

YELLOW ALERT - Electrical Shock

Lesson ID: Y-2008-OR-BWY12-0802 (Source: User Submitted)

Originating Organization or Contracting Company: B&W Y12 ORGANIZATION: Construction
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Classifier: C. A. Chandler Reviewer: C. A. Chandler

Statement: When using electrical equipment in a hot environment you must take into consideration the moisture on your hands and body and be particularly aware of what you may be in contact with (structural steel or some other grounded item) when handling electrical equipment

Discussion: A B&W Oversight Inspector, working on the HEUMF Project unplugged an energized extension cord from a power tool and began to reconnect it to a scissor lift cord. The Inspector had one knee on a dry concrete floor and had extended both arms through a structural steel frame in order to connect the cords. Using both hands, sweaty with no gloves, to connect these cords, he received a small shock to his left index finger which was holding the female end of the extension cord. Lift cord and extension cord were dry and the extension cord had red tape, indicating that it was up-to-date with the required inspections. The Inspector was in direct contact with the structural steel frame at the time he received the minor shock. The extension cord was plugged into a Ground Fault Circuit Interrupter (GFCI) outlet which tripped.

Analysis: The scissor lift had been left sitting next to structural steel within about one foot of the steel floor stanchions with the plug connect on the side of the stanchion. In order to plug the extension cord into the scissor lift the employee had to lean through the stanchion to reach the cord on the scissor lift. The cord length was not long enough to reach to the other side of the stanchion; therefore, the employee had to bring the extension cord through the stanchion to plug it in. This put the employee in an awkward position which prevented him from easily plugging in the scissor lift.

It was determined that the minor shock was probably due to the employee's hands being wet or damp from heat conditions in the building. The employee had inspected the extension cord prior to use. The scissor lift extension cord and GFCI were verified to have no electrical faults by an electrician.

Actions: Instruct all users of equipment that requires a cord to plug connections, to park these vehicles in an area that is accessible without having to reach through structural steel members. Structural steel is an excellent path to ground and should be avoided when performing energized electrical work of any kind. NFPA 70E addresses this situation in article 110.9(B)(4)(b) which

states in part that the "energized receptacle to plug connection shall be handled with protective equipment if the condition of the connection could provide a conductive path to the employee's hand".

In this case if the worker had leather gloves to protect his hands, he would have insulated himself from the electrical hazard. Every employee should be reminded during their safety meetings the importance of proper technique and PPE for plug to receptacle connection and the practice of leaning through a stanchion or reaching through a structured steel member is not permitted.

Savings:

Keywords: EXTENSION CORD, SCISSOR LIFT CORD, PLUG IN, Shock, GROUND
FAULT CIRCUIT INTERRUPTER

Hazard(s): Elevated Work / Falling Objects, Personal Injury / Exposure - Ambient Temperature
Extremes, Personal Injury / Exposure - Other, Power Tools

ISM Code(s): Analyze Hazards, Develop / Implement Controls, Perform Work

Work Function(s): Construction, Human Factors, Inspection & Testing

References: DR-2008-13

Priority Descriptor: Yellow / Caution