January 2020

viewpoint

Worsening air pollution affects more and more people – is there anything employers can do to help protect their workforce?

At the risk of adding to the January blues, this is a subject we just can't ignore. It affects all of us and is only getting worse. Some 3.6 million premature deaths annually are attributed to outdoor air pollution. The majority of these deaths are due to heart disease and stroke, with a fifth due to respiratory illnesses and cancers. A recent survey of 4,300 cities worldwide found only 20% of the urban population live in areas that comply with guidelines for PM2.5, the fine particulate matter that is the most harmful air pollutant.[1] That's quite worrying.

And the costs are worrying too. In England, the total NHS and social care cost due to PM2.5 in 2017 was estimated to be £41.2 million, with high end estimations reaching £76.1 million.[2]

Air pollutants are emitted from a variety of sources, both natural and manmade. Everyday activities like transport, industrial processes, farming, heating and energy generation have a detrimental effect on air quality[3] and, as these have been building up for hundreds of years, it's easy to see how air quality has become the global problem it is today.

As this is an issue which is affecting the entire world, is there anything employers of multinational companies can do to try and make meaningful change and help protect their workforce?

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A truly global problem

PM2.5 are particles about one 30th the width of a human hair and can penetrate deep into the lungs. Inhaling these invisible particles is linked to heart disease, stroke, lung cancer, respiratory infection and a range of other harmful conditions including infertility and even infant mortality.[4]

Data from the World Health Organization (WHO) suggests that air pollution affects the less wealthy more acutely. 97% of cities in low and middle-income countries (which tend to be developing economies) with more than 100,000 inhabitants don't meet WHO guidelines.[5] However, let's not forget, air pollution is not limited to developing countries. While in high-income countries this percentage decreases to 49%, according to data from the European Economic Area (EEA), around 90% of city dwellers in Europe are exposed to pollutants at concentrations higher than the air quality levels deemed harmful to health.[6]

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A University of Malaya paper believes most megacities in Asia are facing acute problems due to an increase in harmful air pollutants as a result of rapid urbanisation. In fact, of the world's 30 most polluted cities, 22 are in India, with Delhi an example of a city which is really struggling.[7] In November 2019, schools in the city were shut, and flights had to be diverted due to the heavy smog, while some people reported burning eyes, persistent headaches and coughing.[8] But India is far from alone. Earlier in 2019 South Korea saw levels of PM2.5 as high as 118 micrograms per cubic metre, the highest since monitoring began in 2015.[9]

And even places we think of as areas of natural beauty are not immune. California is home to some of the worst polluted cities in the USA. Three Californian cities hit the top of the chart for the three key measurements; by ozone (Los Angeles-Long Beach), by year-round particle pollution (Fresno-Madera-Hanford) and by short term particle pollution (Bakersfield)[10]

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It's not good for anyone's health!

It's important to remember, that those living and working in any big city are more at risk of ill health due to exposure to air pollution. In London, more than 9,000 premature deaths each year are caused by prolonged exposure to air pollution according to a study by King's College.[11]

And, it may be that the danger of air pollution is most noticeable when travelling to and from work. A recent Financial Times investigation[12] found that the London Underground is the most polluted area of the city where fine particles of dust, metal, skin and clothing fibre have built up in the tunnels over a century of use, leaving a toxic haze that is stirred up by passing trains and inhaled by passengers.

This investigation into different tube lines across London also discovered that levels of pollution on the underground are as much as ten times above the guidelines set by the WHO. For an average Londoner, taking the tube for more than an hour every day in effect doubles their exposure to PM2.5 particles.

Meanwhile, researchers in Atlanta, Georgia, planted specially designed sampling devices into the passenger seats of cars during the morning rush hour commute. The results showed up to twice as much particulate matter was detected in the car as it was by roadside sensors. The researchers also found that the pollution contained twice the amount of chemicals that cause oxidative stress – thought to be involved in the development of many diseases including respiratory and heart disease, cancer and some types of neurodegenerative diseases.[13]

On a similar note, researchers in the Netherlands have estimated that an hour a day stuck in traffic exposes drivers and their passengers to toxins equivalent to smoking 180 cigarettes a year.[14]

Different pollutants can impact the body in different ways. At very high levels, Nitrogen Dioxide, Sulphur Dioxide and Ozone gases can irritate the airways of the lungs, increasing the symptoms of those suffering from lung diseases, while fine particles can be carried deep into the lungs where they can cause inflammation and a worsening of heart and lung disease. Carbon Monoxide on the other hand prevents the uptake of oxygen by the blood which be especially dangerous for those suffering from heart disease.[15]

According to the WHO, as air quality declines, the risk of stroke, heart disease, lung cancer and chronic and acute respiratory diseases including asthma increases.[16] And Public Health England claims that long-term exposure to poor air quality is the largest environmental risk to public health in the UK.[17]

It does impact your workforce

In a fascinating study, economists from the National University of Singapore (NUS) found that exposure to air pollution over several weeks is not just unhealthy, it can also reduce employee productivity. The researchers discovered that, while daily fluctuations in pollution did not immediately affect the productivity of workers, when exposure was for 30 days or more, a definite drop in productivity was recorded.

