



24.46 Metal Welding & Fabrication – Key Health Facts

How can welding & fabrication work affect my health?

Welding is a fabrication process that joins metals by melting their contacting surfaces and allowing them to fuse as they cool. It is most often achieved by the application of electrical arcs in process such as MIG, TIG and MMA welding.

These processes may affect an employee's health in several ways, depending on the process used and the metals involved and include:

Vision Problems

Most welders will suffer “**welding flash**” at some time in their life. Also known as “**Arc Eye**”, it is essentially a sunburn on the surface of your eyes when exposed to intense UV light.

There is some evidence to suggest that **cataracts** could be caused by exposure to the UV light from welding arcs.

Respiratory Illness

All welding fume is classified as **carcinogenic** and might cause **lung cancer**. It can also cause **kidney cancer**. Welding some metals may cause **Metal Fume Fever**. It can also be caused by welding galvanised steel. Inhaling some type of welding fume can cause **asthma** to develop, but this is not common. This condition used to be known as **reactive airways dysfunction syndrome**. Exposure to the **Nickel** and **Chromium** components of **Stainless Welding** fume can be a cause of industrial asthma.

Gases and fine particles in welding fume can irritate the breathing passages and cause dryness of the throat, coughing or tightness in the chest although these effects tend to be short-lived.

Dermatitis and skin Issues

Dust may dry out skin and cause cracking.

Exposure to **UV radiation** may cause damage to unprotected skin and, over time, increase the risk of **skin cancer**.

Hand Arm Vibration Syndrome (HAVS)

There are many processes associated with welding a fabrication where exposure to hand arm vibration occurs. Exposed employees can develop **Vibration White Finger (VWF)** or **Vibration induced Carpal Tunnel Syndrome (V-CTS)**, resulting in painful and disabling disorders of nerves, joints & blood vessels.

Noise Induced Hearing Loss

Welding and fabrication is “**Noisy Work**”. Sound levels are typically high in production areas and often enough to cause **permanent hearing damage** and **tinnitus**.





Musculoskeletal Injury

The manual handling of heavy metal components accounts for up to a fifth of all workplace absences that last seven days or more. Common injuries include:

Back Injuries: Strains, slipped discs, and sciatica, often caused by incorrect lifting techniques or twisting.
Sprains and Strains: Tears to ligaments or muscles, commonly occurring in the arms, shoulders, and legs.
Repetitive Strain Injuries (RSI): Damage caused by performing the same lifting or carrying motions over time.

Hernias: Occurs when internal tissue pushes through a muscle wall, often triggered by improper heavy lifting.

Crushing Injuries: Feet and hand injuries caused by dropping heavy items

Exposure to Electromagnetic fields (EMF)

The strong electromagnetic fields generated by welding sets may interfere with wearable or embedded medical equipment such as hearing aids and pacemakers. In some people, it can stimulate nerves causing temporary effects such as dizziness or visual disturbances. It can also cause local tissue heating.

Workplace Exposure Limits

The agents identified in this advice, including noise and vibration, have specified exposure limits set by the **Health and Safety Executive (HSE)** to protect workers' health.

The **UK Workplace Exposure Limit (WEL)** for general welding fume is **5 mg/m³** over an 8-hour period.

The **Lower Action Value** for **noise** is set at **80 dB(A)**: Employers must provide hearing protection and training above this level.

The **Upper Action Value** is **85 dB(A)**: Employers must enforce the use of hearing protection above this level, establish "Hearing Protection Zones" & introduce health surveillance.

The Exposure Limit Value (ELV) for is set **at 87 dB(A)** for an average daily or weekly exposure. This limit includes any reduction provided by earplugs or earmuffs.

Vibration exposure has two action values:

Exposure Action Value: 2.5 m/s² (8) (or 100 points): At this level, employers must introduce technical and organizational measures to actively reduce exposure.

Exposure Limit Value: 5.0 m/s² (8) (or 400 points): This is the absolute legal maximum an employee can be exposed to in any single workday. Exposure must cease immediately if this limit is reached.

Health Surveillance

Where there is a residual risk of exposure after controls have been implemented, your employer should consider undertaking Health Surveillance such as skin, respiratory, hearing and HAVS assessments. These checks are designed to ensure that controls are working and help to identify work related health problems at an early stage, so that prompt intervention may take place.

A copy of this & other documentation can be found from <https://mohs.co.uk/resources> or using the QR code at the top of this page.