

Specialty Materials

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November 22, 2005

U.S. Nuclear Regulatory Commission
Director, Office of Nuclear Material Safety and Safeguards
Attention: Document Control Desk
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(UPS: 301-415-8147)

Subject: 30-Day Written Follow-up Report to NRC Event Number #42083 Reported
October 26, 2005 to the NRC Operations Center
Docket No. 04003392, License No. SUB-526

Honeywell Chemicals, Specialty Materials, Metropolis Works (MTW) facility reported to the NRC Operation Center as per 10 CFR 21 a failure to follow the procedure related to the installation of fill valves in UF₆ cylinders resulting in a violation of the ANSI Standard for UF₆ Cylinders. This letter is a required follow-up report to address specific items required by the regulations.

NRC Event Number #42083 dated October 26, 2005, reported:

Metropolis Works, Metropolis, Illinois (Uranium Conversion Facility) is reporting a failure to follow the procedure related to the installation of valves in UF₆ cylinders.

A violation of ANSI Standard N14.1 (2001) "Uranium Hexafluoride Packaging for Transport", Section 6.14.6 was reported 26 October, 2005. This is a reportable event because it is a violation of an applicable national standard and also an action outside licensee's procedures. ANSI N14.1 (2001) 6.14.6 states, "No material of any kind other than the specified solder shall be used on the threads to facilitate installation [of cylinder valves into the UH6 type 48Y cylinders]." Contrary to that standard, MTW site maintenance personnel did use Teflon spray to facilitate installation of cylinder valves into type 48Y cylinders. Use of a thread lubricant, such as Teflon, can be expected to increase the degree the valve threads are engaged for a given torque. Teflon is a fluorinated compound and is not a chemical hazard in contact with UF₆.

[NOTE: The referenced subsection for this report was originally incorrect. The correct referenced subsection is 6.12.6 which states "No material of any kind other than the specified solder shall be used on the threads to facilitate installation" referring to valve and plug installation in the 48Y UF₆ Shipping Cylinders.]

This issue was discovered when USEC inspectors noted white residue around cylinder valves previously replaced by the licensee when those valves were later replaced by the cylinder manufacturer. Analysis of the residue showed it was Teflon. USEC notified the licensee of the finding October 25, 2005. Interviews with maintenance workers disclosed

that Teflon had been used when replacing some cylinder valves. The licensee is investigating the quantity and type of cylinders that might have been subjected to Teflon during valve replacement. Notification of all customers that might have received cylinders with valves installed with Teflon is in progress.

The licensee has notified Region II (D. Hartland).

10 CFR 21.21 (d) (4) Written 30-day follow-up report required:

- (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;*

A violation of ANSI Standard N14.1 (2001) "Uranium Hexafluoride Packaging for Transport", Section 6.12.6 was reported October 26, 2005. This is a reportable event because it is a violation of an applicable national standard and also an action outside licensee's procedures. ANSI N14.1 (2001) 6.12.6 states, "No material of any kind other than the specified solder shall be used on the threads to facilitate installation [of cylinder valves into the type 48Y UF₆ cylinders]." Contrary to that standard, MTW site maintenance personnel used Teflon spray to facilitate installation of cylinder valves into type 48Y cylinders. Use of a thread lubricant, such as Teflon, can be expected to increase the degree the valve threads are engaged for a given torque. Teflon is a fluorinated compound and is not a chemical hazard in contact with UF₆.

This issue was discovered when USEC inspectors noted white residue around cylinder valves previously replaced by the licensee when those valves were later replaced by the cylinder manufacturer. Analysis of the residue showed it was Teflon. USEC notified the licensee of the finding October 25, 2005. Interviews with maintenance workers disclosed that Teflon had been used when replacing some cylinder valves over more than 15 years. The valve threads were started by hand in the cylinder valve coupling and the Teflon was sprayed onto the remaining exposed threads prior to applying torque with a wrench.

The licensee is investigating the quantity and type of cylinders that might have been subjected to Teflon during valve replacement. Notification of all customers that might have received cylinders with valves installed with Teflon is in progress.

An investigation of this event has determined the cause to be management's failure to adequately implement upper tier requirements of the ANSI Standard into local procedures to be used by the workers, in that, ANSI N14.1-2001, "Uranium Hexafluoride – Packaging for Transport", Section 6.12, 48Y Cylinder, subsection 6.12.6, Valve and Plug Installation, states in part: "No material of any kind other than the specified solder shall be used on the threads to facilitate installation." This requirement was not implemented in the procedure set used to install or replace fill valves in the UF₆.

- (ii) *The exact location of the event;*

The event occurred at the Honeywell-Metropolis Works Facility, Highway 45N, Metropolis, IL 62960

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

The isotopic constituents are natural uranium, with each cylinder containing ~8,200 kg (~18,400 lbs) of uranium in the UF₆ chemical form, solidified in the cylinder.

(iv) Date and time of the event

USEC reported their laboratory analysis results to Honeywell-MTW on October 25, 2005. The event had been occurring intermittently over more than 15 years whenever a valve installation was hindered by what was identified as rough thread engagement.

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

Since identification of the problem the following additional actions have been taken:

- a. Shipping of any full cylinders that could be contaminated with Teflon has been stopped.
- b. The practice of utilizing any thread sealant/lubricant other than the ANSI N14.1 required thread tinning has been stopped.
- c. Interviews of mechanics performing valve installations determined that no other thread sealants/lubricants other than the Teflon spray have been utilized.
- d. The US Department of Transportation (DOT) has been notified and asked to consider a ruling of the ANSI Standard allowing the shipping of empty (heeled) cylinders back to the licensee before the valves are replaced.
- e. Customers utilizing cylinders in which Honeywell-MTW replaced the fill valves have been notified.
- f. A formal request for change has been made to the ANSI N14.1 Subcommittee to consider removing the prohibition against the use of thread sealant/lubricants that are UF₆ compatible from the Standard for 48Y series cylinders.
- g. Total Teflon retained on the threads of a fill valve has been determined to be <0.1 grams of material.
- h. Procedures will be modified to include the prohibition of the use of thread sealants/lubricants until, and if, the ANSI N14.1 Subcommittee approves and reissues the Standard with an allowance for the use of UF₆ compatible thread sealant/lubricants.

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

No radiation exposure or exposure to radioactive materials resulted from this error. Exposures received were part of the normal occupational exposure resulting from proximity to the UF₆. All personnel involved were participants in the occupational exposure monitoring conducted at Honeywell-MTW.

No report of any detrimental or deleterious effects attributable to the presence of the Teflon have been reported over the 15 year period during which this event has occurred.

Another update will be provided in approximately 30 days.

Sincerely,

BA Vandermeulen for David B. Edwards

David B. Edwards
Plant Manager

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