CNC and conventional machining platforms

THE PROBLEM - Exposure to ANY LEVEL of coolant mist is harmful to health

Traditional **MANUFACTURING PROCESSES POLLUTE** the working environment with e.g., Noise, Volatile Organic Compounds and Particulate Matter and these **AFFECT OUR HEALTH**.

Having a better understanding of the **DAILY RISKS** we are exposed to at work and being able to act on that insight reduces uncertainty and minimises the chance of **ILLNESS DEVELOPING**, often in later life. Both employers and employees have a **LEGAL AND MORAL** responsibility for health and safety.

UNSEEN RISK is from Particulate Matter (PM). PM are microscopic particles of solid or liquid matter suspended in the air. **AIRBORNE CONTAMINANTS** in manufacturing environments include mist, dust, fumes, metals, bacteria, mould, volatile organic compounds etc. It is known viruses can attach themselves to Particulate Matter as a mode of transmission.

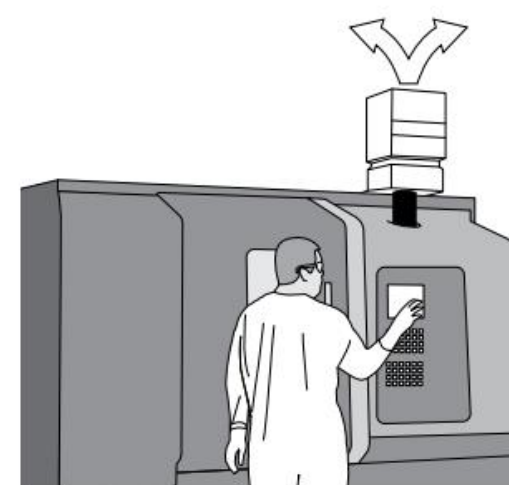## How effective are recirculating type mist extractors.

Installing a suitably specified Local Exhaust Ventilation (LEV) system and correctly maintaining helps reduce exposure to 'larger', irritating particles (~>10µm) of metalworking fluid mist but may **NOT ELIMINATE RISK** from smaller respirable particles (<2.5µm)

Particle sizes <2.5µm are **RESPIRABLE** and some of these toxins may enter the bloodstream and be transported around the body, lodging in the lungs, heart, brain, and other organs leading to **OCCUPATIONAL LUNG DISEASE**, **COPD**, **CANCER** and other **ILLNESSES**.

Some LEV's are less efficient at removing 'water emulsion' mist than 'neat oil' mist and suppliers often state "independently tested" with "up to 99.95% efficiency"
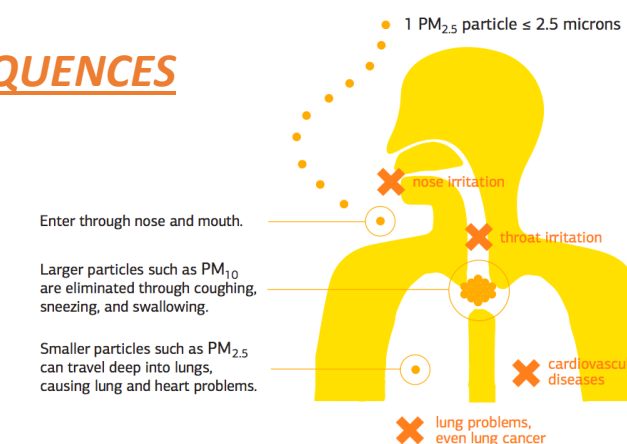
These numbers **CAN BE MISLEADING** as Fractional Efficiency Data (from independent testing) is not readily advertised showing ineffectiveness to remove respirable particles.

CNC Mist Extractor (LEV) Systems are mechanical devices, their **CAPABILITY REDUCES** over time. This is why regulatory servicing is required at least every 14 months.

CNC machine with a standalone LEV fitted

THE SOLUTION - HEXmon SENSOR 24/7 Health Exposure Monitoring, Reporting & Alert System

Sanitized -
Multi Axis CNC with Mist Extractor

Red columns are breaches of World Health Organisation guidelines. Lower red line is exposure limit for RESPIRABLE particles.

