Case 272. 52-year-old welder died when he was pinned between a slowly revolving 30-foot long by 12-foot diameter cylindrical and the frame of the feed rollers rotating the tank as he was exiting feet first through a 24-inch diameter manhole opening.

A 52-year-old male welder died when he was pinned between a slowly revolving 30-foot long by 12-foot diameter cylindrical and the frame of the feed rollers rotating the tank as he was exiting feet first through a 24-inch diameter manhole opening. Two powered feed rollers at ground level rotated the tank. To control the tank rotation, the decedent had possession of a pendant control with unlabeled buttons inside the tank. The buttons on the pendant are the constant pressure type that required them to be pressed for the rollers to turn. Once released, the rollers coast to a stop and the tank will roll for an additional 6 inches of revolution. The decedent had completed his welding of the head or the end piece inside the steel tank. Forced air ventilation was in place. The decedent handed the pendant control to the attendant positioned outside through the 24-inch diameter access opening. While the tank was still revolving, the decedent exited the tank feet first. The attendant attempted to stop the revolving tank by pushing the pendant control buttons, but the tank continued to roll. The decedent's lower body was pinned between the roller and the tank at the bottom near floor level. A crane was used to lift the tank off from the decedent. He died several hours later at a local hospital.
MIOSHA found the following deficiencies of the pendant control:

- Four buttons on the pendant control were not identified as to function
- Cord at pendant was disconnected from the fitting – no strain relief
- No stop device on the pendant or anywhere near the roller
- Cord to pendant was damaged – cut and taped in 2 spots and severely kinked in one.

In addition, MIOSHA found the firms confined space procedures inadequate in the following areas:

- Atmosphere within the tank was not tested prior to entering that day. Both testers in for repair.
- Inadequate communication between employee within the tank and the attendant. Employer using strobe light/buzzer in the event of an emergency. Neither the strobe light nor buzzer was in place or used this day.
- The decedent had not completed an entry permit.

MIOSHA General Industry Safety and Health Division issued the following Serious, Repeat Serious and Other than Serious citations at the conclusion of its investigation.

SERIOUS: GENERAL PROVISIONS, PART 1

- Rule 33(1):
  Powered electrical equipment did not have an on-off switch:

  No on/off switch for pendant control used by employees welding inside large steel tank to rotate tank sitting on set of rollers – Roller Set-Up Machine

- Rule 33(3):
  Each operating control device was not identified as to its function.

  Pendant control to roller not identified as to functions. Four buttons, different functions - Roller Set-Up Machine

SERIOUS: ABRASIVE WHEELS, PART 1A, RULE 123:

A guard on a right angle head or vertical portable grinder did not have the guard located so as to be between the operator and the abrasive wheel during use:

No guard for Bosch right angle grinder – North Wall of Building

REPEAT SERIOUS: WELDING AND CUTTING, PART 12

- RULE 1213(3):
  The air in a confined space as not tested with an approved device and purged, if necessary, before any entry: the company was previously cited for a violation of this Occupational Safety and Health Standard or its equivalent standard WELDING AND CUTTING, PART 12, RULE 1213(3) which was contained in a 2008 MIOSHA Inspection.

  No testing of atmosphere prior to entry into enclosed steel tank – Confined Space

- RULE 1213(5):
  An employee who is trained in rescue procedures, and with such equipment as is necessary to effect a rescue, if needed, shall be stationed outside the confined space during welding or cutting operations. An employee shall ensure that an effective means of communication is established between employees in the confined space and the attendant. When safety belts and lifelines are used, they shall be provided and used as prescribed in Rule 3390 of General Industry standard, Part 33, Person Protection Equipment, being R408.13390 of the Michigan Administrative Code, and attached to the welder's body so that his or her body cannot be jammed in a small exit opening.

  The company was previously cited for a violation of this Occupational Safety and Health Standard or its equivalent standard WELDING AND CUTTING, PART 12, 1213(5) which was contained in a 2008 MIOSHA Inspection.

  No effective communication between welder in confined space and attendant – Confined Space

OTHER-THAN-SERIOUS: GENERAL PROVISIONS, PART 1, Rule 15(3):

The floor of a work area, passageway, or aisle was not maintained free of hazardous accumulations of scrap, debris, water, oil, grease, and/or other slip and trip hazards:

Multiple trip hazards; extension cords, air hoses, welding lines strewn on floor between steel tank and wall.

OTHER-THAN-SERIOUS: WELDING AND CUTTING, PART 12, RULE 1223(1):

A chain, bracket, or other restraining device was not used at all times to prevent cylinders from falling:

One unrestrained welding gas cylinder

OTHER-THAN-SERIOUS: DESIGN SAFETY STANDARDS FOR ELECTRICAL SYSTEMS, PART 39

- RULE 1910.303(g)(2)(ii):
  In locations where electric equipment was likely to be exposed to physical damage, enclosures or guards were not so arranged and of such strength as to prevent such damage:

  Cord to pendant running through opening in steel tank. Cord rubs against sharp metal edge of round opening in tank - Roller Set-Up Machine.

- RULE 1910.305(g)(2)(iii):
  Flexible cords and cables were not connected to devices and fittings so that strain relief is provided that will prevent pull from being directly transmitted to joints or terminal screws:

  No strain relief - Roller Set-Up Machine

OTHER-THAN-SERIOUS: ELECTRICAL SAFETY-RELATED WORK PRACTICES, PART 40, RULE 4007(4):

When there was a defect or evidence of damage in cord and plug-connected equipment, including flexible cord sets (extension cords), the equipment was not removed from service and not allowed to be used until necessary repairs and tests to render the equipment safe were made:

Cord to pendant damaged, 2 cuts in outer insulated coating and cord kinked in 1 spot - Roller Set-Up Machine

MIOSHA General Industry Safety and Health Division also issued a **Safety and Health Recommendation** to the firm:

Install braking systems for all set-up machines that will immediately stop the motion of the rollers and rotation of steel tanks atop in the event of an emergency.