Foundry Laborer Electrocuted

A foundry laborer was electrocuted as he was helping to feed stainless steel scrap into a furnace refractory.

The foundry uses electric induction furnaces for melting aluminum, brass, stainless steel and iron. The furnaces are powered by a three-phase, 1,250-volt electrical system. The victim was helping the furnace tender hoist a 150 pound (68 kilogram) piece of metal into the refractory. Both were sweating profusely. The victim was wearing cotton gloves and was resting his thighs against the furnace frame. The worn ceramic refractory – which was not properly grounded – cracked, allowing molten metal to flow through and make contact with the induction coil, energizing the scrap metal piece and the furnace frame.

The victim’s hands were in contact with the scrap metal piece and his thighs were in contact with the grounded furnace frame. His body provided a path to ground and he was electrocuted.

Investigators made several recommendations from this event:

- All electrical equipment should be properly grounded.
- Refractories must be maintained in good condition.
- Specific procedures for refractory installation must be followed, including grounding.
- The electric induction furnace should be re-evaluated to identify possible electrical safety design modifications.