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Editorial

The Effects of Climate Change on the Health of Outdoor Workers

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The phenomenon of climate change occurs as a result of factors such as dynamic earth processes or external factors such as changes in the intensity of sunlight or human activity. External factors affecting the climate are often referred to as climate forces including processes such as fluctuations in the intensity of sunlight, distortions in the direction of the Earth's motion, and increased greenhouse gas concentrations. The causes of this increase can be attributed to the increase in heat, CO2, and greenhouse gases resulting in an increase in atmospheric ozone causing an increase in UV radiation at the Earth's surface.[1] Climate change cause the prevalence of heatstroke, kidney disease, neurological and mental problems, cardiovascular disease, stroke, diarrhea, infectious diseases, contagious diseases and food chain disruption in onshore and marine ecosystems, increased ocular disease, increased immune deterioration and increased skin cancer.[2]

Despite many advances occurred in cooling technologies and heating strategies, the inability of the body to fully control the thermal energy produced remains a serious health concern. In 2012, heat-related illnesses caused the highest number of weather-related casualties in the United States due to cardiac arrest and caused other heat-related illnesses.[3] As a result, increasing heat in response to climate change can cause many health problems including heat stress and its associated effects for workers especially those working in the open air.

Heat stress is a non-specific physiological response of the body when it is exposed to high temperatures. Also, according to the National Occupational Safety and Health Report of the United States during 1983-2001, most cases of heat-induced illnesses in mines occur during the workday shift.[4] This can be due to the higher daytime heat. Increasing body temperature and decreasing body fluid (hydration) have a negative effect on the behavior of the workers including physical exhaustion, irritability, numbness, miscarriages, decreased appetite, vomiting effects, and fatigue. It can lead to reducing efficiency, and safety. In addition, investigating the role of heat stress on accidents has shown that very high and low temperatures are statistically and significantly related to unsafe behaviors of workers.[5] In some studies, exposure to heat stress in open-pit mines was determined based on the temperature index of the burners compared to the standard in all workplaces above the recommended limit.[6,7] Consequently, it can be concluded that climate change can be a greater threat to outdoor workers.

Climate change is caused by an increase in greenhouse gases and a decrease in atmospheric ozone which in turn increases the amount of UV radiation that can affect everyone especially outdoor workers. As a result, climate change has a positive and significant relationship with increasing UV radiation. Various studies have shown that excessive exposure to UV radiation can lead to the risk of eye damage (cataracts, photocrititis), sunburn, immunosuppression, and skin cancer. Consequently, outdoor workers are more affected by UV

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radiation as a result of climate change. Accordingly, preventive measures should be taken to reduce exposure to heat and UV radiation to reduce the effects of climate change. Ergo, measures should be taken to reduce the exposure to outdoor workers. This may include training workers regarding the proper use of personal protective equipments, a periodic health check of workers to assess their health and to prevent the diseases, the formulation of necessary regulations, guidelines and standards regarding cultural and climatic characteristics and their performance in outdoor occupations. In addition, drinking cool water at work, preparing posters about heat stress and UV radiation in the workplace and its side effects to reduce its damages, shift work in people exposed to heat stress and UV radiation, preventing people with heart disease to work outdoor, the use of special creams to reduce exposure to UV can also be highlighted in this regard.

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