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From: Meredith Brown <racar@lanl.gov>
Subject: Yellow Alert: Manhole Cover Flaw Causes Accident

Title: Manhole Cover Design Flaw Causes Accident

Identifier: LBNL-1999-0001

Date: Jan. 27, 1999

Lesson Learned Statement: Manhole covers that do not have proper hook holes can be difficult to remove and pose a hazard to personnel who are removing them. While most manhole covers have lifting hook holes, some older designs only have U-shaped slots along the perimeter edge. The trade standard technique of removing a cover consists of inserting a hook through the hole, lifting the cover slightly, then dragging it off the manhole. With only slots on the outer edge of the cover, there is no positive purchase point available for a hook. A prying device or hook can easily slip, allowing the cover to drop. DOE facilities should recognize this hazard and arrange to have the older covers drilled out, and implement safe procedures for lifting manhole covers.

Discussion of Activities: On January 4, 1999, a Data Communications Technician suffered a severe laceration, eventually requiring 70 stitches, to the top of his right middle finger when a manhole cover he was attempting to lift slipped, pinching the fingertip. He was immediately transported to LBNL Medical Services by the Facilities Coordinator with whom he was working. He was sent to the hospital, where he was treated and released the same day.

Analysis: In addition to the design problem noted above, the following contributing causes were identified:

A. Lack of Personal Protective Equipment (PPE). The victim was barehanded at the time of the accident. Use of work gloves would not have changed the sequence of events, but may have lessened or eliminated the injury.

B. Lack of training and authorization. Working directly with manhole covers was not a recognized component of this employee's responsibilities. No employee should attempt to perform tasks outside of their normal work unless they are specifically authorized to do so by their supervisor. It is the supervisor's responsibility to ensure that employees under his supervision are appropriately trained and qualified.

C. Lack of Procedures. The Division has no specific procedures for this activity. Normally, such a procedure would include the following items, none of which were adequately addressed at the time of the accident:

1. Identification of the hazard.

2. Specific Cautions, e.g., never place any body part under a suspended cover.
3. Manpower requirements
4. Personal Protective Equipment
5. Tool selection and usage

Recommended Actions:

1. Manhole covers without lifting holes should be drilled or punched to provide for safe lifting.
2. Procedures for the safe removal of manhole covers should be developed.

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Priority Descriptor: Yellow

DOE Functional Category: Occupational Safety and Health, Safety

User- Defined Functional Category: Occupational Safety and Health

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