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Subject: Blue Alert: Aging Glovebox Gloves

BLUE ALERT

TITLE: **Lessons Learned for Technical Standards for Aging Gloves**

IDENTIFIER: LA-98-079.IO
DATE: July 31, 1998

LESSONS LEARNED:

*A surveillance program for all primary containment system components should be maintained for all systems containing nuclear material, those in-service as well as those out-of-service and waiting to be decommissioned.

*With operations changing at many facilities using nuclear materials in gloveboxes, standards for shelf life and maximum useful life of glovebox gloves and other polymeric material used on glovebox should be established

DESCRIPTION:

Rocky Flats shut down production operations in December 1989 and the events that took place after that resulted in a large number of processes to set idle for many years. Some of the processes have never been restarted and are setting idle today. One of the results of the change in operations was the way glovebox gloves, and other glovebox components were monitored. Up until 1992, gloves were changed on a scheduled basis that varied from 6 months to 72 months depending on the operations taking place in the box. In 1992 the program monitoring glovebox gloves was discontinued which left a large number of gloveboxes unmonitored for glove integrity. Since glovebox gloves (as well as boots and O-ring bags) are use as a primary containment for nuclear material, this created a potential safety hazard to workers working around (or in) these gloveboxes.

ANALYSIS:

With the glovebox operations at a minimum and the glove change program no longer used, glove usage went down drastically causing the age of the warehouse stock to increase. Using older gloves was evaluated based on changes in tensile properties of the gloves and concluded that gloves up to 10 years old could be used to replace deteriorated gloves. Observations of veteran operations personnel indicated that the tear and puncture resistance of gloves may also be affected by glove age which would make older gloves more susceptible to failure during use than new gloves.

Preliminary evaluation of puncture and tear resistance of gloves performed at Rocky Flats indicate that this is true to some extent and these data should also be considered in establishing

the shelf life as well as a maximum useful life of gloves (and other polymeric glovebox components).

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DOE FUNCTIONAL CATEGORY: Radiological Protection
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FOLLOW-UP ACTIONS: Information in this report is accurate to the best of our knowledge. As a means of measuring the effectiveness of this report, please notify the contact of any action taken as a result of this report or of any technical inaccuracies you find. Your feedback is appreciated.