

CLIMATE CHANGE AND OCCUPATIONAL SAFETY AND HEALTH: AN OVERVIEW



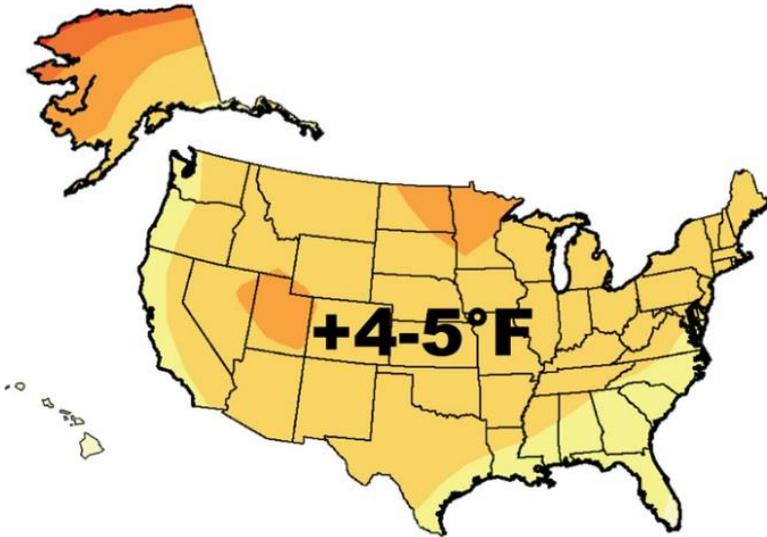
**Joanna Watson, NIOSH Western States Division
Anchorage, Alaska**



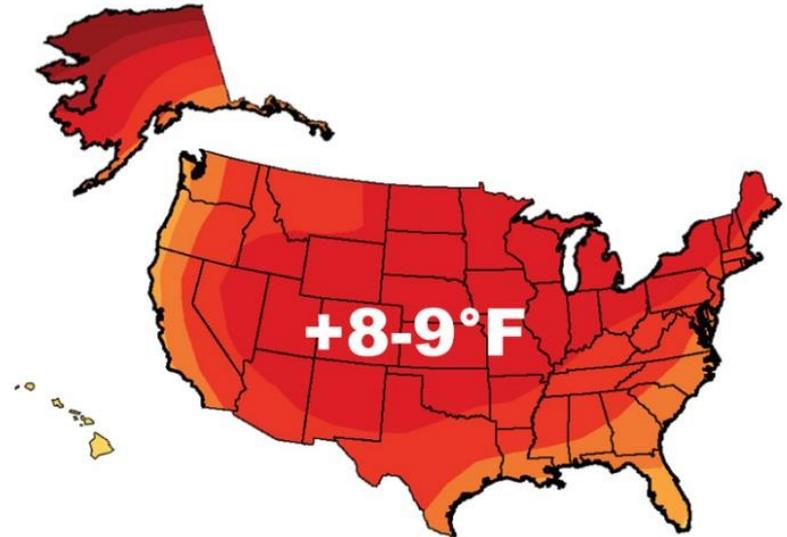
“The findings and conclusions in this report are those of the author(s) and do not necessarily represent the views of the National Institute for Occupational Safety and Health.”

PROJECTED TEMPERATURE INCREASE BY 2100

Lower CO₂ Emissions (B1)



