

SAFETY AWARENESS

Brief Topic Safety Refresher Training For Associates

2024

Welding Safety – Hexavalent Chromium

Welding, cutting, and brazing (Hot Work) are hazardous activities that pose a unique combination of both safety and health risks to more than 500,000 workers in a wide variety of industries. The risk from fatal injuries alone is more than four deaths per thousand workers over a working lifetime. Welding, cutting, and brazing are addressed in specific standards for the general industry, shipyard employment, marine terminals, and construction industry.

Hazards and Solutions

Health hazards from welding, cutting, and brazing operations include exposures to metal fumes and to ultraviolet (UV) radiation. Safety hazards from these operations include burns, eye damage, electrical shock, cuts, and crushed toes and fingers. Many of these can be controlled with proper work practices and personal protective equipment (PPE).

One of the health hazards workers may encounter during “Hot Work” is hexavalent chromium. This is a heavy metal substance that can cause lung cancer and other health problems over time, if inhaled in significant concentrations. The primary exposure to mechanical construction workers occurs when hot work is performed on stainless steel.

The amount of exposure depends on the following factors:

- Type of hot work being performed;
- The concentration of chromium in the steel;
- The type of ventilation system; and
- Type of work environment.

Some hot work methods produce fewer fumes than others. For example, TIG welding produces a fraction of the fumes that stick welding or arc gouging produces.

- Some types of steel have more chromium than others. The higher the concentration of chromium, the higher the potential for overexposure to hexavalent chromium once it's heated.
- Adequate ventilation makes a big difference with regard to exposure. Point of operation ventilation systems are the best in terms of exposure reduction.
- The work environment makes a big difference too. For example, exposure would likely be considerably higher in a confined space than it would be in a new building under construction or a pre-fabrication shop.



