

TOOLBOX TALK #10

FOUR WARNINGS OF WELDING FUME PROBLEMS – PART 1

This TBT is the first part of a 2-part TBT topic on welding fumes. Please group this with TBT-11.

Many companies use one of two options to clear the air of welding fumes – filter the dirty air or exhaust the dirty air out and provide clean air from outside. If you are recirculating cleaned air, you'll need to keep below OSHA's Permissible Exposure Limit (PEL) thresholds for metal contaminants generated by welding processes. If you are exhausting the air outdoors, you may be subject to EPA emissions requirements. When you are using a collection system to capture weld fumes, you have to make sure your equipment is doing its job.

Recognizing warning signs that you may have problems with your fume extraction equipment and addressing them promptly is key to protecting workers' health and keeping your jobsite in compliance. Here are a few important indicators that you may have a welding fume problem:

1. **Employee health concerns.** If your workers experience health problems consistent with overexposure to fumes, pay attention. In general, watch out for eye, nose and throat irritation, dizziness and nausea. **Manganese**, the primary metal in welding wire, can cause headaches, exhaustion, listlessness and weakness. Prolonged exposure to manganese fume can cause neurological symptoms. Exposure to **hexavalent chromium**, a carcinogenic substance produced during welding on metals that contain chromium, can result in short-term upper respiratory symptoms, eye or skin irritations. The most serious long-term danger associated with hex chrome exposure is lung cancer. **Zinc oxide**, generated by hot work on galvanized steel, can result in "fume fever", a short-term illness in which severe flu-like symptoms occur after a break from work, such as after a weekend or during a vacation. Signs and symptoms of beryllium exposure can include shortness of breath, an unexplained cough, fatigue, weight loss, fever and night sweats.
2. **Exceeding air quality standards.** If air quality testing shows your site no longer meets OSHA exposure limits for the materials you are welding, you are exposing your workers to dangerous welding fumes. OSHA has established PELs based on an 8 hour time weighted average (TWA) for hundreds of dusts, including metals contained in welding fumes. They are listed in the OSHA standards. The OSHA PEL requirements will determine the minimum level of efficiency that your respiratory equipment must achieve.