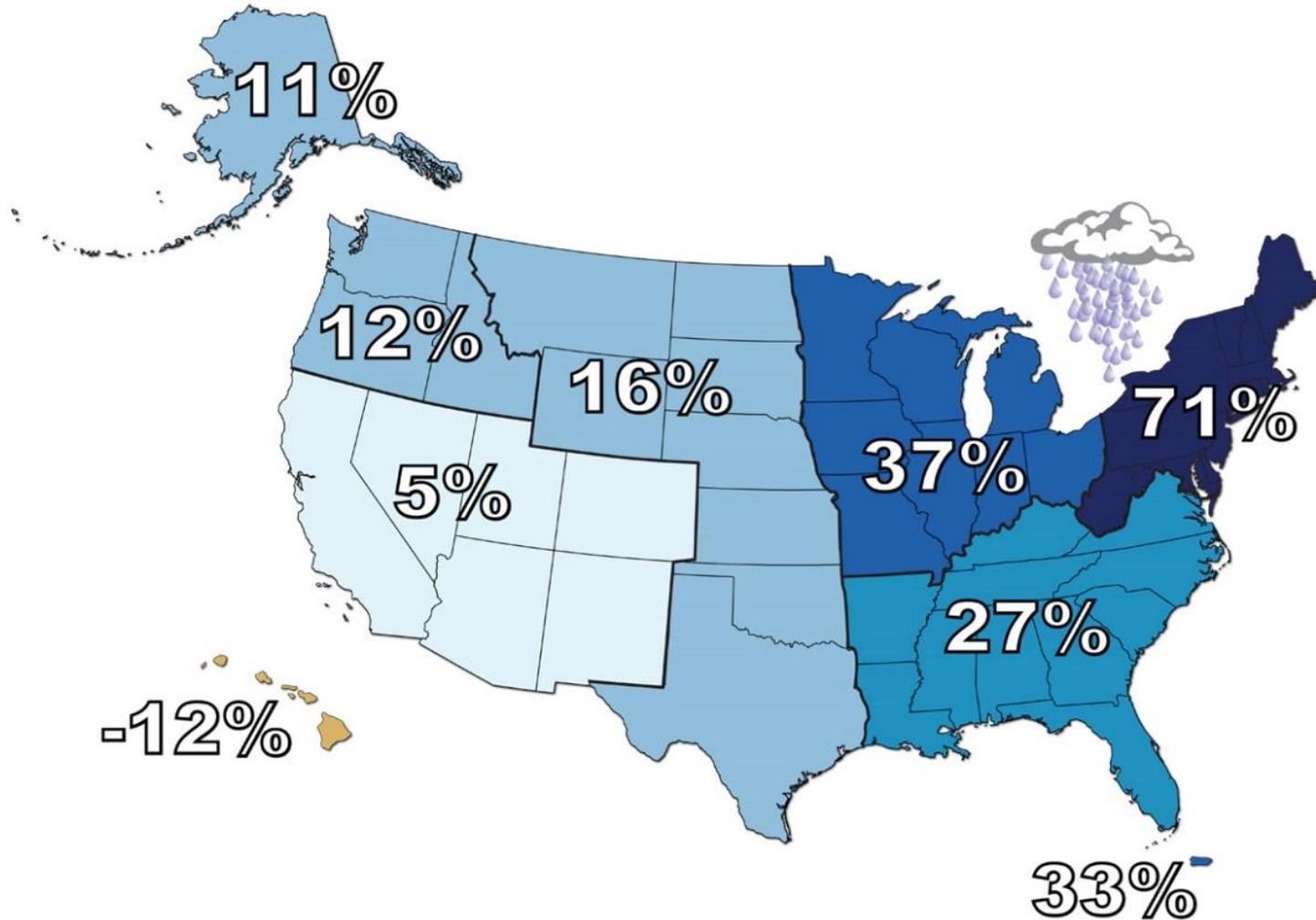
Higher CO₂ Emissions (A2)



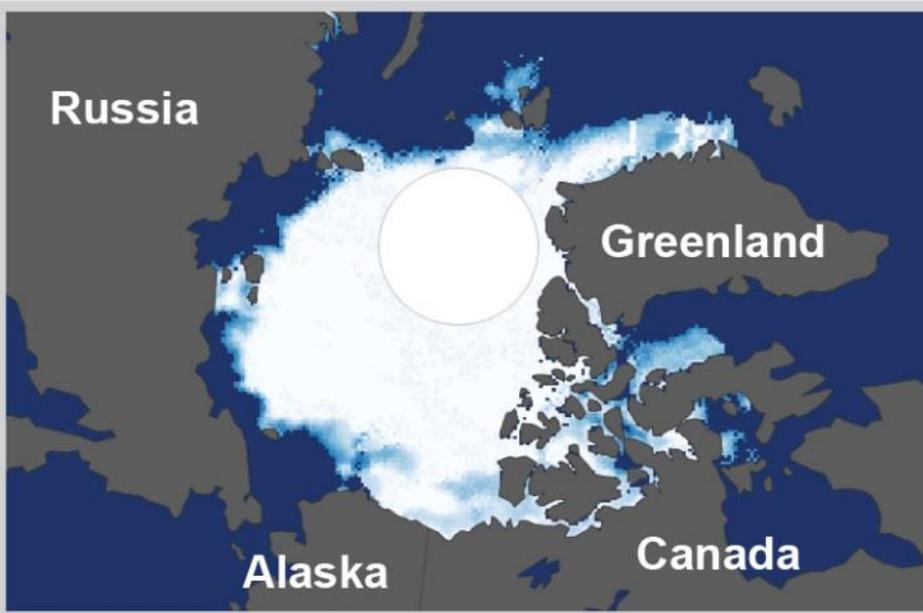
Temperature Change (°F)



OBSERVED CHANGE IN VERY HEAVY PRECIPITATION



SHRINKING ARCTIC SEA ICE



Sept. 1984



Sept. 2012

Rod Stewart's Comeback + Hip-Hop Smash 'Hamilton'

