

## EDITORIAL

# What does climate change mean for occupational health professionals?

Climate change is the most important issue of our time. Thirty years of research, review and consensus from the United Nations' Intergovernmental Panel on Climate Change has led to alarming conclusions about how anthropogenic climate change is already affecting communities, ecosystems and biodiversity around the world. These findings and extrapolations are based on an assessment of around 6000 peer-reviewed publications and suggest that unless the global population can effect a carbon-neutral way of life in the near future, continued species loss is inevitable, along with global heating, degradation of human quality of life and population loss.

Unfortunately, most governments that have declared carbon neutrality targets are not in line to meet their targets. Even if those targets are met, they are inadequate to address potentially catastrophic climate change [1], particularly in view of our ever-growing human and livestock population. In response, the UK Healthcare Alliance on Climate Change wrote to the Prime Minister in support of expediting the UK's target for net-zero carbon emissions last year [2]. Those working in occupational health (OH) must give thought to how we may be part of the solution for our service users.

The World Health Organization's COP24 Special Report describes climate change as a poverty multiplier and the 'greatest health challenge of the 21st century', highlighting the direct effects of more frequent extreme weather events such as storms, droughts, flooding, heatwaves, temperature change and wildfires. In addition, indirect effects include the impacts on water and air quality, land use and ecology. The resulting effects on the security of shelter, food, safe water, livelihoods and on poverty levels, displacement and conflict have serious fundamental health effects in terms of nutritional status and physical and psychological health [3]. To date, due to baseline weather profiles, the global north has so far been protected from these outcomes, but the tertiary effects may already be appearing in the form of migration patterns [4], particularly in the global south.

Examples of secondary consequences associated with extreme weather events such as heatwaves include increased mortality, particularly in those with chronic diseases [5], along with heat- and humidity-related physiological stress upon workers in warmer climates. In outdoor workers, we may see more epidemics of sudden

fatal cardiac events as seen in the young male workers constructing the 2022 FIFA stadium in Qatar (despite their geographic origins and theoretical tolerance for working in hot climates [6]). The higher incidence of chronic kidney disease in various outdoor workers such as tropical sugarcane cutters, construction workers and farmers will likely be echoed elsewhere as heat stress is experienced in increasingly large parts of the world [7,8].

Indoor workers are not exempt from climate impacts either. The performance of office workers without access to sufficient air conditioning is likely to be negatively affected [9], with implications for a broad variety of employment groups and business streams. Global businesses will no longer need to be based in traditionally climatically hostile environments for these environmental issues to become a vital consideration. In a best-case scenario, managers and health and safety professionals will look to occupational medicine for advice on pre-emptive operational planning. In a worst-case scenario, the response will be reactive with advice on adjustments based on poor health outcomes for individual workers.

Specific research-related concerns relevant to travel medicine include the potential for variations in geographic spread and growth of disease vectors, such as the *Aedes* and *Haemagogus* mosquito species (vectors of Dengue fever, Chikungunya, Yellow fever, Zika and Mayaro viruses) and the *Anopheles* mosquito (vector of malaria) [1]. Predicting the altered risk distribution of infectious diseases in order to provide up-to-date advice to our service users along with ensuring timely access to preventive or post-exposure resources will be a critical aspect of our roles going forward. Many heavy industries have been 'off-shored' from the UK, along with their associated health risks. For occupational medicine specialists, there will be a requirement to forecast the relevance of old threats and to foretell the significance of newer ones.

Air quality can degrade respiratory health via temperature-dependent ozone formation, as well as aerosols and particulates from traffic and fuel burning. There are regional variations in air quality, and having a good understanding of the implications of the relevant literature will put us in good stead in our roles as medical advisers and planners.

Some industries and employers already feel these climate change effects and are adapting by, for example, re-locating their farms to less arid environments or finding new irrigation methods, moving away from coastal areas or flood plains or installing air conditioning and air filters in the workplace. These adaptive changes may be geographic, relate to the technology utilized or even include a change in the core nature of their business. OH specialists must prepare to proactively respond to the impending change in the employment landscape. Health and safety considerations are best structured around a hierarchy of controls, and this system offers a framework around which to adapt to climate change effects. In business, financial impacts are often the deciding factor in whether business can continue as usual—a less resilient workforce due to the health impacts cited above, with loss of experience and need for more frequent training cycles are likely to significantly impact on employers in the future. In the event that elimination of climate change is not successful, these losses will need to be balanced against the costs of introducing adaptive changes.

