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Climate Change and Human Health

The Lancet Commissions

Health and climate change: policy responses to protect public health



Opinion

EDITORIAL

Editorials represent the opinions of the authors and *JAMA* and not those of the American Medical Association.

Climate Change

A Continuing Threat to the Health of the World's Population

Howard Bauchner, MD; Phil B. Fontanarosa, MD, MBA

Occupational Impacts

Environmental Change



Societal Response



Types of Worker Hazard

Amplification of existing hazards

Known hazards in new situations

New, unanticipated or unrecognized hazards

Why Workers are Important

Many of the population are workers

Workers face unique hazards

Intervention opportunities

NIOSH Activities



Developed a Conceptual Framework



2014 Established Climate Change Workgroup



2015 Established Climate Change Initiative

Contexts Local conditions/ **Population** Energy Urbanization/ policies Socioeconomic circumstances Deforestation growth **Global Climate Impact on Occupational** Change Safety and Health Hazards/Exposures **Research and Practice** Vector-borne Industrial Increased Increased Changes diseases transitions Conduct new research UV ambient Extreme air in the built & expanded & emerging linking climate and radiation weather temperature pollution habitats industries environment occupational diseases Identify numbers More hot Ozone More Job **Plants** exposure davs clean-up insecurity of workers exposed Carbon ←Insects monoxide Develop: - New hazard controls/ More workers Higher More guidance average out in severe tight temperature weather buildings Occupational Pulmonary Pathogens **Exposure Limits** New toxicants Lightning hazard Risk communication Molds/ Increased scenarios allergens Expanded surveillance radon Collaborate with environmental scientists/ "green movement" **Occupational Health Effects** Modify risk assessment methods Heat Respiratory Skin Allergies/ Lung Unknown disease stress cancer asthma cancer Develop leading Traumatic Tight Dermatitis Cardiovascular indicators of climate-Fatigue injuries 1 building disease Musculoskeletal Eve effects potentiated health syndrome Increased disorders Mental effects chemical Acute stress Cardiovascular **Immune** Infectious intolerance death ← diseases ▼ Mental stress disease dysfunction

FIGURE 1. Conceptual framework of the relationship between climate change and occupational safety and health

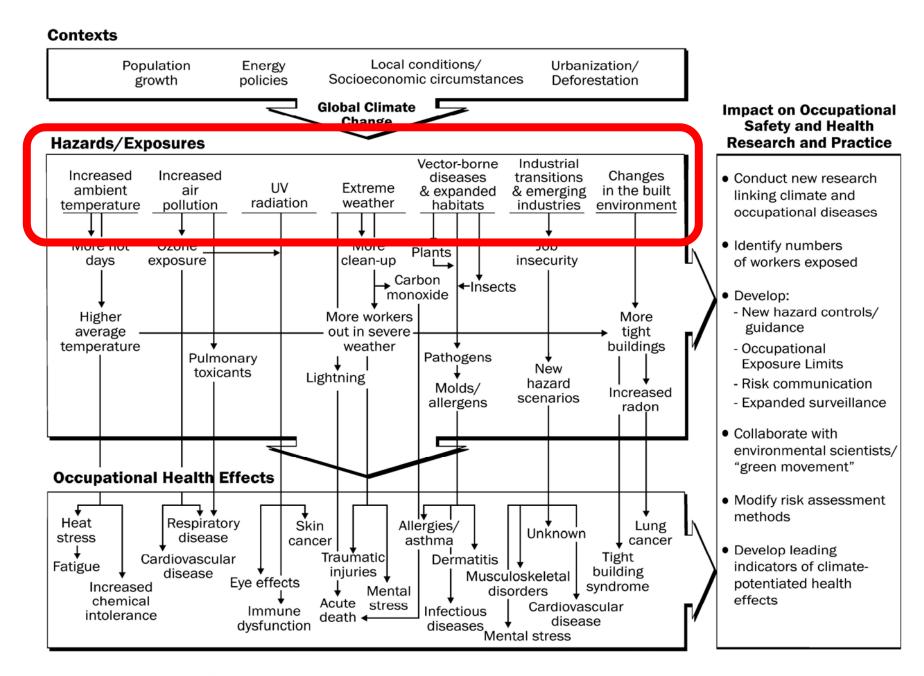


FIGURE 1. Conceptual framework of the relationship between climate change and occupational safety and health

Hazards / Exposures

ENVIRONMENTAL CHANGE

- Increased ambient temperature
- Increased air pollution
- UV radiation
- Extreme weather
- Vector-borne diseases & expanded habitats

SOCIETAL RESPONSE

- Industrial transitions & emerging industries
- Changes in the built environment

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NIOSH Climate Change Workgroup

Aim

Ensure current, emerging, and anticipated worker safety and health issues associated with climate change are appropriately identified and prioritized, and to determine the most important actions.







NIOSH Climate Change Workgroup

Workgroup Conclusion

There is strong evidence that climate change is and will present occupational safety and health hazards and numerous critical research questions need to be resolved regarding specific hazards, sentinel events, risk assessment and preventive actions.

Workgroup Outcomes

- Establishment of a Climate Change Initiative
- Draft strategic research agenda

NIOSH Climate Change Initiative

Mission: Protect workers from the adverse impacts of climate change

- 1. Increase awareness of occupational hazards resulting from climate change
- 2. Establish research priorities
- 3. Promote and support research
- 4. Use research findings to develop recommendations, guidance and policies

Strategic Research Agenda

Information Sources

- Conceptual framework
- Literature review
- Participation in federal interagency activities
- Consultation with stakeholders

Findings

- Research is needed!
- Unclear definition of 'climate change related'
- Some research is underway
- Limited data on burden

Research Priorities

Who is impacted? How are they impacted?

- Surveillance
- Targeted data collection

Identify control measures

- Transfer/use existing knowledge
- Identify new interventions and controls

Research to Practice

- Disseminating information
- Influencing policy making

Challenges

Defining 'climate change related'

Estimating burden

Identifying emerging hazards

Communicating importance of workers

Conclusions

- Lots of research needs
- Limited information available
- Determining burden is a top priority
- Research priorities need regular reassessment

Call to Action

- Occupational safety and health should be a core component of climate change related public health
- Everyone has a role to play
- Need to just make a start!

THANK YOU!

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http://www.cdc.gov/niosh/topics/climate/ http://blogs.cdc.gov/niosh-science-blog/category/green/

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