Issue 1245 • October 8, 2008
\$4.99

Rolling Stone

**Obama's
Climate
Crusade**
The Rolling Stone
Interview



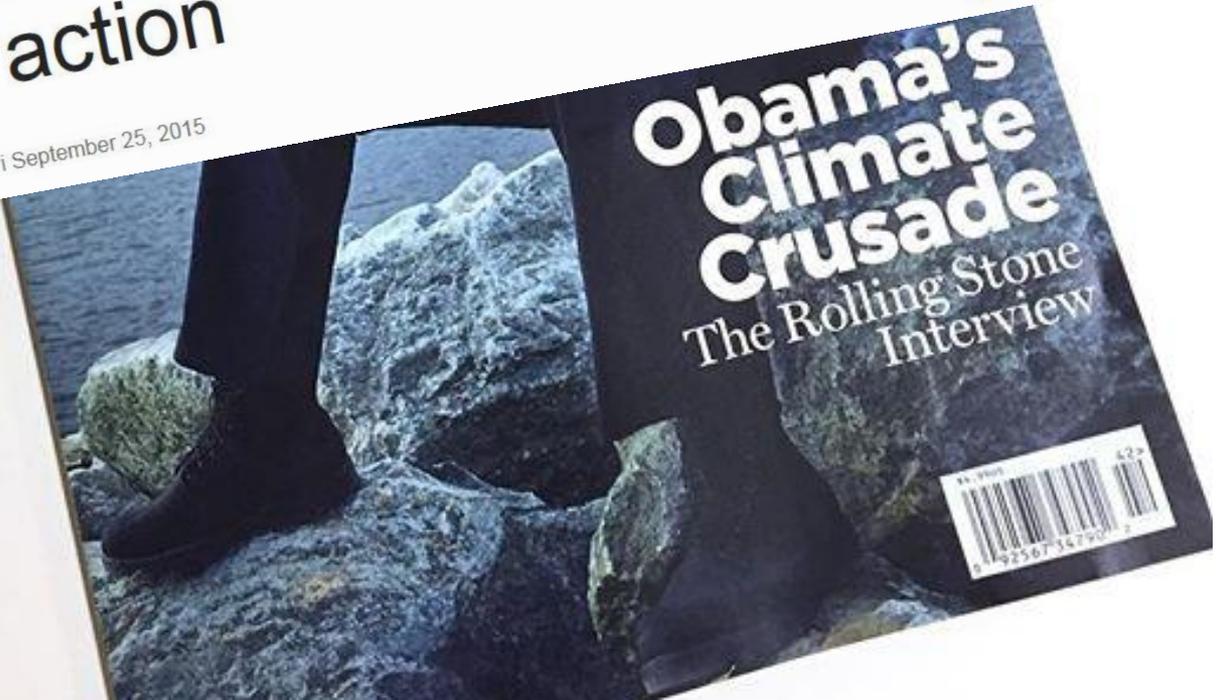


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U.N. chief: Listen to Pope Francis on climate action