In addition to physical sequelae, we must also consider the mental health consequences of climate change. There are directly linked psychological consequences associated with the disruption caused by loss of access to secure employment, food, water, shelter and geographic displacement already seen in some countries in the global south. Another phenomenon is increased morbidity in those with psychiatric disorders in unduly hot weather [10]. Due to the looming impact upon the global north in the event of unchecked ‘greenhouse gas’ emissions, a more insidious issue is also becoming apparent, whereby mental health practitioners recognize ‘eco-anxiety’ or a grief reaction affecting sections of the population [11]. Individuals now realize that the future they work towards may not be the one that they and their children will experience, and may question the value of their work altogether. Eco-anxiety is starting to affect members of the current workforce as knowledge becomes more widespread—this is particularly so in younger people whose futures are more impacted by climate change. This will be a growing problem. Some may be able to positively focus their career paths towards sustainability-related employment, but others may not. Their concerns are likely to have a broader scope than anxiety or grief and may represent a loss of the sense of meaning to their work or even a frank existential crisis. With mental health services in the UK already under strain, and long-term sickness absence or presenteeism being a concern for employers, we must consider how we might add value in relation to this new and growing problem and how individual states will address their needs.

There may be pressure on and from employers to continue with ‘business as usual’, but we may be able to act as intermediaries between employer and employee, to help balance the needs of business demands with employee wellbeing. Health and wellbeing programmes have been popular in

recent years. Now that they are embedded in the employer psyche, they have a role in squaring this circle of climate change, the existential crisis at an individual or societal level and maintaining worker productivity. The authors of the COP24 Special Report note that health effects are not considered in carbon pricing (a mechanism designed to reflect the true cost of carbon), but as in other areas of medicine, health effects cannot be ignored in occupational medicine. Predicting the scale of the associated health effects, including impact upon the workforce and therefore the business, is not straightforward, however. Occupational medical specialists will need to consider how the consequences might be effectively articulated. We will need to engage with employers to advise on the physical and psychological health risks associated with current and future operational planning. With unchecked carbon emissions and the ensuing impact upon climate change having such far-reaching consequences, as medical leaders we must also consider our own behaviours and how to model those that promote wellbeing and influence people who engage in OH services. In a pyramidal/interconnected business world, OH specialists are uniquely placed to analyse and interpret the scientific evidence, understand the implications for the workforce and positively influence the choices made by employers in areas such as employee wellbeing, workplace conditions and health and safety. If the role of OH is to protect the health interests of both the employer and the employee, climate change is the biggest health issue that affects and will continue to affect both groups on an unprecedented scale and thus deserves our professional attention.

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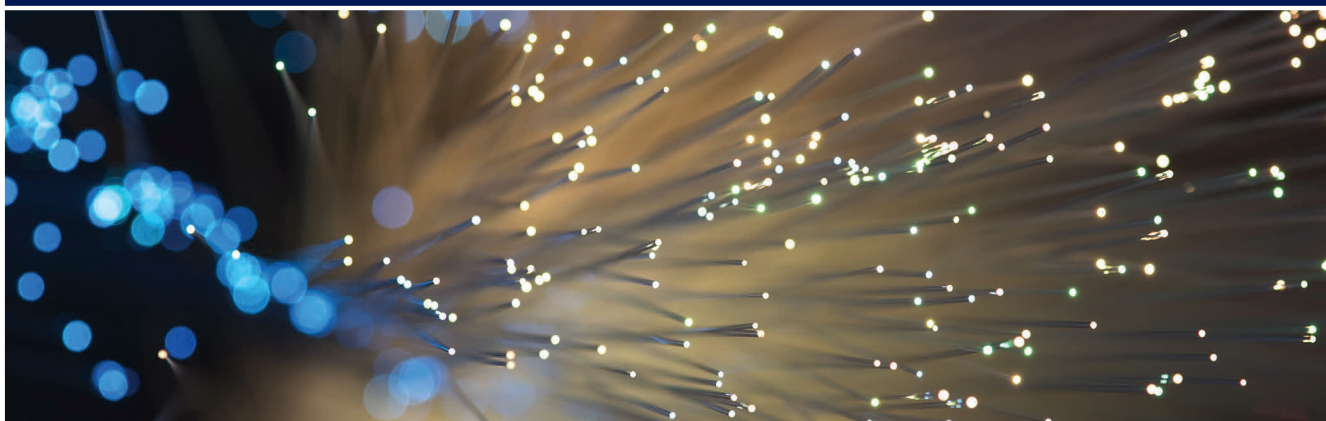
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