Associate Professor Lio said: "Besides entering via the lungs and into the bloodstream, there could also be a psychological element. Working in a highly polluted setting for long periods of time could affect your mood or disposition to work."[18]

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The Department for Environmental and Rural Affairs (DEFRA) in the UK estimated that in 2012, poor air quality cost the economy £2.7 billion through productivity loss. Total health costs as a result of air pollution in the UK are estimated to range between £8.5 billion and £20.2 billion.[19]

The effects of poor air quality on office workers

A Harvard Business Review investigation found that air pollution is making office workers less productive. The investigation analysed employees in China's largest travel agency and found that a 10 unit increase in the Air Quality Index (AQI) led to a 0.35% decline in the number of call-outs handled by workers. This suggests that workers are 5-6% more productive when air pollution levels are rated as good by the Environmental Protection Agency. The researchers speculated that if this negative impact on productivity is indeed the result of diminished cognitive function, it could mean that the negative impacts of pollution on productivity will be greater in higher skilled jobs.[20]

Is anyone tackling air pollution?

Most countries are now recognising the urgent need to tackle air pollution but sometimes not until a real crisis occurs. During the worst smog in Delhi in November, the city introduced a transport scheme to remove half of the cars on the road at any one time. On alternate days, those with even numbered number plates and odd numbered plates could drive into the city centre. While this was only a short-tern solution, it would be interesting to know if any commuters are changing their habits.

In the UK, Bristol is a city trying to lead the way in the battle against air pollution. In November 2019, the city announced a new scheme to ban diesel vehicles between 7am and 3pm from entering a small central zone and introduce a charging system for them entering a wider area, which could have substantial health benefits.[21] A University of Oxford and University of Bath study found the health damage effects associated with diesel vehicle emissions are around 20 times more than electric vehicles and at least five times more than those associated with petrol vehicles.[22] According to Bristol City Council, poor air quality currently contributes to 333 annual premature deaths from respiratory illnesses in the city each year.[23]

In Seoul, the government has declared that dust pollution is a social disaster, meaning it can release emergency funding for measures including the mandatory installation of high capacity air purifiers in classrooms and encouraging sales of liquified petroleum gas vehicles, which produce lower emissions than those that run on petrol and diesel.[24]

However, there may be some cheaper solutions. A study in Stockholm found that there is a large potential for reducing emissions and exposure if all car drivers living within a distance corresponding to a maximum 30-minute bike ride to work changed from driving to commuting by bike. The researchers estimate that this would result in around 110,000 new cyclists and that lower vehicle emission would therefore reduce population exposure and save 449 years of life in Stockholm County.[25]

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Beijing: A success story

In Beijing, fine particle levels dropped by 35% between 2013 – 2017, while levels in surrounding regions dropped by 25%. The findings, published in a United Nations (UN) report, found "no other city or region on the planet has achieved such a feat." The success was due to an effective air quality management system, in place over 20 years, which includes complete legislation and enforcement mechanisms, systematic planning, powerful local standards, strong monitoring capacity and high public environmental awareness.[26]

What can you do to help your employees?

Poor air quality can impact the health of the workforce and result in increased absenteeism, reduced productivity and potential safety hazards. This can, in turn, lead to a rise in health claims linked to poor air quality. Employers are responsible for providing safe work conditions and this includes healthy air in the workplace – however that can be a real challenge if your employees are outside.

The WHO provides some examples of workplace measures to protect workers from ambient (or outside) air pollution, including:

- reduction of exposure – reducing the working time outdoors, rotation of workers, restricting work during episodes of severe air pollution
- providing respiratory protection programmes – appropriate respirators, fit testing, training workers
- medical surveillance of workers – medical check ups for underlying health conditions that can worsen with exposure to air pollution like asthma, cardiovascular disease
- health surveillance of the working environment – recording levels of air pollution from the municipal sources
- reporting of cases of occupational diseases that can be caused by ambient air pollution among exposed workers and follow up with the employment injury scheme.[27]

The British Lung Foundation[28] advises that if travelling to work by car or bike, avoiding rush hour will help commuters reduce their exposure to harmful air pollution. They encourage workplaces to introduce flexible working so people can miss the traffic or work from home occasionally. And working from home can even help boost productivity. A two-year study at Stanford University showed that telecommuters were more productive, took fewer sick days, shorter breaks and less time off – plus the company saved US$2,000 per employee on office space rent.[29]

Employers could also think about how their employees are affected – if the greatest risk is when travelling, consider whether they need their employees in the office every day or if they could encourage working from home at regular intervals or ask their staff to travel at non-rush hour times. Multinationals may also want to consider how they can reduce their carbon footprint and impact on air pollution by taking steps to reduce business travel and encourage more virtual meetings rather than face-to-face.

There is a significant role for multinational organisations to play in reducing air pollution and protecting their workforce. In their workplace, employers can conduct regular checks, both on the air quality and the health of the workforce and provide respiratory protection programmes if needed. Providing access for workers to comprehensive health and wellness programmes within their employee benefits programmes is essential to help recognise and treat any health issues.

Employee benefits programmes can also help. Access to health and wellness programmes to provide advice on recognising the effects of air pollution and potential health impacts can aid employees, while encouraging take up of cycle to work schemes could help to reduce the number of people driving.

Dangerous levels of air pollution will continue to be a major threat to global citizens for the foreseeable future. The world is very aware of this threat, however, and there are already improvements being made in cities all over the world to help reduce the level of pollution and some success is already being seen.

And employers can try to do their bit. While it may seem that improving air quality is out of the control of one individual or even one organisation, every little helps. Clean air and the working environment of employees should be at the top of every business agenda.

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