By Ban Ki-moon
Updated 9:20 AM ET, Fri September 25, 2015



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

WHY WORKERS ARE IMPORTANT

Many of the population are workers

Workers face unique hazards

Intervention opportunities

Environmental Change



Societal Response



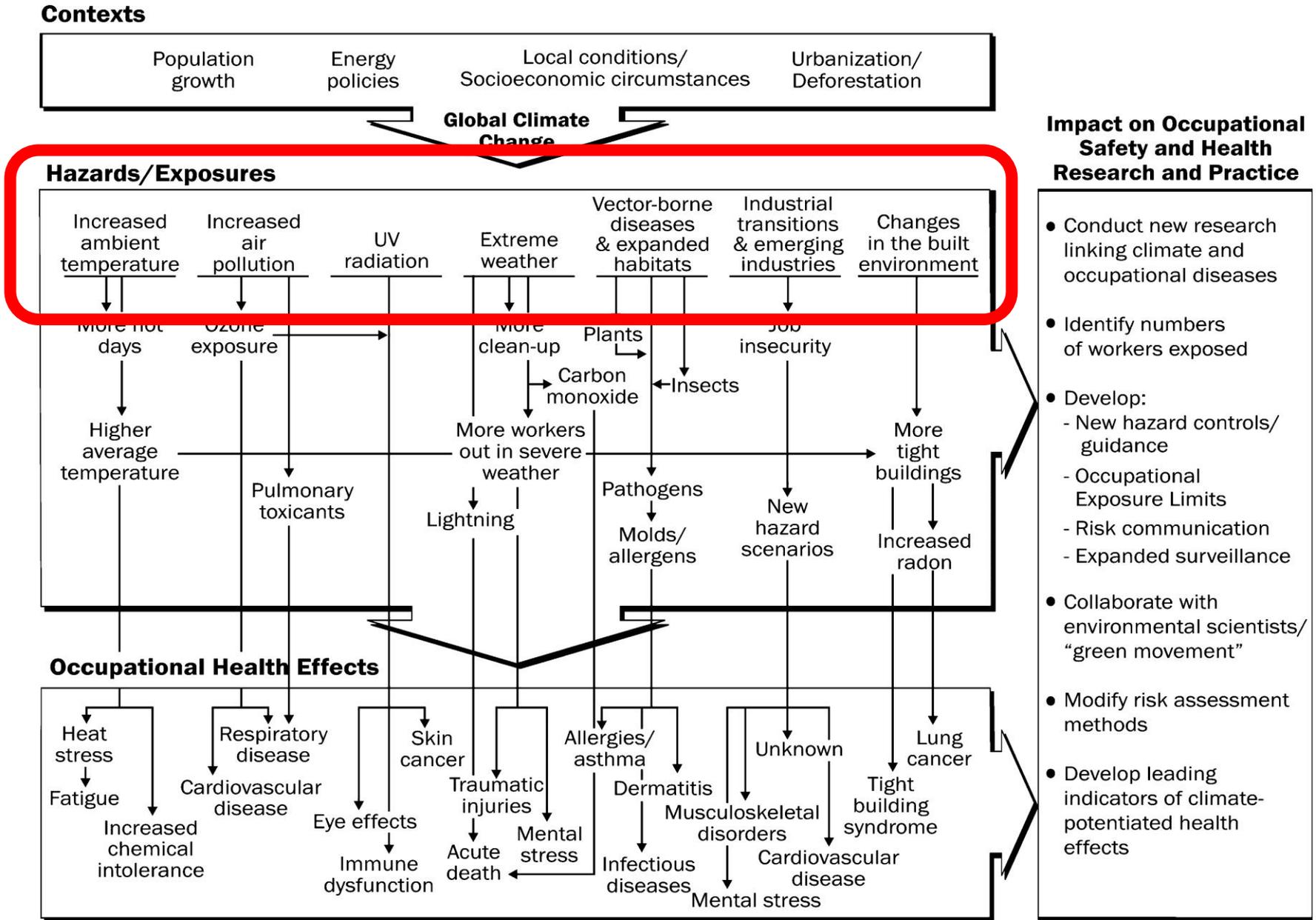


FIGURE 1. Conceptual framework of the relationship between climate change and occupational safety and health

Taken from: Climate Change and Occupational Safety and Health: Establishing a Preliminary Framework. Paul A. Schulte & HeeKyung Chun.

Journal of Occupational and Environmental Hygiene, Volume 6, Issue 9, Pages 542–554, 2009

