

Date Tue, 22 Feb 2000 131512 -0700  
From Meredith Brown [racer@lanl.gov](mailto:racer@lanl.gov)  
Subject: Blue Alert- Hazard Considerations for Process Lines

**Title- Blue Alert- Small Quantity of Mercury Discovered During Decommissioning Operations**

Identifier 2000-OH-WVNS-004 Date 1/27/00

**Summary-** Personnel generating and reviewing work instructions need to evaluate all potential hazards when cutting into process lines. Consideration should be given to telltale and sample the process lines prior to cutting to address not only radiological contamination levels, but also chemical hazards. Effective application of Integrated Safety Management Core Functions, 'Analyse Hazards', could prevent similar incidents from occurring.

**Discussion-** On 1/12/00, two operators were cutting and removing radiologically contaminated process lines, when a small amount of water and approximately 8 to 10 beads of mercury (approximately 1 mm in diameter) came from the lines. (The lines carry distillate from a Liquid Waste Treatment System (LWTS) evaporator, through an in-line radiation monitor, and to other parts of the processing system. The evaporator is used to reduce radioactive liquid waste volume.) Further investigation found that there was evidence of mercury in a drain (underneath a valve) in the system. (There were some wipes in the drain that were stained with what appeared to be mercury.)

**Analysis-** During subsequent process line removal, two quantities of approximately ½ teaspoon and 1 teaspoon was found in the lines. Although the exact source and transport method of the mercury is indeterminate, it's currently thought that the mercury could have come from deposition from process flows. Ionic mercury may have carried over with the evaporator condensate (perhaps as a volatile organomercury compound) where it was reduced to elemental mercury (perhaps by catalysis at the titanium surfaces of the evaporator, or by reaction with sulfide in the condensate).

**Resolution-** Work was stopped, and the cut ends of the line were plugged with rubber stoppers. Actions were initiated to monitor the individuals who were potentially exposed to mercury. (Precautionary blood samples of the exposed individuals were voluntarily proposed to all 8 workers who could have been exposed. The results are pending.) Air monitoring for mercury was conducted and airborne concentrations were found to be below the Threshold Limit Value.

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Contact Edward Lachapelle (716) 942-2117  
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