Focus on **Welding**

GS48 on Weld Smoke & Fume

THE CHALLENGE

Capturing dust and fumes generated during welding presents a unique challenge. With welding, floor space is typically at a premium. Combining guidelines found in the ACGIH "Industrial Ventilation: A Manual of Recommended Practice for Design" with our in-field experience and state-of-the-art filtration, Camfil APC will correctly size a cost- and space-saving filtration system that is reliable, durable and easy to maintain. **Let Camfil APC's expertise in this application help you put in a safe dust collection system.**

BENEFITS OF THE GOLD SERIES X-FLO

Respiratory Health — A well-designed and maintained dust and fume collection system is needed to prevent respiratory problems and keep facilities in compliance with current air quality requirements. A good dust collection system can eliminate the need for personal respirators and the challenge of getting employees to wear them.

Maintenance — The equipment currently used in fabricating plants has reached a new level of sophistication. Controls and other computerized systems are more sensitive than the machinery of 10 or 20 years ago. If dust is not collected properly from welding stations and similar areas, electronic controls can fail, shutting down the operation and requiring emergency repair. This causes production downtime, frustration and costly losses in productivity.

Energy Savings — In cold climates, a proper weld fume ventilation system can significantly reduce your energy cost by recycling filtered air and lowering the need for costly makeup air.

RESPIRATORY CONCERNS WITH WELDING

Metal dust particles in welding fumes are a leading cause of eye irritation in factories. Metal dust also can cause upper respiratory irritation with black material being coughed and sneezed from workers who are exposed to welding fumes. Welding fumes also cause frequent headaches.

Manganese, the primary metal in welding wire, can cause workers to feel exhausted, apathetic and weak. It is also a primary cause of headaches. Chronic overexposure to such fumes leads to a condition known as "manganism", which is characterized by neurological and neurobehavioral health problems. The personal exposure limit (PEL) for manganese is 5.0 milligrams per cubic meter TWA. Manganese is the trigger for EPA Rule 6x.

Hexavalent chromium or hex chrome is a carcinogenic substance produced during welding or other types of "hot work" on stainless steel and other metals that contain chromium. Hex chrome overexposure can result in short-term upper respiratory symptoms, eye or skin irritations. Long-term, the greatest health danger associated with hex chrome exposure is lung cancer. Other major health effects include damage to the upper respiratory system, and allergic and irritant contact dermatitis. Respiratory tract problems can include inhalation damage to mucus membranes, perforation of septum tissue between the nostrils of the nose, and damage to the lungs.

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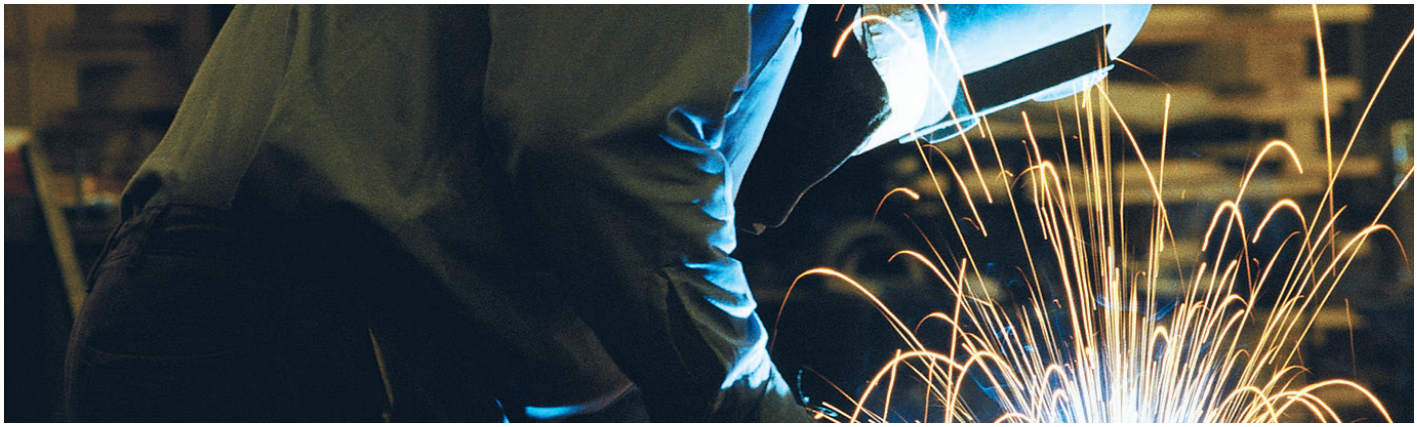

RESPIRATORY CONCERNS WITH WELDING (continued)

In addition, there may be injury to the eyes, skin, liver and kidneys. Once in the body, hex chrome typically targets some of the body's organs. A worker exposed to hex chrome may also experience symptoms such as sinus irritation, nosebleeds, stomach and nose ulcers, skin rash, chest tightness, wheezing and shortness of breath. The current OSHA PEL for hex chrome is extremely stringent, 0.005 micrograms per cubic meter TWA. (Most other PELs are listed in milligrams. The exposure limit on hex chrome is 1000x less.)

Zinc oxide is a pollutant generated by hot work on galvanized steel. Exposure can result in a condition known as "metal fume fever", a short-term illness in which severe flu-like symptoms occur after a break from work. Due to the delayed reaction, it is often confused with regular influenza and in many cases goes undiagnosed. The current PEL is 5.0 milligrams per cubic meter TWA.

Welding fumes are known to cause headaches. A customer who manages 60 welders reported experiencing daily headaches for years. After installing a properly designed air filtration system, the headaches stopped.

It is imperative to follow **OSHA** exposure guidelines for these and other metals, particularly where workers are at risk for long-term health effects.

Flame retardant filters should always be used in this application.

Federal EPA Rule 6X

Manufacturers who use or consume 2000 lb of wire or rod are subject to EPA NESHAP Rule 6x, which strictly regulates smoke and fumes being exhausted outdoors. Learn how Rule 6x applies to you, what you should look for in your air and manufacturing environment, and the appropriate tests to see if you are affected.

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Power up your dust collector with HemiPleat. With lower pressure drop HemiPleat filters, you can pull more air with less energy, thus capturing pollutants better. Filtration efficiencies up to MERV 16 per ASHRAE 52.2.

The patented Gold Cone X-Flo filter has allowed many facilities to reduce the number of filters they have to use and change. The innovative cone of filter media expands the usable area of the filter, reducing the required number of filters by at least a third. The design also promotes long filter life with low pressure drop.

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AIR POLLUTION CONTROL

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