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

INCREASED AMBIENT TEMPERATURE



Photo Credit: Ricardo DeAratanha/Los Angeles Times

INCREASED AMBIENT TEMPERATURE: ALASKA



INCREASED AMBIENT TEMPERATURE: ALASKA

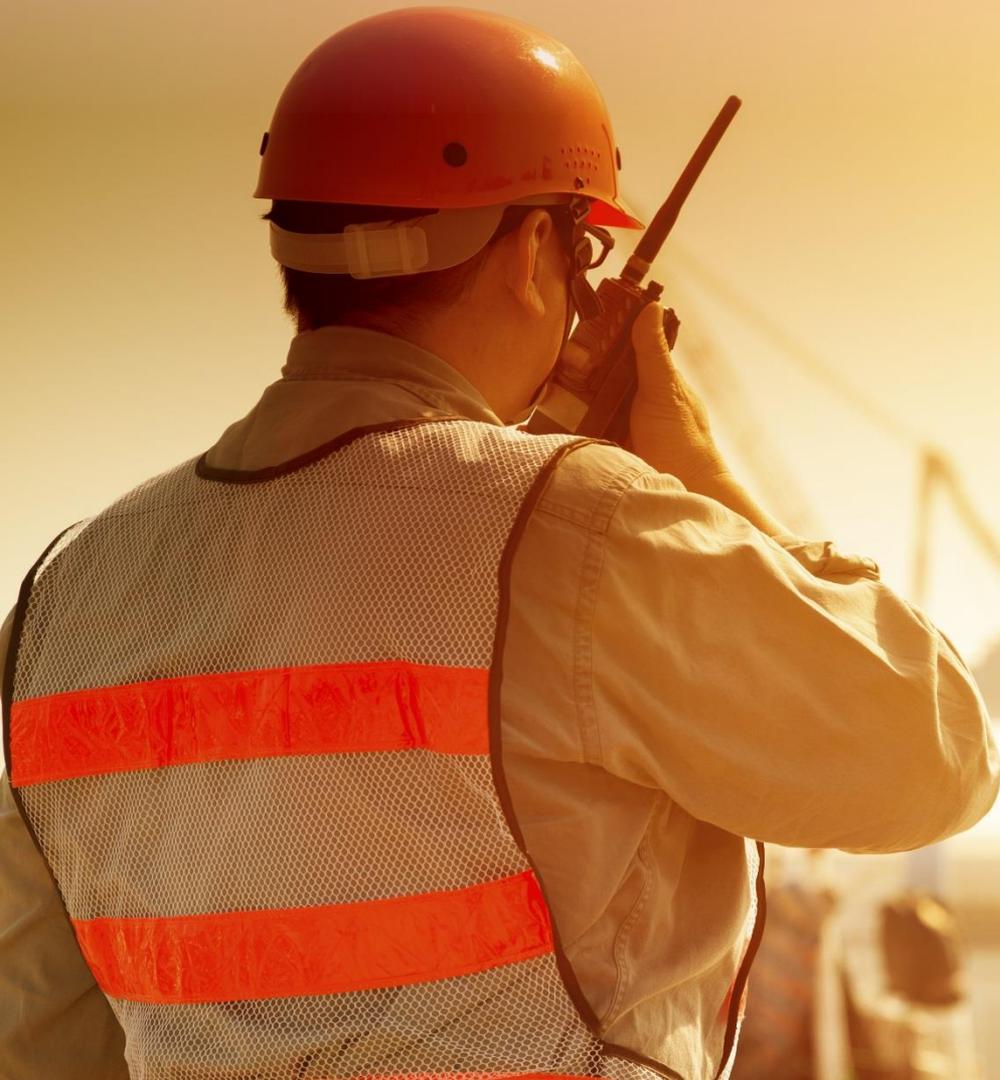


Photo Credit: Harry Jackson/Alaska Dispatch News

AIR POLLUTION



UV RADIATION



EXTREME WEATHER: RESCUE



Photo Credit: AP Photo/Detroit News,

EXTREME WEATHER: CLEANUP



EXTREME WEATHER: WORKER FATALITIES

NATURAL DISASTERS: 1992–2006

307 worker deaths

WILDFIRES

80 deaths

80% during
active
firefighting

HURRICANES

