Date: Wed, 18 Feb 1998 10:22:01 -0700
From: Meredith Brown <racer@lanl.gov>
Subject: Green Alert: Electrical Shock Avoided

Title: **Potential Electrical Shock to Maintenance Personnel Avoided Due To Proper Grounding Of Modular Offices**

Date: October 2, 1997
Identifier: 1997-ABQ-WIPP-0001

Success Story Statement: As the result of lessons learned alert 1995-SR-WSRC-LL-0012, Modular Offices & Metal Skid Shacks Electrical Requirements, inspections were performed on modular offices having electrical service to determine if they were properly connected to the site grounding system. When a maintenance technician working under a modular office came in contact with a section of conduit that was energized by 110 volts, the technician was not injured because the office was properly connected to the site grounding system. Although all modular offices inspected were found to be properly grounded, the potential for finding an office that was not properly grounded was high due to the number of modular offices on site.

Discussion of Facts: On December 21, 1995, lessons learned alert 1995-SR-WSRC-LL-0012 was distributed through the DOE list server. The alert identified a significant personnel safety hazard concerning electrical system installation producing electrical shocks in modular offices (trailer type structures) and metal shacks. In January 1996, the lessons learned alert was distributed to the Waste Isolation Pilot Plant Electrical Safety Committee. The committee determined that the electrical grounding configuration of the numerous modular offices onsite was questionable. A number of the modular offices had been onsite for many years and confirmation of the grounding integrity could not be determined.

During the first quarter of 1996, a procedure was developed to test ground integrity from the site ground system to the modular office's electrical systems and to their metal frame/skins. All modular offices electrical systems were tested to verify that they and their metal frame/skin were connected to the site's ground system.

On July 8, 1997 a maintenance technician was sent to repair a water leak under a modular office. To gain access to the leak, the technician climbed through an access door in the metal skirting surrounding the modular office. The distance between the earth and the bottom of the modular office was approximately 24 inches. After repairing the leak, the technician was returning to the access door when his back came in contact with a ½ inch metal conduit containing 110-volt energized conductors. Contact with the conduit caused it to separate at a coupling pinching the electrical conductors against the sharp edges of the conduit. When the conductors came in contact with the sharp edges of the conduit, the electrical insulation was damaged resulting in an electrical arch. The technician was not shocked/injured because the fault current was dissipated through the frame of the modular office to the site ground system and the over current breaker opened as designed.

Benefits Realized:

1.The maintenance technician avoided a potentially dangerous electrical shock because the modular office was properly grounded.

2.Workman compensation costs, medical expenses, and other human resource expenditures were avoided because no injury occurred. 3.Engineering, maintenance, and management personnel developed an awareness on the importance of grounding systems on temporary structures.

Contact: Merl Rosenthal, Waste Isolation Pilot Plant, 505-234-8902, (fax) 505-885-4300, (email) ROSENTM@WIPP.Carlsbad.NM.US Reference: Modular Offices & Metal Skid Shacks Electrical Requirement, Identifier: 1995-SR-WSRC-LL-0012