRC Regional Inspector (R. Gibson) were notified following the event.

Further questions regarding the above report can be directed to Mr. Jack Riley, Regulatory Affairs Manager, Interim, at 618-524-6330 or Mr. Darren Mays, HS&E Manager, at 618-524-6396.

Sincerely,



David B. Edwards
Plant Manager

Cc: Regional Administrator
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