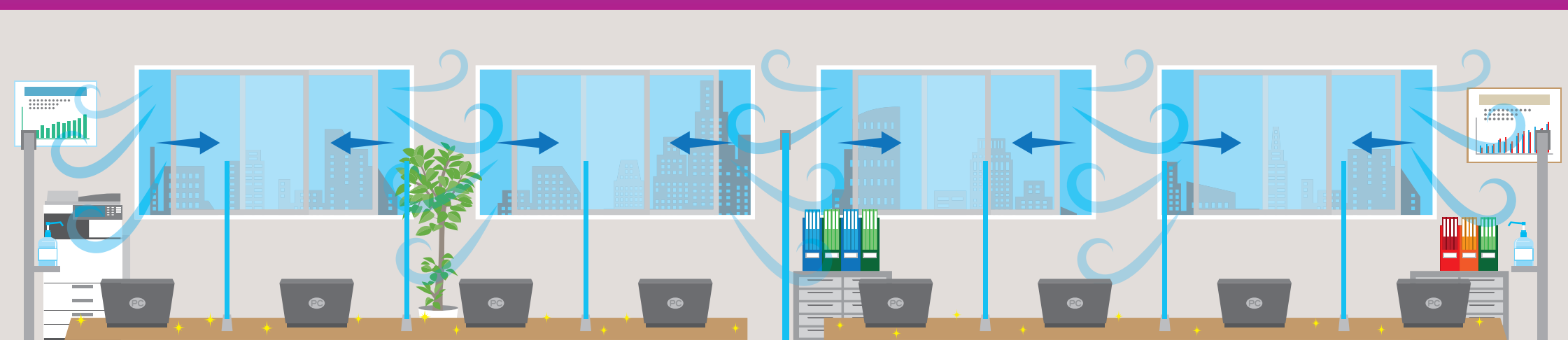
Supporting occupational health and wellbeing professionals

WORKPLACE AIR QUALITY: PROTECTING HEALTH AND BOOSTING PERFORMANCE



WHAT IS WORKPLACE AIR QUALITY AND WHY DOES IT MATTER?

Indoor Air Quality (IAQ) refers to the condition of the air in indoor spaces. Poor air quality impacts health, productivity, and wellbeing *(Felgueiras et al., 2023; Zhang & Srinivasan, 2020; RAENG, 2022; Morawska, 2024)*. Employers have a responsibility to monitor and manage indoor air risks to maintain a safe and healthy working environment. This is especially important in the manufacturing sector, where the rate of occupational asthma is about 5 times higher than the all industries average *(HSE, 2023)*.

WHAT CONSTITUTES POOR AIR QUALITY?

Common Workplace Pollutants:

Dusts: including wood, cement, and flour dust, commonly present in construction activities and manufacturing processes

Organic Compounds: including volatile organic compounds (VOCs), commonly emitted by paints, construction and cleaning products

Respirable contagious bioaerosols: including SARS-CoV-2, measles, influenza

Bioaerosols from ***actively growing microbes*** (bacteria, moulds, and dust mites) on indoor materials

Gases: including ozone, commonly emitted by office equipment *(Zhang & Srinivasan, 2020) (DEFRA, 2022)*

Ventilation is a key factor affecting indoor air quality. Poor natural ventilation or poorly designed/maintained mechanical ventilation can result in worse IAQ. Where removal or reduction of emission sources is not possible, increased ventilation is the most effective solution to reducing poor indoor air quality. *(IAQM, 2021)*

HEALTH IMPACTS OF POOR AIR QUALITY

Exposure to indoor pollutants can cause:

- Airborne infections
- Headaches and fatigue
- Irritability and poor concentration
- Skin rash
- Eye/airway irritation
- Asthma and breathing difficulties
- Nausea and dizziness

leading to increased risk of sickness absence, presenteeism and reduced productivity. Exposure is also associated with increased risk of respiratory tract infections, lung cancer, and chronic obstructive pulmonary disease (COPS).
(Felgueiras et al, 2023; Zhang & Srinivasan,2020; Raju et al, 2020)

SOLUTIONS TO IMPROVE WORKPLACE AIR QUALITY

Engineering Controls:

Open windows or use HVAC systems, ensuring ventilation systems discharge air outside

In a factory or industrial setting, controlled ventilation systems are normally needed (see CIBSE guidance)

Install HEPA-filter air purifiers

800ppm CO_2 or under is acceptable air quality; add visible CO_2. monitors in shared spaces to ensure compliance

(Chau et al, 2007; FPS Public Health, 2024, SAGE 2020; CIBSE, 2015)

Administrative:

Regularly monitor CO_2 levels and IAQ using ambient air quality monitors

Identify and manage pollutants from equipment and products

Educate staff on reducing exposure

(Felgueiras et al, 2023; HSE, 2021; IAQM, 2021)

Personal Protective Equipment (PPE):

Provide masks or respirators in high-risk or poorly ventilated zones, for example in a manufacturing setting

Coveralls or overalls prevent dust and chemicals from settling on clothes and being taken home

(Zhang & Srinivasan, 2020)

Regular maintenance:

Service ventilation systems and ensure filter replacement in line with product and industry best practice

Track air quality data and address complaints

(Zhang & Srinivasan, 2020)

BELGIUM'S INDOOR AIR QUALITY LAW (2022)

Belgium's 2022 law requires **all** public indoor spaces to:

- Install visible CO_2 monitors
- Conduct formal indoor air quality risk assessments
- Develop an air quality action plan
- Obtain public certification or labelling by 2025-2027

The 2024 English-language guide from FPS Public Health expands on this, offering practical implementation steps, including:

- *How to choose and calibrate monitors*
- *What to include in risk analyses and action plans*
- *Examples of acceptable ventilation thresholds and labelling formats*

(FPS Public Health, 2024)

TAKE ACTION NOW!

Employers should:

- ☑ Prioritise clean air through effective ventilation, air monitoring, and source control
- ☑ Communicate openly about air quality issues, policies, and improvements with all staff
- ☑ Use proven policy models, such as Belgium's legal framework and international air quality guidance
- ☑ Measure what matters: include assessment of particulate matter, gases, VOCs, and biological particles
- ☑ Recognise the payoff — cleaner air improves cognition, reduces sick days, and boosts morale

(Felgueiras et al., 2023; FPS Public Health, 2024; DEFRA, 2022)

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RESOURCES

World Health Organization (WHO)
Indoor air quality guidance
www.who.int

Health and Safety Executive (HSE)
Workplace health and safety standards
www.hse.gov.uk

Royal Academy of Engineering (RAENG)
Ventilation matters!
Why clean air is valuable to health
explainers.raeng.org.uk/ventilation-matters

FPS Public Health (Belgium)
National air quality law (2022)
health.belgium.be

American Industrial Hygiene Association & International Labor Organisation
Report on air pollution and work-related deaths
aiha.org

Confederation of British Industry (CBI)
UK business insights on workplace air quality
cbi.org.uk

Asthma + Lung UK
Advice on indoor air pollution in workplaces:
asthmaandlung.org.uk

Society of Occupational Medicine (SOM)
IAQ learning resources
som.org.uk

Chartered Institution of Building Services Engineers (CIBSE)
Guidance for ventilation
www.cibse.org

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