

IOWA CLIMATE STATEMENT 2014: IMPACTS ON THE HEALTH OF IOWANS

Iowans are experiencing the very real impacts of climate change, including heavier rains in spring, increased flooding, and a longer growing season ([Iowa Climate Change Impacts 2010](#)). Human health effects are just as real and are already being felt in Iowa.

Most obvious, immediate, and direct are the health-related effects of extreme events ([Pinkerton et al. 2012](#)), which are increasing in frequency and severity as our atmosphere warms and holds more moisture ([Kirtman et al 2013](#), [US EPA 2014](#), [Vavrus and Van Dorn 2010](#)). Iowa and the Midwest have experienced higher humidities and increased nighttime temperatures making it harder to recover from daytime heat stress ([Pryor et al. 2014](#)). Repeated heavy rain events cause increased exposures to toxic chemicals and raw sewage that are mobilized and spread by flood waters ([Broughton 2014](#), [Martinez et al. 2012](#)).

Degraded water quality is another direct and immediate problem associated with climate change. In farming states like Iowa, higher water temperatures and decreased mixing have combined with high nutrient levels to create harmful algal blooms that make the water unsuitable for human and animal consumption and for recreation as evidenced by more frequent beach closures at Iowa lakes ([Kosten et al. 2011](#), [Paerl and Huisman 2008](#), [Skopec 2014](#)). Algal blooms can produce crisis conditions as evidenced this summer in Toledo, Ohio, where a half-million people were left without safe water for drinking or bathing ([Lee 2014](#)).

A less obvious, but perhaps more common, health effect of climate change is its impact on respiratory and cardiovascular health ([Braga et al. 2002](#), [Caizzo et al. 2013](#)). With warmer temperatures and higher carbon dioxide levels in the air, plants produce not only more pollen, but also pollen with a higher allergen content ([Beggs 2004](#), [Wayne et al. 2002](#), [Ziska et al. 2003](#)). A longer growing season extends the period of exposure to allergens, and new allergenic plants moving northward into Iowa are magnifying the range of exposures ([Shea et al. 2008](#), [Ziska et al. 2011](#)). Respiratory problems such as childhood asthma have increased dramatically in prevalence since the 1980s ([Akinbami et al. 2002](#), [Friel et al. 2011](#)). In many cases, this is related to increased exposures to flood molds and to higher indoor moisture ([Hoppe et al. 2012](#)), as well as to lung-damaging ozone and fine particulate matter made worse by higher heat in urban areas ([Filleul et al. 2006](#), [Patz et al. 2014](#), [US EPA 2014](#)). Heat stress and exposure to air pollutants also increase the risk of heart attacks and stroke, especially in aging adults.

We are concerned about new infectious diseases arising in the Midwest as the organisms that carry them move north due to rising temperatures. We are now seeing new species of mosquitos and ticks in Iowa capable of transmitting diseases such as Dengue Fever and Ehrlichiosis ([CDC, 2014](#)). With increasing temperatures, more rainfall, and longer summers, these mosquitos and ticks can live longer and expand their range ([Mills et al. 2010](#), [Patz et al. 2014](#)).

Our changing climate's influence on mental health is perhaps less obvious, although the stress caused by climate-related physical displacement and loss of livelihood due to flood or drought is well established ([Peek-Asa et al. 2012](#)). Other mental health problems are growing concerns. For example, research since the 1980s has associated higher temperatures with increased aggression and violence and these are now being linked to climate change ([Anderson 2001](#), [Basu 2009](#), [Bohannon 2013](#), [Hsiang et al. 2013](#)).

As long as greenhouse gas emissions continue to increase, climate-related health problems will continue to grow. However, lowering emissions and seeking new ways to adapt to climate stressors will help ease the risks of new health problems, while simultaneously benefitting our economy ([Patz et al. 2014](#)). Energy efficiency and clean renewable energy have the co-benefits of reducing air pollution and producing jobs, creating economic opportunities for Iowans ([Houser et al. 2014](#), [Wei et al. 2010](#)). Many heart healthy activities such as walking or bicycling to work also decrease greenhouse gas emissions

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(Maizlish et al. 2013, Woodcock et al. 2009). Adopting strong climate-change policies will play a vital role in diminishing human suffering and illness now and for generations to come.

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