72 deaths

60% during
cleanup &
restoration

FLOODS

62 deaths

45% in a
motor
vehicle

WILDFIRES

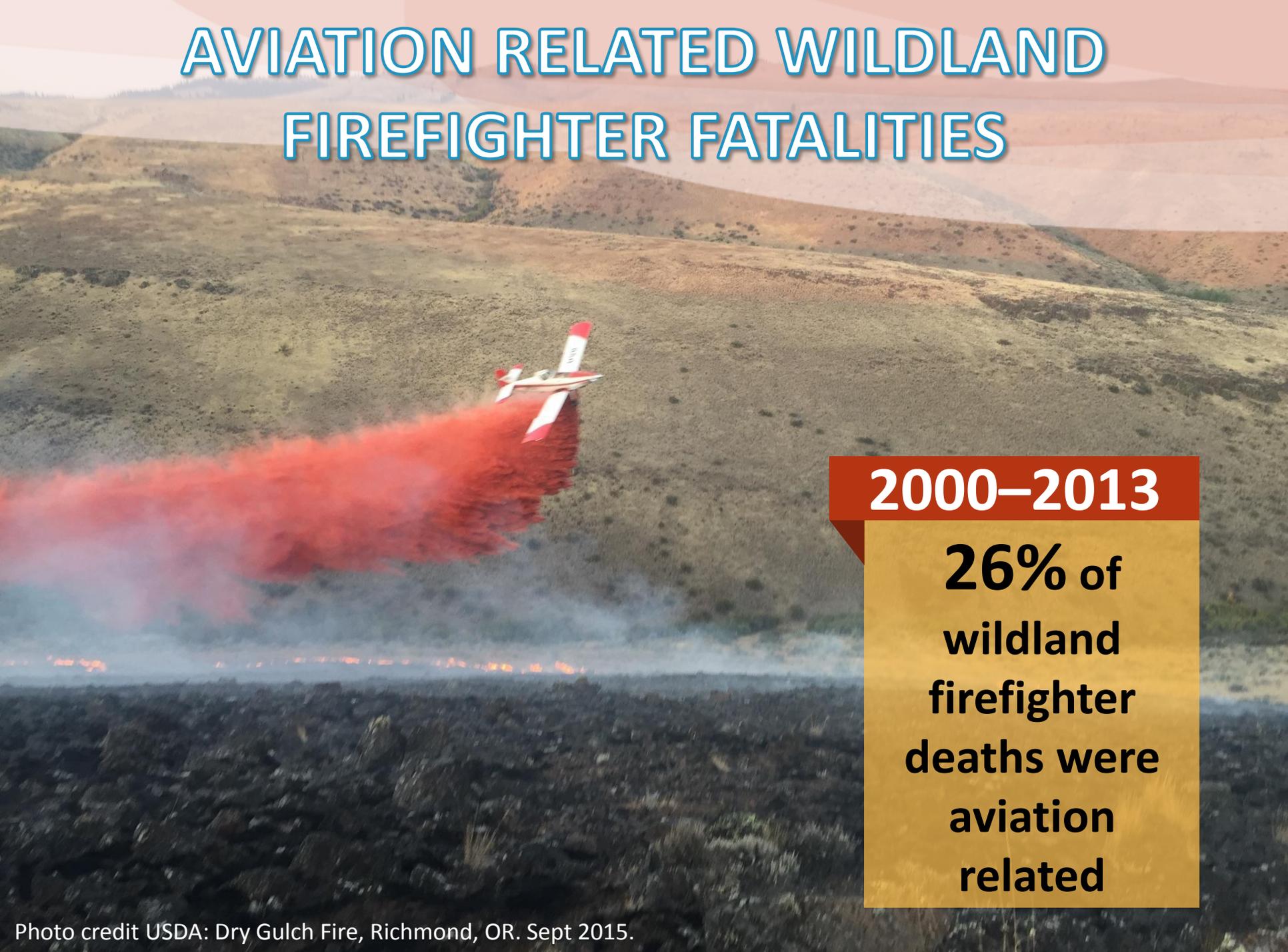


2000–2013

298

**wildland
firefighter
fatalities**

AVIATION RELATED WILDLAND FIREFIGHTER FATALITIES

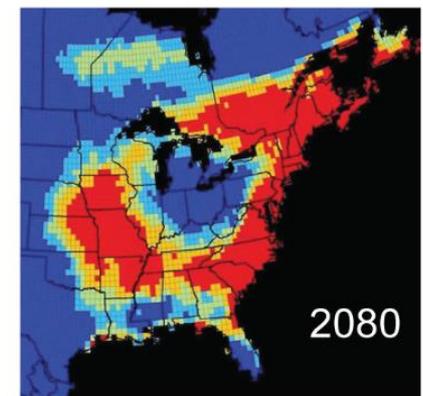
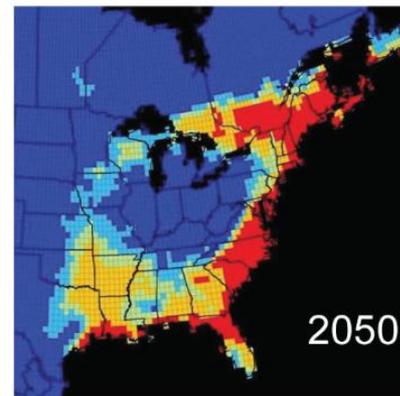
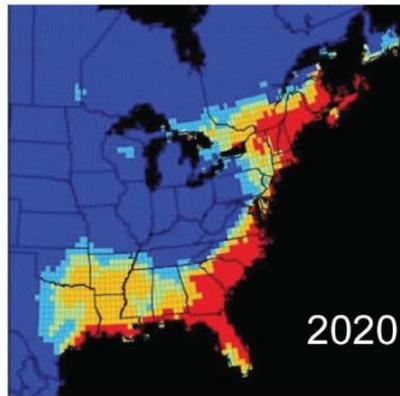
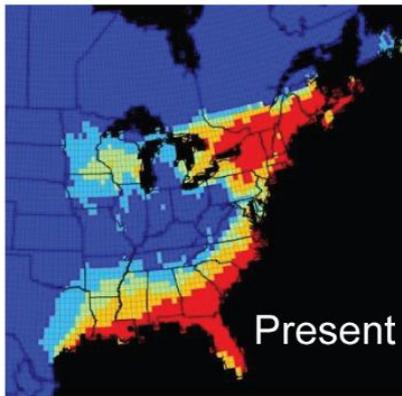


2000–2013

**26% of
wildland
firefighter
deaths were
aviation
related**

VECTOR-BORNE DISEASES & EXPANDED HABITATS

Projected Changes in Tick Habitat



Establishment Probability (%)



