Global environmental change: opportunities and challenges for occupational health

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International action in response to global environmental change, and more specifically the emerging green economy and the strategies for climate change mitigation and adaptation, provides ample opportunities but also poses some challenges for protecting and promoting the health of workers

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Introduction

The environment influences population health in many ways - through exposures to physical, chemical and biological risk factors, and through related changes in human behaviour in response to those factors. Therefore, proper environmental management is the key to avoiding one quarter of all preventable illnesses which are directly caused by environmental factors.[Prüss-Ustün et al., 2006].

In this paper, we explore the main opportunities and challenges for protecting and promoting the health of workers in the context of global environmental change, and more specifically with reference to the strategies for climate change mitigation and adaptation and the greening of the economy

Environmental change and the green economy

Against the backdrop of a long standing environmental crisis, the unfolding economic and financial crisis has generated growing political will to invest in a greener and more sustainable economy [The Group of Twenty (G20), 2009].

The so called “green” economy involves a wide range of sectors such as clean technologies, renewable energies, water services, green transportation, waste management, green buildings and sustainable agriculture and forests, and represents a major opportunity for a sustainable and environment friendly development. It also calls for a further expansion of primary health prevention activities, including within occupational settings. Greening the economy is expected to create a series of health, economic, social and environmental benefits, including a reduction of greenhouse gas emissions and a better adaptation to climate change, extracting and using less natural resources, creating less waste and improving social equity.

Initiatives to protect and promote health and safety in work settings through environmental sustainability would enhance the health of workers while reducing the carbon foot print where ripe opportunities for greater energy efficiencies exist, and scale up access to renewable energy resources elsewhere. These initiatives include climate-friendly and safe constructions, sustainable modes of provision of renewable energy, reduction or safe management of exposure to chemicals, radiation and waste, sustainable provision of water and access to reliable occupational health services.

As the global environment is changing, it becomes increasingly clear that the pattern of employment is also changing. New, greener, cleaner, more sustainable and supposedly healthier and safer jobs are emerging. The so called “green jobs” are defined as “work in agricultural, manufacturing, research and development, administrative, and service activities that contribute substantially to preserving or restoring environmental quality”. Such jobs help to protect ecosystems and biodiversity while reducing energy, materials, and water consumption through high efficiency strategies to de-carbonize the economy and to minimize or avoid the generation of waste and pollution [Worldwatch Institute, 2008].

Implications for the health of workers

Global environmental change and the related policies to address climate change and the depletion of natural resources have a number of implications for the health of workers. These changes are likely to modify the distribution and severity of workplace exposures to occupational hazards and potentially result in increased incidence of workers morbidity, mortality and injury. On the other hand, the strategies for environmental protection and for mitigating the effects of climate change could have both beneficial and negative effects on workers’ health [Ellwood et al., 2010].

Changes in the outdoor work environment could result in heat stress, air pollution and UV exposure particularly among outdoor workers, for example in agriculture and construction. The health consequences range from dehydration, injuries, and heat fatigue to a higher burden of respiratory and cardiovascular diseases, cataract, skin and eye cancer and weakening of the immune system. Furthermore, effects on the breeding sites of disease vectors such as mosquitoes and on the pollen seasons will likely to modify the distribution and severity of workplace exposures to occupational hazards and potentially result in increased incidence of workers morbidity, mortality and injury. On the other hand, the strategies for environmental protection and for mitigating the effects of climate change could have both beneficial and negative effects on workers’ health [Ellwood et al., 2010].

Extreme weather events affect workers involved in emergency, rescue and cleanup efforts delivered in high risk situations due to more frequent floods, landslides, storms, droughts, and wildfires. Such workers are affected particularly by exposure to chemical...
and infectious agents, and risks of injuries. Hazards related to recovery of bodies, crowd control and assault are also common among rescue and cleanup workers and can result in a variety of psychological and psychiatric disorders, including post-traumatic stress disorders [Schulte, Chun, 2009].

Changes in the built environment can elevate the levels of certain occupational health risks. For example, improving energy efficiency through the so called “tight building” may result in accumulation of radon, a major cause of lung cancer, as well as to exposure to mould spores and bacteria [Schulte, Chun, 2009]. Microbiological contamination of air conditioning systems has been associated with outbreaks of Legionnaires’ disease [Morey, 2010].

However, some measures for reducing greenhouse gas emissions bring about significant benefits for the health of workers. For example, moving from fossil fuel to renewable energy would reduce the number of deaths, injuries and diseases among workers in coal mining, which is one of the most hazardous industries [Sumner, Layde, 2009]. Expanding organic farming would reduce exposure of farm workers to pesticides and other agrochemicals. Conversely, some technologies developed to improve carbon performance can potentially have negative impacts on the health of workers and should be accompanied by measures for protection of workers’ health. These include, for example, protection against mercury poisoning in the manufacture of fluorescent light bulbs, improving working conditions in the recycling industry, and controlling exposure to toxic substances in the production of solar panels.

Policies and measures

The WHO Global Plan of Action on Workers’ Health 2008-2017 was endorsed by the 60th World Health Assembly, as a global strategy to enhance the capacity of countries to better protect the health of workers worldwide. In particular, this plan urges countries to incorporate workers’ health in climate mitigation and adaptation strategies and in the measures for environmental protection, such as those dealing with environmental preparedness and response [World Health Assembly, 2007]. This requires building capacities to anticipate, recognize, assess and control changes in the work environment and occupational hazards as well as addressing the potential impacts of mitigation measures on workers’ health, including both occupational health benefits and risks.

The health impacts of green technologies arise in all stages of their lifecycle - from the extraction of the necessary raw materials, the manufacture of the technological devices, their transport, installation, operation, decommissioning and disposal. These stages can occur in different countries and involve different social groups. Therefore a life-cycle (cradle to grave) approach to the assessment of potential health impacts of green technologies should be used systematically. In the increasingly globalized economy, such an approach would avoid injustice whereby the users in some countries and social groups experience the health benefits of such technologies, while others bear negative health impacts of the measures for climate change mitigation.

While engaging in greening activities, occupational diseases and injuries may still occur in certain production processes. This needs to be fully considered in the choice of mitigation strategies, for example in transitioning from fossil fuel to renewable energy sources. The development of green jobs and green technologies should include assessment and measures to prevent workers’ ill health.

Finally, it is likely that the unfavourable health effects of climate change will be more serious in workplaces and countries which do not have sufficient measures already in place to protect workers’ health and safety. The prevention of such effects requires strengthening the capacities of these countries to protect and promote the health of workers, including policies, legislation, enforcement and services for occupational health. Specific measures include adjustment of occupational health and safety standards, development of new hazard control guidance and communications, early warning systems and surveillance, increased emphasis on prevention through design, in an attempt to improve social justice and health equity.

Improving health protection at the workplace would help address effectively the challenges of climate change and achieve environmental sustainability. Therefore, workers should have a fair share of health co-benefits arising from mitigation policies and strategies. The forthcoming international policy and financial instruments on environmental protection and climate change could provide powerful mechanisms to foster the protection of health of workers.

References


Morey, P.R., 2010. Climate change and potential effects on microbial air quality in the built environment. Washington DC: U.S. Environmental Protection Agency.


The Group of Twenty (G20), 2009. Leaders’ Statement: The Pittsburgh Summit.

World Health Assembly, 2007. Workers’ health: global plan of action, WHA 60.26, 60th World Health Assembly.