

# HEALTH RISKS OF METALWORKING FLUIDS

Millions of machine operators around the globe are exposed to coolant or lubricant mist from metalworking processes that pose a variety of health risks.

These airborne particles of metalworking fluids (MWF) must be carefully controlled, which is why the EU Occupational Safety & Health Administration (EU-OSHA) has published guidance specifically for working with metal working fluids. There are varying global Recommended Exposure Limits (REL) from 0.2 mg up to 10 mg per m<sup>3</sup> for an 8 to 10 hour Time-Weighted Average (TWA). For more information EU-OSHA refers to the Health and Safety Executive (HSE): <https://www.hse.gov.uk/metalworking/index.htm>

We recommend to consult with your local institute for occupational safety and health for specific guidance. In any case machine shops must use mist collection equipment to limit worker exposure. Even if the facilities are meeting the REL requirements but workers are still experiencing symptoms, it may be necessary to try to reduce levels.

## SKIN

Mineral oils found in MWFs have a degreasing and dehydration effect on the skin and often cause acne-like disorders. Water-based, synthetic, and semi-synthetic MWFs can cause contact dermatitis. Prolonged contact may cause allergic contact eczema.

## IMMUNE DISORDERS

Microorganisms, bacteria and fungi can absorb into vapours and can lead to weakening of the immune systems, increasing the likelihood of contracting an illness for instance legionella.

## BRAIN

Over exposure to MWFs can cause changes in organs including brain tumors. Vapours of low-viscosity hydrocarbons even have narcotic properties.

## NERVES

Over exposure to MWFs can cause changes in organs as well as potential nerve damage.

## LUNGS

MWF particles of <100 microns can be inhaled, <5 micros can reach the lower respiratory tract, and <2.5 micros can penetrate into the pulmonary alveoli. These particles can cause complications including asthma, chronic bronchitis and hypersensitivity pneumonitis.

## DIGESTIVE TRACT

When larger MWF particles enter nose, mouth or lungs, contaminants can enter the digestive tract. This has been linked with pancreatic, colon, bladder and liver cancer.