

There is a saying, more meaningful than “Safety First” and the like; *“Lessons in safety we learn are written on the tombstones of others”* or alternatively worded *“Every Safety Regulation is Written in Blood”*. Like many other Industrial processes, welding inherently has some hazards/risks. The only way to truly avoid these risks would be to not use it. Welding however is essential to many aspects of our society, be it buildings, vehicles, infrastructure...the list goes on. Thus welders and teams involving them must assess the risk of the particular job/task, implement best practices, refer to regulations and experts, and use the appropriate advice. In doing so they can reduce workplace accidents/injuries, as well as save lives.

The main risks of welding are as follows: **Asphyxiation** (Due to leakage of Inert Gasses from welding gas storage. This is undetectable without a meter as the human body senses Carbon Dioxide concentration in the blood, not Oxygen, so short of feeling lightheaded etc you will often not notice until it is too late) **Burns** (Due to Torches, Hot Components, and Splatter), **Electric Shock, Explosions/Fire** (Due to Welding/Cutting Gas, or due to Welding or other “Hot Work” causing a fire/explosion on the site (See the February 8, 2017, explosion at the Packaging Corporation of America DeRidder Louisiana Pulp and Paper Mill)), **Eye/Skin Damage due to UV Exposure**. Another, although less noticeable until years later, type of risks, **Long Term Effects of Several Chronic Hazards (Often called “Welder’s Lung” and most often diagnosed as Pneumoconiosis and/or Lung Cancer)**, most of which affect the lungs such as Smoke/Fumes from Flux based welding methods such as Shielded Metal Arc Welding (SMAW) and Flux Core Arc Welding (FCAW), **Thorium Exposure** from Thoriated Tungsten Electrodes. Also there are risks associated with various welding careers as well. Those who work in the Chemical/Petrochemical/Fossil Fuel industries will be exposed to all risks/chronic hazards inherent in those. Also for Underwater Welders there are all associated risks of other non-welding operations in water, as well as the risk of **Electric Shock, Delta-P, and especially in the case of Saturation Diving, the issue of the Massive Delta-P Risk** (See the *“Byford Dolphin 1983 Incident”* which killed Four Divers, One Dive Tender, and Injured another Dive Tender), and the Risks of Hypothermia, and Death by It, and/or Asphyxiation if support systems fail, or if the Diving Bell Tether becomes disconnected/damaged (See the *“Wildrake”* and *“Stena Seaspread”* Diving Accidents). **These risks can be reduced, and nearly eliminated however.** This is done with appropriate Personal Protective Equipment (PPE) (Including, but not limited to: Welding Masks, Respirators, Flash Curtains, Fume Extraction Systems, Wearable Gas Detector/Dosimeters, Heat/Fire Resistant Full Body Coverings (Either leather, thick canvas, specialized synthetic fibers such as Aramid, and Metallized Fabric). **These do not work however without a proper Safety Culture.** The term “Normalization of Deviance” is the term used to describe a gradual erosion of safety culture that is usually only discovered after a major accident. **Given the advances in safety technology + practice, most modern accidents are due to poor planning and/or gross negligence.** Finally Planning Emergency Scenarios, Cooperating with Local Emergency Response Services, and Education/Drills around these Emergency Plans allows for another layer of safety. **In conclusion, we can live in a world with welders living healthily into old age, and few (if any) workplace accidents/deaths. We have the technology and knowledge, all we need now are Appropriate Standards/Regulations, and more importantly the education of the workforce, and a continued culture of safety in the welding community.**