

Date: Thu, 01 Apr 1999 13:02:36 -0700
From: Meredith Brown <racer@lanl.gov>
Subject: Yellow Alert: Hazard Identification Prevents Injury

Title: Hazard Identification Prevents Injury from Pressurized Empty 55 Gallon Open-Top Drum

Identifier: 1999-NV-ITLV-0101 Date: 3/31/1999

Lessons Learned Statement: Empty drums sealed at a lower elevation and transported to a higher elevation can become pressurized. When the drum lid clamp is loosened or removed, the lid can be forcibly ejected. Implementation of Integrated Safety Management (ISM), training, and engineering controls can prevent injuries.

Discussion of Activities: At the Nevada Test Site, a waste handler was opening new, empty 55 gallon open-top drums. Upon removing the bolt from the drum lid clamp, the ring blew off and the lid was ejected approximately 5 to 10 feet in the air, just missing the Waste Handler's face. The drum did not hiss or show signs of pressurization. Because the Waste Handler had been properly trained to stand away from the drum while opening it, he was not injured. The site safety officer addressed this issue on subsequent daily safety briefings. As a corrective action, he instructed the field crew to place new empty drums on their side, facing away from everyone and everything before opening them for the first time.

Analysis: The event was caused by the drums being manufactured and sealed at sea level in Los Angeles and subsequently shipped to a much higher elevation of approximately 6,000 feet at the Nevada Test Site. The increased elevation, combined with the midday heat, created sufficient pressure buildup to cause the lid to blow off when the ring was being released.

By implementing the 5 ISM Core Functions as follows, a serious injury was avoided:

- o Define Scope - During the planning phase, it was determined that drums would be used to contain waste and a Waste Handler was assigned to the job.
- o Analyze Hazards - Potential hazards associated with drum handling, including pressure buildup, were identified.
- o Develop & Implement Hazard Controls - Controls were instituted and the Waste Handler was trained on the proper methods of drum handling. The Waste Handler was alerted on the hazards and given a list of specific actions to perform.
- o Work Within Controls - The Waste Handler performed his duties as trained and, as a result, averted an injury.
- o Provide Feedback and Continuous Improvements - Subsequent to this event, the Site-Safety Officer

reassessed the hazards and instituted additional controls as a precaution.

Recommended Actions: The hazards and controls for drum handling were reevaluated and Lessons Learned involving pressurized empty drums reviewed. As a result of this investigation, the following corrective actions are being implemented:

- o Engineering controls are being evaluated and lid-restraining devices will be obtained.
- o Existing plans and procedures were reviewed for adequacy. The Site-Specific Health and Safety Plan has been revised to include additional safe Drum Handling practices.
- o All drums will be considered pressurized and handled accordingly.
- o Drums will be placed on their side prior to venting if a lid-restraining device is not available.
- o A training video "Bulging Drums" was ordered from Los Alamos National Laboratory.
- o This Lessons Learned was written and circulated to all projects within the organization.

Estimated Savings/Cost Avoidance: \$3,000 based upon preventing a lost work day case.

Priority Descriptor: Yellow/Caution

DOE Functional Category: Worker Safety

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References: Operating Experience Weekly Summary 98-21