

## **TOOLBOX TALK #21**

### **WELDING FUMES**

Why are welding fumes so toxic? The most toxic hazards are from filler metal, coatings, shielding gases and base metals created when heating the materials. Many welding fumes contain hexavalent chromium and zinc, which are known to cause long-term damage to the lungs and nervous system. Consider that toxic welding fumes surround the welder throughout the job and are directly in the path of the welder's breathing. The fine fume particles are able to travel deep inside the welder's lungs to cause irreversible cell damage reducing lung function and enter the welder's blood system causing systemic and chronic illness.



Because of this, personal respiratory protection should be the number one priority for all welders. High protection (i.e. Powered Air Purifying Respirators or PAPRs) and correctly fitted respirators will protect against the most dangerous vapors, fumes, and particulates, including silica. Regardless of ventilation systems or scheduled work tasks, welders should ensure they use their respirators as the health consequences can include:

- Irritation of the nose and throat
- Asthma
- Central nervous system damage such as Parkinson's Disease
- Kidney and other organ damage
- Lung and other cancers

Regardless of regulatory guidelines, businesses with welding operations including welding contractors should assess their controls and respiratory programs to ensure all workers are effectively protected. Historically, many welders have relied on negative pressure masks such as disposable respirators – N95 or half-masks with P100 filters. However, welders have been fast adopters of PAPRs, which provide high levels of assured protection and superior worker comfort and acceptance.

PAPRs do come with limitations. Traditional PAPRs with hip-mounted heavy batteries and motors and connecting body hoses add to the weight and bulk of existing welding equipment. In addition, traditional PAPRs may not be compatible with existing PPE, forcing welders to reinvest in new welding helmets and have issues with immobility or portability, limiting welders in tight spaces or moving between equipment. New technology in PAPRs has eliminated these issues and now offer super lightweight and compact affordable options, with both high protection and fresh airflow. Now, there is no reason for employers or welders to risk their most precious asset – their health.