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Subject: Blue Alert: PPE Selection and Personnel Contamination

The following Lesson has been issued by the ORNL Lessons Learned Program.

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**TITLE: Improper Personnel Protective Equipment (PPE) Selection Contributes to Skin Contamination**

IDENTIFIER: B-1999-OR-LMERX10-0302 DATE: March 30, 1999

**LESSONS LEARNED STATEMENT:** Improper Personnel Protective Equipment (PPE) selection may contribute to skin contamination and worker exposure. Establishing a formal PPE approval program should ensure proper PPE is used.

**DISCUSSION:** Radiological work was being performed with californium-252 in a glove box laboratory when skin contamination occurred. After a bagout operation from the glove box, contamination was found on the nitrile gloves used as PPE. The work was conducted under a Radiological Work Permit (RWP) requiring gloves, laboratory coat, and shoe covers as PPE. The glove was torn during doffing and skin contamination was found on the palm of the worker. The tear in the glove was in a different area of the hand and was not believed to contribute to the skin contamination. The contamination was removed from the worker's skin by a Radiological Control Technician with soap and water.

**ANALYSIS:** The source of the contamination found on the glove was a small pin hole in the glove box bagout plastic. The pin hole in the plastic was addressed by other corrective actions. The gloves used for this operation had recently been changed to the thin short cuff nitrile glove rather than the standard thicker long cuff latex glove. The gloves were selected because they are thinner and provided better "feel" for the individual conducting glove box operations. Although the type glove was reviewed by the radiological control supervisor in the area and the short cuff was identified as an issue, the glove was not prohibited from use in radiological work. The short cuff design and the tight fit makes this glove difficult to doff without resulting in skin contamination. The short cuff also did not allow the glove to be taped to the laboratory coat to ensure no gap existed in the PPE.

**RESOLUTION/RECOMMENDED ACTIONS:**

1. The use of the short cuffed thin nitrile glove was discontinued. The more conventional thicker long cuff latex glove was returned to general use in the facility where the contamination occurred..
2. A formalized PPE program was established for the facility. The program includes a PPE coordinator to coordinate procurement, receipt inspection and stocking of PPE. The program also requires approval of all new types of PPE by the Area Radiological Control Supervisor and the Facility Manager before use.

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PRIORITY DESCRIPTOR: Blue / Information

DOE Functional Category: Occupational Safety and Health

LMER Functional Category: Safety and Health

KEYWORDS: skin contamination, Personnel Protective Equipment (PPE), gloves

REFERENCES: ORO--ORNL-X10REDC-1998-0012

**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 Connie Arnwine at 423-241-3134 or e-mail a93@ornl.gov of any action taken is a result of this report or of any technical inaccuracies you find. Your feedback is important and appreciated.