

# Project Hanford Lessons Learned

**Title:** Worker Injured While Moving Forklift Tines

**Date:** December 9, 2005

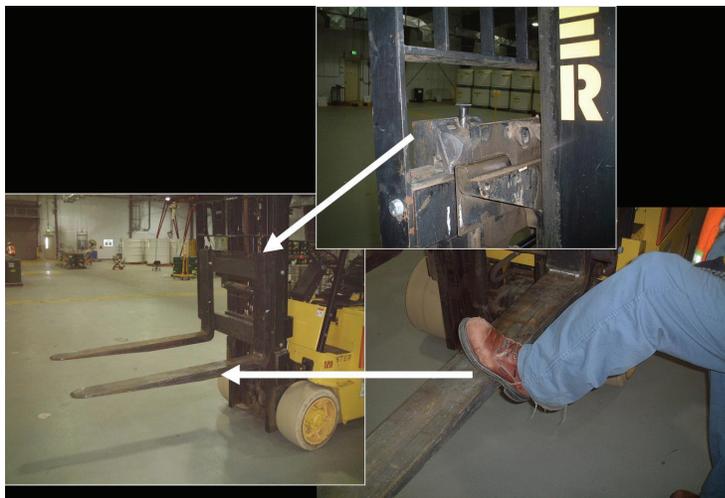
**Identifier:** 2005-RL-HNF-0042

## Lessons Learned Summary:

Repositioning forklift tines with hands and feet may be a common task; however it does present an opportunity for injury. Workers should be aware of the hazards associated with moving forklift tines and the proper methods used to prevent injury. Tilting the forklift mast away from the truck and using a second person to balance the end of the tine, reduces the weight (friction) on the tine and enables easier and safer movement.

## Discussion of Activities:

On October 21, 2005 a worker at the Waste Receiving and Packaging facility (WRAP) was preparing to use a forklift to transport a Solid Waste Box (SWB). The worker had to adjust the forklift tines to fit the SWB. The worker attempted to adjust the forklift tines to the required position by removing the locking pin, pushing on the top (vertical part) with his hands, and by applying force to the lower horizontal part with the arch/in-step of his boot. The worker applied force to the tine twice, but it did not move. On the third try, the impact landed on the toe section of the boot causing awkward leg extension and injury to the worker's calf muscle. The use of hands and feet to reposition forklift tines is a common practice in WSD facilities.



Top arrow-mast angle

Bottom arrow-foot placement

## Analysis:

Investigation of the event indicates that use of hands and feet to reposition tines on 5K forklifts had been a common practice at Waste Stabilization and Disposition (WSD) facilities. The WRAP facility had recently started using a 12K forklift to move SWBs and Ten Drum Over-Packs (TDOPs). The tines on the 5K truck weigh 120 lbs. while the tines on the 12K truck weigh 350 lbs. Because more force is required to move the heavier tines, applying the work practice used for movement of the tines on the 5k forklift was not a practical or safe method. It

was also concluded that movement of even the lighter weight tines by one person is potentially a unsafe practice.



5K Forklift-back

12K forklift-front

The use of the 12k forklift also increased the frequency of repositioning the forklift tines to accommodate the different configuration of the waste containers. The equipment was not well-lubricated, which increased the difficulty in repositioning the tines. The vendor manual does not provide specific direction on re-positioning the tines. Current forklift training does not include direction for re-positioning the tines.

WRAP determined that by tilting the forklift mast away from the truck, some of the weight (friction) was reduced on the forklift tines, which increased the ease of movement. Use of a second person to balance the end of the tine during repositioning also facilitates the ease of movement.

### **Recommended Actions:**

1. Methods such as tilting the mast away from the truck and the use of a second person to assist with movement of forklift tines should be considered. These methods should be also incorporated into forklift training programs.
2. Workers should inspect the forklift tines for proper lubrication before attempting to move them and, if lubrication is needed, contact the appropriate personnel. A more frequent maintenance schedule may be required for forklifts used in outdoor environments to ensure that the lubrication is properly maintained.
3. Evaluate all hazards associated with changes in operations, including equipment changes that could increase the potential risk to the worker.

**Estimated Savings/Cost Avoidance:** Not determined

**Priority Descriptor:** Yellow/caution

**Work / Function:** CONOPS - General

**Hanford Functional Categories:** Associated Causal Factors - N/A

**Hazard:** Personnel Injury - Mechanical Injury (Striking Crushing)

**ISM Core Function:** Analyze Hazards

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**References:** None