Date: Thu, 21 Jan 1999 09:50:30 -0500
From: "Eubanks, Cynthia M. (EUB) " <eub@bechteljacobs.org>
Subject: Yellow Alert: PCB Container Event in the PCB Storage Facility

The following Bechtel Jacobs Company, LLC Lesson Learned Yellow Alert was generated as a result of an incident that occurred at the Portsmouth Project. It should be shared with other facilities and operations that are involved in the storage of waste containers. If you have any questions, please contact Joanne Schutt at (423)574-1258, e-mail=s6u@ornl.gov

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TITLE: PCB Container Event in the PCB Storage Facility

IDENTIFIER: Y-1999-OR-BJCPORT-0101 DATE: January 4, 1999

LESSONS LEARNED STATEMENT: The effects of biodegradation and ambient temperature changes on containers of waste can present significant safety concerns for personnel working in storage areas. Close attention should be paid when filling containers with damp material. Workers should be reminded that absorbent and biodegradable materials may contain enough moisture to create free liquid when collected in a drum. Close scrutiny of containers should be observed by those receiving waste for storage when the Request For Disposal indicates that decontamination liquids are present in normally dry material.

DISCUSSION: During a self assessment of a PCB storage facility the project engineer discovered personal protection equipment (PPE) lying on the concrete floor in an aisle way. He noticed a lid had become unsealed from a 55-gallon drum exposing the contents. The 55-gallon drum was located on the middle pallet of the three-tiered palletized stack. The project engineer immediately reviewed the drum labeling, secured the surrounding area, and called Waste Management for support. Health Physics and Industrial Hygiene surveys were performed. No radiological contamination was found. The container was isolated, the loose PPE was placed in an empty drum, and new lids were placed on both drums. Other containers in the facility were checked for evidence of pressurization, however, none were identified. The container contents was sorted, sampled, and re-packaged. Smears were taken in the spill area per PCB spill response criteria and a spill report was initiated. The affected drum contained a variety of biodegradable materials including mop heads, absorbent pigs, PPE, water, Techstract PCB Clean, kerosene and PCBs. The drum was stored for approximately ten months and prior to failure was exposed to elevated temperatures. After the drum failed, its contents were examined, sorted, and set out to dry. Identifiable odors indicated the presence of mold/mildew and ammonia, suggesting bacterial action. An aqueous layer was present. Samples of the water were taken for analysis.

ANALYSIS: The direct cause was determined to be External Phenomena, weather or ambient condition based on the following: The pressure from PCBs, kerosene, and water would be too low to cause drum distortion or failure at the storage temperature. Pressurization was therefore caused by a different mechanism. Sampling results documented that the water phase was saturated with carbon dioxide, and had high ammonia content concluding the storage conditions were favorable to aerobic and anaerobic bacterial growth. Aerobic bacteria prefer acid

environments. The PCB cleaner, Techstract PCB Clean, is acidic and is suspected of favoring initial aerobic bacterial growth resulting in carbon dioxide pressure. As the oxygen was consumed, the aerobic population would be expected to decline and be replaced by anaerobic bacteria which produce methane, more carbon dioxide and ammonia. The added methane and carbon dioxide would increase the drum pressure. The sampling results support this conclusion.

The contributing cause was determined to be Procedure Problem, defective or inadequate procedure. The procedure was inadequate in addressing free liquids in PCB solids waste stream with respect to DOE waste acceptance criteria.

The root cause was determined to be Management Problem, policy inadequately defined/disseminated/enforced. Management did not ensure that support organizations adhere to the requirements identified in the waste acceptance criteria.

RESOLUTION/RECOMMENDED ACTIONS: Informed the waste generator of the Waste Acceptance Criteria for DOE Storage Facilities. Specifically address the issue of no free liquids in the PCB solids waste stream prior to storage in DOE facilities. Containers with free liquids will be returned to the generator.

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PRIORITY DESCRIPTOR: Yellow/Caution
KEYWORDS: 55-gallon drum, Biodegradable materials, PCB
REFERENCES: ORO--BJC-PORTENVRES-1998-0006
DOE FUNCTIONAL CATEGORIES: Environmental Restoration and Waste Management
BJC FUNCTIONAL CATEGORIES: WM - Waste Management
HAZARDS: Environmental
WORK ACTIVITY: Material Storage

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 (423)574-1248, e-mail at s6u@ornl.gov of any action taken as a result of this report or of any technical inaccuracies you find. Your feedback is important and appreciated.