Accumulated Oxygen Sets Off Explosion in Steel Ladle

A man working in a steel plant was removing steel slag from the bottom of an upright ladle. He was using a jack hammer, a pry bar and a cutting torch fueled by acetylene and oxygen. The ladle was about 14 feet deep by 10 feet across. When he walked away from this task to take a coffee break, he left his equipment in the bottom of the ladle. When he returned 25 minutes later, he started to light the cutting torch to begin work again. An explosion occurred and the victim was engulfed in flames. A crane operator saw the incident and sounded his emergency horn, directing co-workers to the site. They poured water on the fire. The victim was taken to hospital where he died about three weeks later in spite of intense therapy.

On the day of the fatality, a number of things had been done differently from normal procedures. First, the worker had dismissed his helper who was supposed to be keeping a safety watch while he worked inside the ladle. Second, the ladle would ordinarily be tipped on its side with a plug removed from the bottom to improve ventilation, but this was not done. Third, the torch is usually removed from the ladle when not in use, but this time it was left inside during the worker’s break. The torch was later found to be leaking oxygen. It appears that the leaked oxygen accumulated in the ladle ? a confined space ? and was ignited when the worker started the torch to resume work. Following correct procedures such as keeping the safety watch, checking the atmosphere in the ladle before lighting the torch, and wearing fire retardant clothing might have helped to prevent this fatality. Never forget that safe work procedures are there for your protection. Rules requiring ventilation when using oxygen and fuels are intended to prevent tragedies such as this one.