



February 10, 2015

TESTIMONY: Oral & written

To: Chairperson Lee and Vice-Chair Lowen, House Committee on Energy & Environmental Protection (EEP)
To: Chairperson Yamane and Vice-Chair Cullen, House Committee on Water and Land (WAL)
And: Members of the House Committees on EEP and WAL

From: The Hawaii Public Health Association (HPHA)
Subject: HB591, Relating to Climate Change

Aloha Chairs Lee and Yamane and Members of the House Committees on EEP and WAL:

My name is Nancy Partika, and I am President of the Hawaii Public Health Association (HPHA). HPHA is pleased to be testifying today in strong support for this bill on a public health issue that is unparalleled in nature: that of climate change and its impacts on health. The Hawaii Public Health Association (HPHA) represents a membership of over 600 practitioners, professionals, and students in the field of public health from various disciplines statewide. HPHA's mission is to promote public health in Hawai'i through leadership, collaboration, education and advocacy, and our vision is health equity in Hawai'i and the Pacific and a strong public health workforce able to effectively respond to health challenges. HPHA is very concerned about the current and projected impacts of climate change on Hawaii's people and their health.

"Climate change, together with other natural and human-made health stressors, influences human health and disease in numerous ways. Some existing health threats will intensify and new health threats will emerge. Not everyone is equally at risk. Important considerations include age, economic resources, and location. In the U.S., public health can be affected by disruptions of physical, biological, and ecological systems, including disturbances originating here and elsewhere. The health effects of these disruptions include increased respiratory and cardiovascular disease, injuries and premature deaths related to extreme weather events, changes in the prevalence and geographical distribution of food- and water-borne illnesses and other infectious diseases, and threats to mental health." (Source: *Climate Effects on Health*: <http://www.cdc.gov/climateandhealth/effects/default.htm>)

Hawaii is not alone in advocating for the need for dialog and action on the issue of climate change and health. The American Public Health Association (APHA) has identified Climate Change and Health as a key public health issue, and in the attached recent Journal of Emergency Management article (*How a Warming Climate Impacts Public Health, 2/3/15*), there are strong statements from APHA and other national leadership about the need to address climate change and its health implications now, rather than later.

Multnomah County in Oregon has developed a strategic plan to address climate change and health in 2013. The Great Lakes Public Health Coalition (Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin) are currently working to do parallel policy and advocacy work on climate change on a state-level. Federally, CDC's Climate-Ready States and Cities CDC's Building Resilience Against Climate Effects (BRACE) Framework Initiative is working to assist 16 states and cities partner with local and national climate scientists to understand the potential climate changes in their areas. CDC will assist states and cities in developing and using models to predict health impacts, to monitor health effects, and to identify the area's most vulnerable to these effects (<http://www.cdc.gov/climateandhealth/>). Very recently, the U.S. Office of the Assistant Secretary for Insular Areas established a new climate change coordinator position in the Department of the Interior to help leaders of the U.S. insular areas in the Pacific and the Caribbean plan and prepare for the impacts of climate change in their respective jurisdictions.

One striking example of climate change that we can all relate to in Hawaii is the increase in vog statewide, due in part to tradewinds being reduced by 28% over the past 38 years (source: *Professor Chip Fletcher, UHM School of Ocean and Earth Science and Technology*). This reduction in tradewinds is expected to increase in the years ahead. At an HPHA-sponsored Climate Change and Health briefing for stakeholders held at the State Capitol on Oct., 23, 2014, several presenters talked about Hawaii's efforts thus far in addressing

climate change, including the passage of Act 83 in 2014. HPHA is very supportive of state, national and community efforts to further the dialogue on what impacts and effects climate change may have on health-specific areas of concern, including:

Asthma

Respiratory Allergies (increased human exposure to pollen (due to altered growing seasons), molds (from extreme or more frequent precipitation), air pollution and aerosolized marine toxins (due to increased temperature, coastal runoff, and humidity) and dust (from droughts), **Airway Diseases**

Foodborne Diseases (food contamination of seafood from chemical contaminants, biotoxins, & pathogenic microbes & of crops by pesticides)

Nutrition (staple food shortages, malnutrition)

Heat-Related Morbidity & Mortality (heat exhaustion, heat cramps, heat stroke, & death)

Cancer (cancer risk, such as increased duration & intensity of ultraviolet (UV) radiation)

Cardiovascular Disease (climate change may exacerbate existing cardiovascular disease by increasing heat stress, increasing the body burden of airborne particulates, & changing the distribution of zoonotic vectors that cause infectious diseases linked with cardiovascular disease), **Stroke**

Vector-borne Diseases (malaria, hantavirus pulmonary syndrome, rabies, & Lyme disease may increase as a result of climate change due to expansions in vector ranges, shortening of pathogen incubation periods, & disruption & relocation of large human populations)

Zoonotic Diseases

Waterborne Diseases (Increases in water temperature, precipitation frequency & severity, evaporation-transpiration rates, & changes in coastal ecosystem health could increase the incidence of water contamination with harmful pathogens & chemicals, resulting in increased human exposure to waterborne & ocean-related pathogens & biotoxins.)

