

Clean air means brainpower

THE FACTS



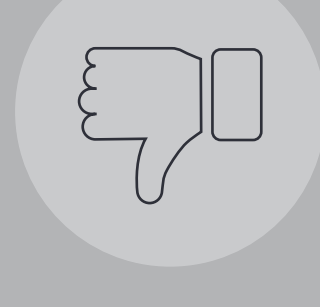
Indoor air quality is **2 to 5 times worse** than outdoor air quality



People spend more than **90%** of their time indoors



50% of illnesses are caused by aggravated indoor air pollution



Indoor air pollution is ranked as one of the **top 5 environmental risks** to public health

Source: EPA

THE STUDY

Poor indoor air quality doesn't just make us unhealthy. It makes us less productive

A major new study from Harvard University shows that there is a **direct relationship between the amount of fine particulate matter in the air and how people perform in mental tests.** The more polluted the air, the worse people perform.

HARVARD
UNIVERSITY



KEY ELEMENTS OF THE STUDY

- Office workers
- Average age of 33
- Worked in commercial buildings
- Tested over a 12 month period
- 6 countries in 3 continents



The study used monitors to measure ventilation and indoor air quality in the buildings, including levels of fine particulate matter, known as PM2.5. This is made up from dust, bacterial spores, allergens, smoke, outdoor air pollution, etc.

The workers were asked to use an app to take regular cognitive tests during the workday. These tests included **Stroop** colour-word tests and **addition-subtraction (ADD)** tests to measure working memory and attention.

The study found that higher PM2.5 and lower ventilation rates, the latter assessed by CO2 concentration, were associated with slower response times and reduced accuracy (fewer correct responses per minute) on the Stroop and ADD for eight out of ten test metrics.



Stroop
302 participants **2776** tests

ADD
292 participants **2583** tests

Source: Associations between acute exposures to PM2.5 and carbon dioxide indoors and cognitive function in office workers: a multi-country longitudinal prospective observational study (September 2021)

Each interquartile increase in fine particulate matter of just **8.8 micrograms per cubic metre** was associated with a:

0.82%
increase in **Stroop** response time

6.18%
increase in **Stroop** interference time

0.7%
decrease in **Stroop** throughput

1.51%
decrease in **ADD** throughput

Those percentages quickly escalate as the concentration of particulate matter builds up in a shared office environment.

IT'S BAD FOR THE ECONOMY TOO

In the USA, poor air quality results in

\$150 billion

of illness-related costs per year.

Of that,

\$93 billion

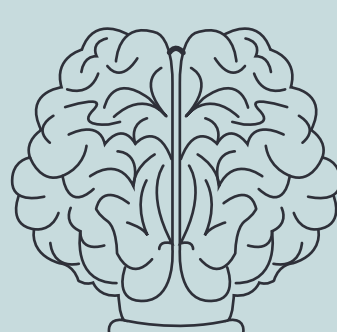
represents lost productivity from headaches, fatigue, and irritation associated with sick building syndrome.

Source: National Oceanic and Atmospheric Administration

NOW FOR THE GOOD NEWS...

Poor indoor air quality is an easily solvable problem

Ventilation and air purification can help combat sick building syndrome, lacklustre productivity, and impaired learning. By improving brainpower, clean air boosts retention, output, innovation and strategic decision making.



By sustaining 20% lower air pollution levels in the classroom, **the development of a child's working memory can improve by 6%.**

Philips Foundation and the University of Manchester

A study on the impact of green buildings showed that, with better air quality, **cognitive scores were 61% higher across nine functional domains**, including crisis response, strategy, and focused activity level.

Harvard Center for Health and the Global Environment

After cleaning the indoor air, employers have seen **workplace productivity increase by up to 11%.**

World Green Building Council

THE INTELLIGENT CHOICE



Companies can add portable air purifiers without affecting the fabric of the building. Working in tandem with integrated Heating, Ventilation and Air Conditioning (HVAC) systems – or in isolation - hospital-grade air purifiers can deliver the optimum cumulative air change per hour rate.

No disruption or delay. Plug in and get clean air on the same day.

In terms of technology, the best solution is a combination of **H13 HEPA filtration to trap particles and germicidal UVC light to destroy the infectious ones.**

It's also important for air purifiers to have a powerful enough fan to create high static pressure, which ensures the circulation of high volumes of air within a given space.

Finally, independent validation is critical. There are lots of wild claims out there, so look beyond hot air to hard evidence of scientific laboratory tests to substantiate performance data.



A word of caution

Residential air purifiers will not cut it in a working environment, so don't be tempted by the cheapest products. Also, beware of technologies with unproven efficacy and potentially harmful side effects. Ozone is best left for the stratosphere: here on earth it's toxic.

Not just good for the economy, but your budget



Any investment in portable air purification is a fraction of what it would cost for an in-built ventilation system.

Purifying existing air, instead of relying solely on the provision of fresh air, can generate further significant economies by saving on energy costs for heating or cooling outdoor air intake.

All in all, the right portable air purifier ticks all the boxes: health, brain and wallet.