Leveraging indoor air quality data to minimise the spread of COVID19

Guidance to adapt the workplace after COVID19





In today's session we'll cover

- The importance of monitoring indoor air quality (IAQ) in relation to COVID19
- How to measure IAQ and the standards to benchmark against
- How to leverage IAQ data to keep your buildings safe
- Go through questions you asked during the broadcast

Give us your feedback for future webinar content



Yodit Stanton CEO & Founder OpenSensors



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Guest speaker

- Over 30 years experience in electronic engineering
- Bruno oversees the digital front-end for electrochemical sensors and particulate monitors, together with an open infrastructure for air quality data
- Has worked on numerous air quality monitoring projects



Bruno Beloff CO-Founder of South Coast Science





We can't monitor airborne concentration of SARS-CoV-2 in real time

....but we can monitor the parameters that influence infection: Temperature, Humidity, Particulate Matter (PM), Occupant density



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How IAQ can increase the spread of viruses

Key

- °C = Temperature
- RH = Relative humidity
- CO_{2} = Carbon dioxide
- ACH = Air circulation per hr



Why indoor air quality matters

"People stay **indoors** for about **93%** of their time and this may increase to **100%** for some in this current situation."

Mohamed Yehia Zakaria Abouleish, IAQ and Coronavirus Public health 2020

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The link between poor air quality and the spread of COVID19

"We found that an increase of only 1 µg/m3 in PM2.5 is associated with an 8% increase in the COVID-19 death rate

Conclusions: A small increase in **long-term exposure to PM2.5** leads to a large increase in the **COVID-19 death rate.**"

Xiao Wu et al, Exposure to air pollution and COVID19 mortality, Harvard University 2020



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How to monitor indoor air quality





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What data to gather

Recommended by the Well Building Institute

- PM_{2.5} less than 15 µg/m³
- PM₁₀ less than 50 µg/m³
- Carbon dioxide (CO2) 500ppm-600ppm
- Carbon monoxide (CO) less than 9,000 ppb
- Nitrogen dioxide (NO2) less than 100 ppb
- Ozone (O3) less than 51 ppb

Source: https://standard.wellcertified.com/air/air-quality-standards



Accuracy, testing, quality assurance



reference versus reported PM levels for OPC-N3 sensor



reference versus corrected PM levels for OPC-N3 sensor-based system

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Air quality hot spots

Quickly identify areas in the office where the air quality needs to be adjusted throughout the day



The link between occupancy and increased CO₂



Key takeaways

Monitor the following variables

- Temp^oC = $21^{\circ C}$
- Relative humidity RH = 40% 60%
- Carbon dioxide CO₂, = 500ppm-600ppm
- Particulate matter PM_{2.5} = <10 micrograms per cubic metre
- Air circulated per hour ACH
- Occupancy
- Nitrogen Oxide NO₂
- Volatile Organic Compound VOC

Use sensors the gather air quality data

- Allows for efficient validation when assessing the health of your workplace
- Lets you quickly see IAQ levels and adjust as needed
- Data is much more accurate and reliable







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