



## Hanford Operating Experience Program

December 17, 2013

### Lessons Learned

2013-RL-HNF-0028

#### Shipment of Drums Must Address Controls for a Unitized Payload

##### SUMMARY:

Although the tie down for a payload appeared to be DOT compliant, it did not have sufficient controls to compensate for a unitized load (composed of single items consolidated into units).

**Lesson Learned:** Evaluation of a unitized load was not addressed by shipment procedures or associated checklists.

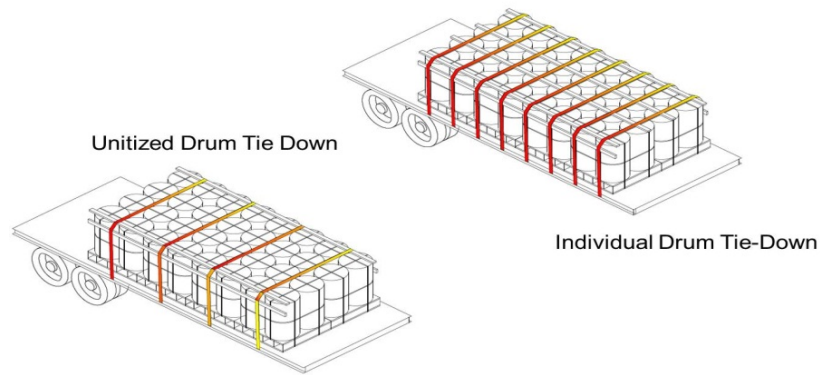


##### DISCUSSION:

The Effluent Treatment Facility (ETF) was shipping two loads of low-level waste drums to an off-site treatment facility prior to disposing of the drums at the Environmental Restoration Disposal Facility (ERDF). Upon departing ETF, the driver began braking at the railroad tracks on Route 11A and felt a surge. All eight drums from the first two pallets had slid off the pallets. Five drums were on the ground and three were in the carriage between the tractor and trailer. All other drums slid from their original pallets to the next pallet forward. None of the drums were breached and there were no personnel injuries. While the shippers had verified controls to keep the pallets stable, controls were insufficient to prevent the individual drums from dislodging.

##### ANALYSIS:

The configuration of the load created additional conditions which needed to be compensated for by the tie-down. The drums were placed on plastic pallets and banded using plastic banding. Additional controls could have been applied which could have prevented the drums from moving during shipment (i.e., friction mats, additional strapping, bulkheads, covered conveyances). The load was treated as a collection of pallets, and the shippers' focused on preventing the pallets from moving. In actuality, the load was an array of single units (drums) consolidated onto pallets. The development of the tie-down did not recognize that the unitized load still had vulnerabilities. Treating the shipment as a unitized load may have increased the recognition of the need to compensate for plastic banding and plastic pallets.



Although DOT regulations and training discuss unitized loads, there are no specifications provided for how to perform a tie-down for a unitized load of drums (there are some provided for piping and other types of unitized loads). The CHPRC off-site transportation program does not contain processes for unitized loads.

### RECOMMENDATIONS – to prevent recurrence

- Develop shipping procedures and associated checklists to include the following:
  - Materials used to unitize the payload (e.g., pallets, banding)
  - Method of securement to pallets
  - Coefficient of friction
  - Evaluation of conveyance type

### REFERENCES:

EM-RL—CPRC-200LWP-2013-0001, Near Miss Transportation Incident

### CONTACTS

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