Ladder Fatality: A Case Study

OSHA, along with many other organizations concerned with worker safety and most individual trade organizations have invested large amounts of time and money to increase the safety of workers that perform tasks at height. Despite their best efforts, falls are still consistently ranked in the top four causes of construction site fatalities. What follows is yet another cautionary tale about the dangers of improper ladder use. This incident will probably sound familiar to many and may help to change a potentially fatal behavior in someone before disaster strikes.

A 33 year old employee of a school district in Alaska died on 14 September 2003 when he fell approximately 12 feet to a concrete floor. He was working from a fiberglass extension ladder on a wall/ceiling joint in a vocational-technical school shop class. The employee had worked for the school district for two years, working in most of the different schools in the district. The victim had worked for three days in the school when the accident occurred. The victim's supervisor informed investigators that although informal safety meetings were periodically held there was no formal Hazard Communication program. According to the supervisor, a foreman would conduct safety meetings with the employees at the various schools and monitored their safety related conduct.

On the day of the incident the employee was working on the interface of the ceiling and a wall in a shop classroom. He was using a 24- foot extension ladder to reach the work area and was positioned at a height of about 11.5 to 12.5 feet. The ladder was leaning against the shop wall but was positioned so that the ladder rungs were facing the wrong way to safely climb the ladder. The employee had placed his tools on a Heating, Ventilation, and Air Conditioning (HVAC) duct. The duct was hanging from the ceiling by metal strapping and ceiling anchors. Based on the positions of the ladder and duct, the tools were well within the reach of the victim. The base of the ladder was stabilized by another employee. At 3:43 PM the worker heard the victim fall. He had not been looking up at the victim at the time and was unable to describe how the victim had fallen. A teacher in an office attached to the shop room heard the scream and fall and came immediately to help.

The victim was found lying on his back and unconscious. The teacher and coworker noticed that the HVAC duct work had been pulled away from its anchors and was hanging down from its normal position. The teacher called 911 and Emergency Medical Services arrived three minutes later. The EMT's found the victim conscious and sitting up. He was disoriented, combative and he persistently tried to get up, stating he had to use the rest room. The EMT's were able to get him to lie down and restrain him. There was no significant external head or back injury but the EMT's noticed a bump on the back of the victim's head. The victim developed bruising over the right eye as well as a clenching of the fists and flexing of the arms which indicated a type of brain injury. The EMT's immediately placed the victim on a back board and immobilized his neck with a cervical collar. While being transported to the hospital via ambulance, he began to have seizures, become unconscious and began experiencing respiratory distress. He was admitted to the hospital where his condition continued to worsen. He died approximately three hours after being admitted. Although no autopsy was done, the death was attributed to "cardiac arrest due to head injury with probable hemorrhage".

The investigation into this fatality yielded five recommendations:

- Recommendation #1
  Employers should develop and institute a hazard communication program. The school district had informal safety meetings that weren't regularly scheduled but lacked a formalized hazard communications program. These programs allow employers to inform employees of any potential hazards including falls from relatively low heights.

- Recommendation #2
  Employers should conduct a general hazard assessment prior to beginning any job or work task. Before any task the worksite should be evaluated for any possible hazards. Had such an evaluation been done three areas of concern would have surfaced: 1. Placing tools on a relatively unstable surface 2. The need for reaching to accomplish the task and 3. The reverse position of the ladder.

- Recommendation #3
  Employers should consider the use of mobile scaffolding or other types of work platforms, instead of ladders. Although the HVAC duct seemed within the victim's reach, it is possible he lost his balance by attempting to "over reach". Using a mobile scaffold would enable a worker to walk small distances safely, stand fully upright and use both hands for work procedures. The larger work surface also allows for safer positioning of tools and materials.

- Recommendation #4
  Employers should ensure that work materials and tools are properly used. The ladder was found to be in a reverse position causing the rungs to be at an unusual angle. Rungs in this position reduce the stability of the ladder. An increased safety factor can normally be obtained through correct positioning of tools, materials and work surfaces.

- Recommendation #5
  Appropriate officials should ensure that victims of traumatic occupational fatalities receive an autopsy to determine the specific circumstances of death. No autopsy was done on the victim and valuable information was lost that could help understand the mechanics of traumatic deaths. This understanding could help prevent other fatalities as well as help in the design of better personal protective equipment.

Following these simple, common sense recommendations could help to prevent an injury or fatality on your jobsite.

For additional help with safety and OSHA compliance, take advantage of the resources available through NCMA. These resources include the NCMA Block Plant Safety Software. The software is available from NCMA at (703) 713-1900 at a cost of $150 for up to 3 plants/year (nonmember $450).