

Date: Tue, 01 Aug 2000 15:08:59 -0600  
From: Meredith Brown <racer@lanl.gov>  
Subject: Yellow Alert: USQ for Potentially Shock-Sensitive Chemicals

**TITLE: Yellow Alert-Discovery of Potentially Shock-Sensitive Chemicals Results in Unreviewed Safety Question**

IDENTIFIER: Y-2000-OR-BJCETTP-0701 DATE: July 7, 2000

**LESSON LEARNED STATEMENT:** Organizations that use or store chemicals must ensure controls are in place to ensure the chemicals are discarded prior to expiration of the shelf life to prevent the chemicals from becoming unstable (shock sensitive).

**DISCUSSION OF ACTIVITIES:** During planning activities for the repackaging of chemicals in K-1025-C, potential hazards related to shock-sensitive chemicals were identified. A visual inspection of the chemicals by a subject matter expert identified two chemicals that had exhibited some crystallization, which caused these chemicals to become potentially shock sensitive. The safety basis document for K-1025-C did not evaluate the storage of potentially shock-sensitive chemicals. This as-found condition resulted in an Unreviewed Safety Question (USQ) which revealed an inadequacy in the approved safety authorization basis for K-1025-C. Access to the facility was immediately restricted, and development of a recovery/mitigation plan was initiated. A month later, during a management walkdown of the K-711 facility, a chemical inventory list attached to a container previously lab packed at another site revealed the presence of tetrahydrofuran, which has been identified as shock sensitive. It was also discovered that perchloric acid and MEK peroxide were also stored in K-711. Access to the facility was immediately restricted until further notice.

**ANALYSIS:** The development of the safety authorization basis documents for these buildings did not evaluate the potential for certain chemicals stored in these facilities to become shock sensitive over a period of time. Because the safety basis documents did not address this condition, controls were not put into place to address this potentially hazardous condition. Unreviewed Safety Question Determinations (USQDs) were completed and identified this "as-found" condition as a condition not previously addressed in the safety authorization basis document. Placement of these materials into storage pending disposition where the shelf life expired while awaiting disposition has created a changing condition, which threatens the safety of personnel and the environment. Compensatory measures have been implemented to mitigate the hazard to personnel and the environment pending treatment and disposal of the material.

**RECOMMENDED ACTIONS:** Controls should be established for purchasing and using chemicals that become shock sensitive upon expiration of a manufacturer's recommended shelf life. These controls should include establishing a program to consolidate and minimize procurement of such chemicals, establish a tickler system to warn generators prior to expiration of shelf lives, conduct inspections of stored material at preset frequencies, and/or storage of such material in clearly identified areas. These actions will preclude the material from becoming a hazard to personnel and the environment. Contingency controls should also be used in the event the above actions fail to identify a material prior to expiration of the shelf life. Contingency

controls should include storage of material in clear containers with non-metal lids and having prepared plan of action, authorized storage capacity and procedures to deal with materials that become shock sensitive.

**PRIORITY DESCRIPTOR:** Yellow/Caution

**FUNCTIONAL CATEGORY (S) (DOE):** Environmental Restoration & Waste Management;  
Conduct of Operations

**BJC TREND CODE (S) (USER-DEFINED):** WM - Waste Mgmt; OP - Conduct of Operations;  
PC - Planning & Controls

**ORIGINATOR:** Bechtel Jacobs Company, LLC; E. J. Lavender; Legacy Waste Project

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**KEYWORDS:** shock-sensitive; chemicals; Unreviewed Safety Question Determinations;  
tetrahydrofuran ; perchloric acid; MEK peroxide; Unreviewed Safety Question

**REFERENCES:** Occurrence Report Number: ORO--BJC-K25WASTMAN-1999-0022

**HAZARDS:** Other

**WORK ACTIVITY:** Material Storage

**ISMS CODE:** Analyze Hazards

**FOLLOW-UP ACTION:** Information in this report is accurate to the best of our knowledge. As means of measuring the effectiveness of this report please notify Joanne E. Schutt at (865) 483-0554, e-mail at [schuttj@pwtor.com](mailto:schuttj@pwtor.com) of any action taken as a result of this report or of any technical inaccuracies you find. Your feedback is important and appreciated.