INDUSTRIAL TRANSITIONS



2011

**3.4
Million
Green Goods
& Services
Jobs**

RENEWABLE ENERGY

Solar Energy



Photo by Dennis Schroeder, NREL 31448

Wind Energy



Biofuels



Photo by Dennis Schroeder, NREL 19894

Hydropower

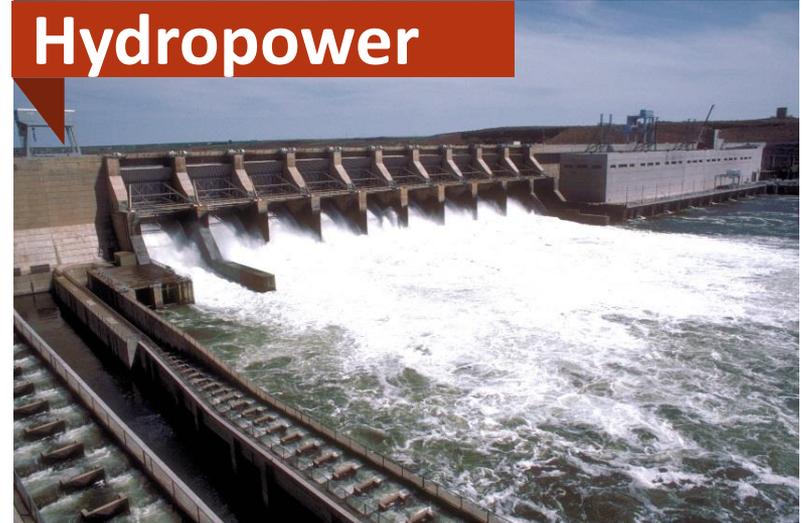


Photo by US Army Corps of Engineers, NREL 06595

SOLAR POWER

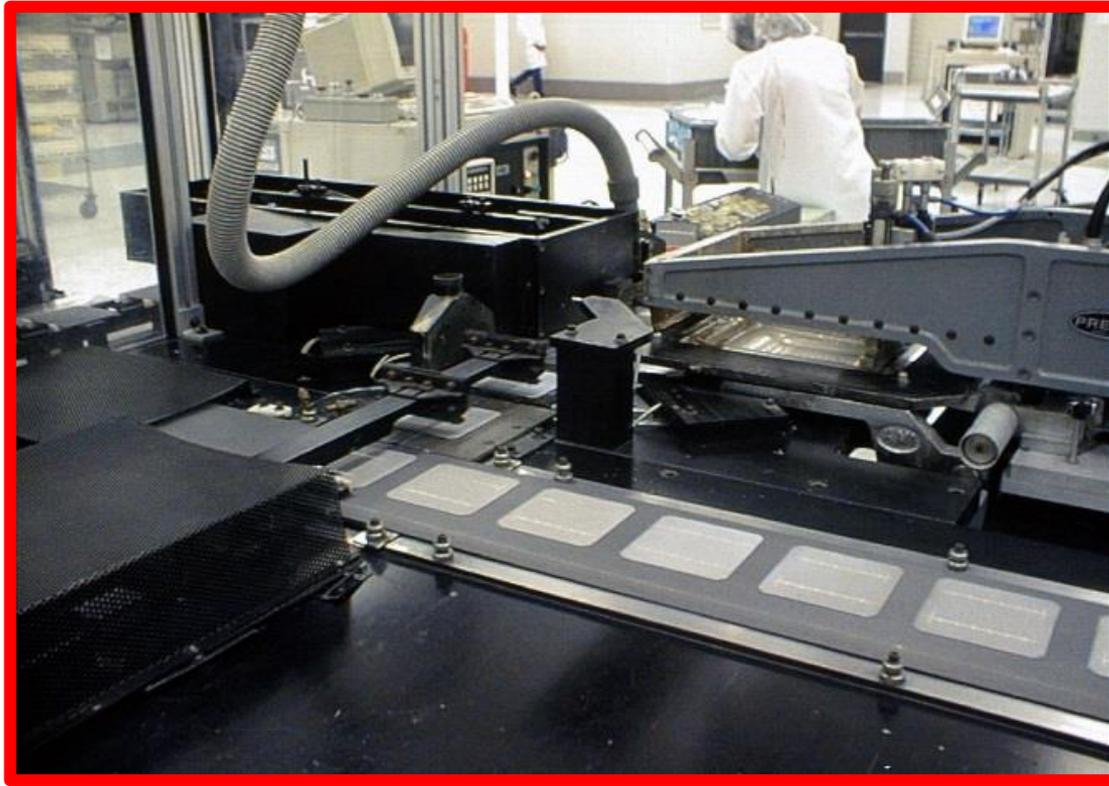


Photo by Shell Solar, NREL 07829



SOLAR POWER



Photo by Dennis Schroeder, NREL 30545



Photo by Susan Biló, NREL 21410



SOLAR POWER



Photo by Dennis Schroeder, NREL 30545



Photo by Susan Biló, NREL 21410



SOLAR POWER



Photo credit: Levkr/Thinkstock



SOLAR POWER

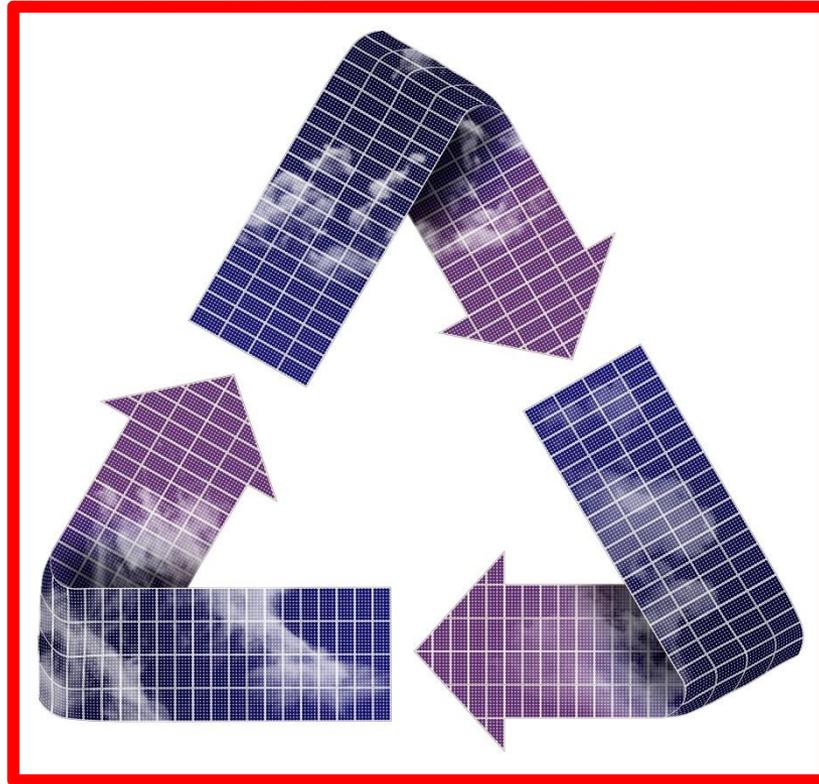
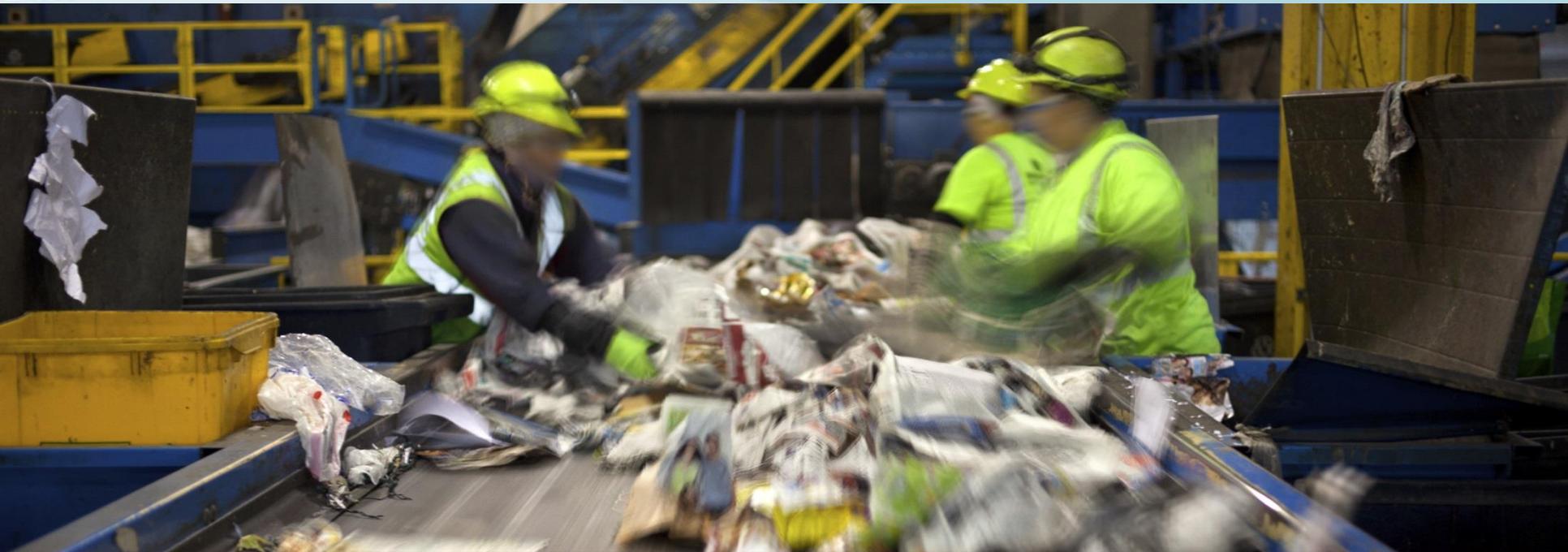


Photo credit: EzumelImages/Thinkstock



RECYCLING



Materials Recovery Facilities

2011–2013: 17 workers killed

2012: 8.5 non-fatal injuries per 100 workers

All industries: 3.5 non-fatal injuries per 100 workers

Waste management and remediation: 5.1 non-fatal injuries per 100 workers

RECYCLING



BUILT ENVIRONMENT

Las Vegas City Center

**6 LEED Gold
Certifications**

**6 Construction
Worker Deaths**



BUILT ENVIRONMENT



BUILT ENVIRONMENT: PREVENTION THROUGH DESIGN



GREEN JOBS. SAFE JOBS?

Intervention opportunity

**Incorporating
occupational safety &
health requirements
into 'green
certifications'**



CHALLENGES

DATA CHALLENGES

- No data available
- Existing datasets not detailed enough
- Lack of resources

'HOT' TOPICS

- Heat-related illness
- Emergency preparedness
- Understanding characteristics of 'green jobs'

AND FINALLY...

Public Health connects us all



THANK YOU!

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