Climate Change and Occupational Health

Edited by Maria Concetta D’Ovidio, Carlo Grandi, Enrico Marchetti, Alessandro Polichetti and Sergio Iavicoli

Preface

Maria Concetta D’Ovidio1, Carlo Grandi1, Enrico Marchetti1, Alessandro Polichetti2 and Sergio Iavicoli1

1Dipartimento di Medicina, Epidemiologia, Igiene del Lavoro e Ambientale, Istituto Nazionale per l’Assicurazione contro gli Infortuni sul Lavoro (INAIL), Monte Porzio Catone (Rome), Italy
2Dipartimento di Tecnologia e Salute, Istituto Superiore di Sanità, Rome, Italy

The climate change is defined as “a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods” [1]. “Although a small quantity of greenhouse gases (GHGs) results from natural processes, most are emitted by human activities. Massive use of fossil fuels such as hydrocarbons (coal, gas, oil), deforestation, and intensive grazing and farming produce large quantities of greenhouse gases, which concentrate in the atmosphere. GHG emissions accelerate global warming” [2]. The climate change “has the potential to affect human health in a number of ways, for instance by altering the geographic range and seasonality of certain infectious diseases, disturbing food-producing ecosystems, and increasing the frequency of extreme weather events, such as hurricanes” [3].

“The science of the anticipation, recognition, evaluation and control of hazards arising in or from the workplace that could impair the health and well-being of workers, taking into account the possible impact on the surrounding communities and the general environment” is a general definition referred to occupational health and safety [4].

Environmental chemical, physical and biological pollutants may induce adverse health effects on the exposed worker. The interaction between two or more risk factors in determining or modulating a health outcome is the rule not the exception. Preventive and protective measures are mandatory to reduce or eliminate exposure and a duty for all occupational risk factors according to the European regulation, but their implementation is more difficult for outdoor workplaces than for the indoor ones. Outdoor workers belong to many categories and represent a significant fraction of the entire workforce. Given the higher vulnerability of the outdoor environment to climate factors, climate change may affect more largely outdoor workers than indoor ones, representing a risk factor by itself or modulating the action of other occupational risk factors. Consequently, there is a growing need to take into account the impact of climate change in occupational risk assessment and management, especially for outdoor workers.

Until now, the scientific literature on climate change has been focused mainly on public, non occupational, health as well as on the role of natural and anthropogenic factors. On the contrary, occupational health has not yet been fully explored in terms of the impact of climate change and the existing studies mainly refer to heat stroke episodes and occupational accidents due to, or promoted by, extreme temperatures. Traditionally, both climate change and occupational health are two complex and multidisciplinary topics, requiring different and complementary expertise.

The purpose of this monographic section of Annali dell’Istituto Superiore di Sanità is to focus the effects of climate change on occupational health and safety from a multidisciplinary point of view. Thermal wellbeing, productivity, exposure to solar radiation, pesticides, vector-borne biological agents and biological allergens are examined in the light of the ongoing climate change. Moreover, implications on occupational health in Ecuador, radiation protection in nuclear facilities, occupational accidents associated to extreme weather events are analyzed as well. Finally, a greener labour market is discussed as a part of strategies to face climate change.

A multidisciplinary approach is the leading strategy and, at the same time, the most important tool by which the initiative “Climate change and occupational health” has been conducted: biologists, physicists, chemists, physicians, statisticians and other professionals from different institutions merged their expertise, contributing to the monographic section with a continuous and growing interchange. “Integrated approaches have been posed as comprehensive solutions to complex issues. Empirical evidence, while still emerging, provides some support for this. Continuing investment in, and evaluation of, integrated approaches are worthwhile” [5].

An integrated approach is also adopted by the National Institute for Occupational Safety and Health (NIOSH) and promotes a relationship between work and life environments and health in terms of protection,
Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels... Parties recognize that adaptation is a global challenge faced by all with local, subnational, national, regional and international dimensions, and that it is a key component of and makes a contribution to the long-term global response to climate change to protect people, livelihoods and ecosystems, taking into account the urgent and immediate needs of those developing country Parties that are particularly vulnerable to the adverse effects of climate change” [2]. Moreover, “the Working Group II contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC WGII AR5) considers climate change impacts, adaptation, and vulnerability. It provides a comprehensive, up-to-date picture of the current state of knowledge and level of certainty, based on the available scientific, technical, and socioeconomic literature. As with all IPCC products, the report is the result of an assessment process designed to highlight both big-picture messages and key details, to integrate knowledge from diverse disciplines, to evaluate the strength of evidence underlying findings, and to identify topics where understanding is incomplete. The focus of the assessment is providing information to support good decisions by stakeholders at all levels” [10].

The present need is to set the focus of knowledge on how climate change, affecting various factors, modulates occupational exposures. Since multiple and interacting exposures occur, it is of paramount importance to ensure the cooperation of different expertise in order to display the state of the art. This approach allows to foresee a research path accounting for the complex interactions between climate change and occupational health, creating a support to proceed along the road of the prevention.

REFERENCES