HEXmon Dashboard

THE CONSEQUENCES

1 PM2.5 particle ≤ 2.5 microns

Enter through nose and mouth.

Larger particles such as PM10 are eliminated through coughing, sneezing, and swallowing.

Smaller particles such as PM2.5 can travel deep into lungs, causing lung and heart problems.

nose irritation
throat irritation
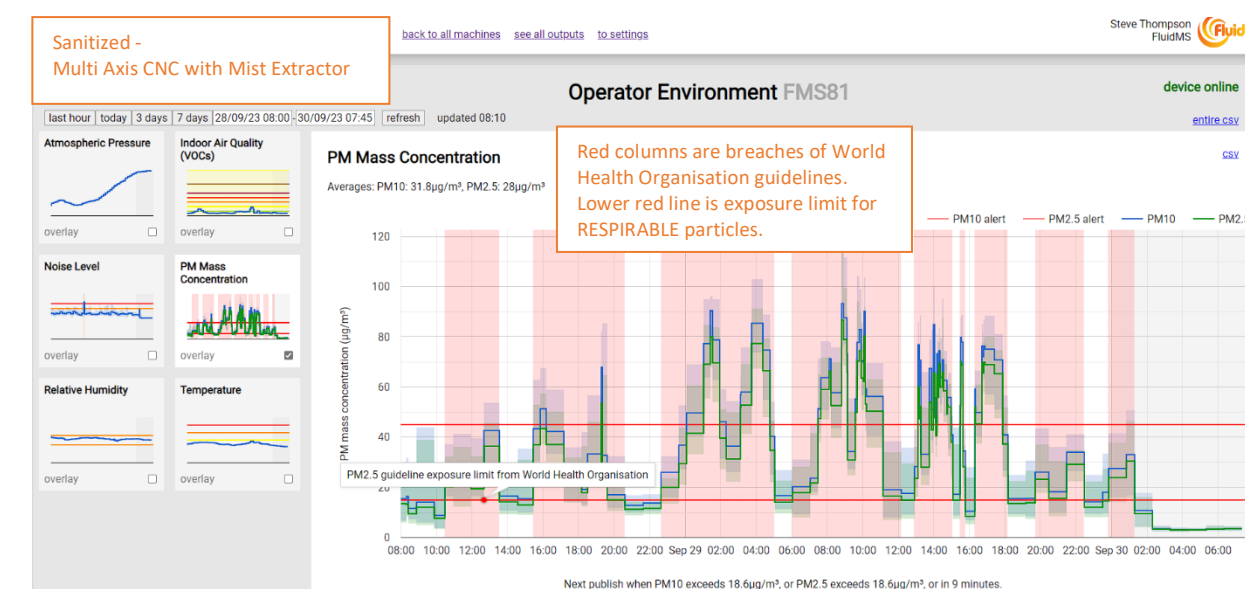cardiovascular diseases
lung problems, even lung cancer

The Health & Safety Executive report incidents of **ILL HEALTH** in the workplace each year.

- **Occupational Lung Disease leads to an estimated 120,000 deaths each year and 400,000 working days lost in Great Britain**

- **Occupational Lung Diseases typically have a long latency. Although people with existing health issues e.g., asthma may be affected sooner.**

- **EXPOSURE** to Metalworking Fluids is always reported as a cause of Occupational Lung Disease

- The traditional approach of occupational health monitoring **DOES NOT CAPTURE** the daily and varying pollution levels created in production processes.

The Health & Safety Executive state
"people develop these diseases because they breath…in airborne contaminants at work, often because control measures do not work well enough."

HEXmon SENSOR, reporting platform and alert system, developed with **APPLICATION EXPERIENCE**, is a cost effective and **PROVEN SOLUTION** to trend daily exposure to harmful, respirable particles, Volatile Organic Compounds and Noise Levels.

HEXmon alleviates the problem of NOT KNOWING

HEXmon SENSOR for a safer & smarter working environment.