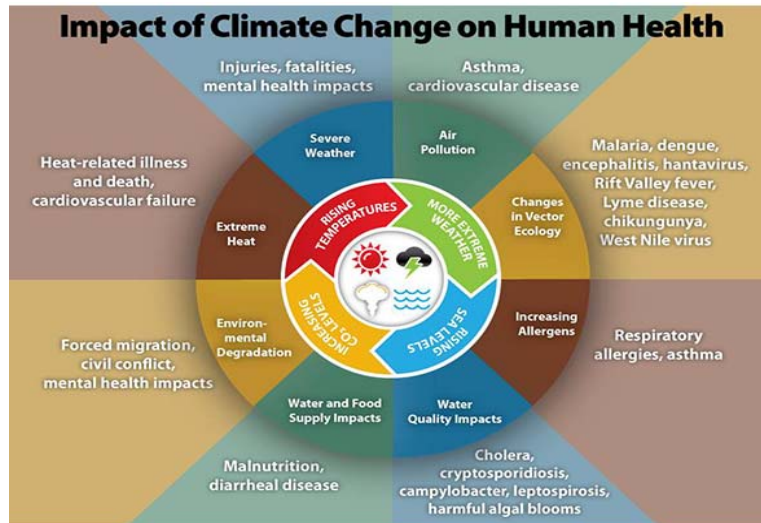
Also to be considered are **mental health and displacement impacts** on vulnerable populations most likely to be directly affected by climate change impacts on our environment.

HPHA has been involved in discussion on the issue of climate change and health for the past 2 years. It is a priority for HPHA to encourage more public health dialog and focus for action through a process with public and private sector partners and other key stakeholders in the community to explore the impacts that climate change is having/ is expected to have on health in Hawaii, the Pacific and beyond.

We believe that our local, state and national governments and our collective efforts have the potential to improve health and health equity, and that coordinated partnerships across diverse public and private sectors are essential to mitigate the potentially significant health impacts of climate change. We think that this bill provides an important opportunity for open public policy dialogue to occur on climate change and health, since we are all affected by this most significant public health challenge.

This bill is viewed by HPHA and our partners as a vehicle for public policy-level discussion and dialogue about the impacts of climate change and health. HPHA is open to any and all suggestions about how to best address this in an inclusive manner, since it does/will impact us all, regardless of who we are, where we live and what we believe. HPHA is not advocating for more funding at this time to support this proposed amendment to Act 83, or to burden the administrative leads of Act 83 with more work. We are instead advocating strengthening the efforts of Act 83, by more fully examining the ramifications of the issue and making collective and collaborative recommendations regarding how to address anticipated potential and current threats to our health and well-being.

In closing, we welcome the discussion today on climate change and health so that we can begin to chart our future actions to address the public health implications. We are not a large public agency and recognize that we do not have the authority, responsibility or resources to lead the state on public health issues. HPHA is committed however, to work with the DLNR and OSP leads for Act 83, the Department of Health and all other agencies and organizations concerned with health on this issue and we are prepared to take a co-lead role, as needed. Mahalo for this opportunity to testify today.



How a Warming Climate Impacts Public Health

Public Health : <http://www.emergencymgmt.com/health/How-Warming-Climate-Impact-Public-Health.html>

Greater climate variability means regions of the country can expect to see new types of human health hazards. Here's what you should know.

[David Raths](#) | February 3, 2015

It may seem counterintuitive to make a connection between a warming planet and the huge snowfall totals that hit Buffalo, N.Y., in November, but these dramatic storms are happening at least in part because the world is warmer, scientists say.

"There is an influx of Arctic air into Buffalo because the Arctic is warm," said John Balbus, senior adviser for public health at the [National Institute of Environmental Health Sciences](#). The water temperatures in the Bering Sea are running way above what are usual, the air temperatures are higher and it displaces the usual patterns, he added.

As researchers study climate change, one area getting more attention recently is the impact of climate variability on public health. Greater climate variability means regions of the country can expect to see new types of human health hazards, which will lead to more public health emergencies.

"Places that haven't had to deal with certain kinds of phenomena, like searing heat in Minnesota or in coastal Washington, need to start developing plans to prepare for that, because they will have to deal with it," Balbus said.

The Centers for Disease Control and Prevention (CDC) has identified several ways public health will be affected as temperatures rise, and many of them could have a direct impact on emergency management and response:

- increasing deaths and illnesses from heat stress;
- increasing risk of injuries and illnesses due to extreme weather events, such as storms and floods;
- more respiratory and cardiovascular illness and deaths caused by smoke from heat- and drought-related wildfires, as well as changes in air pollution, particularly ozone smog;
- changes in the rates and ranges of infectious diseases carried by insects or in food and water;
- threats to the safety and availability of food and water supplies; and
- greater levels of mental and emotional stress in response to climate change and extreme weather-related emergencies.

George Luber, an epidemiologist and the associate director for global climate change in the [Division of Environmental Hazards and Health Effects](#) at the CDC's National Center for Environmental Health, said researchers are seeking to understand the key pathways

through which health will be compromised. There are direct impacts, such as storms, extreme weather, heat waves and air quality problems, but there are also indirect effects climate change will have, including the abundance and distribution of vector-borne diseases.

Climate change will affect the cumulative exposure people have to some impacts, Luber explained. "If you get heat stroke once, your sensitivity to heat is much higher the next time around," he said. "Multiple heat waves have a cumulative effect. Multiple cumulative exposures to bad air mixed with high temperatures mixed with ozone have a death-by-a-thousand-cuts impact. But in addition to that, you have the potential for more complex emergencies."

The magnitude of climate change-related events is projected to get much bigger, and storms will stress the capability of response systems to manage them. "The potential for multiple disasters within a disaster really exacerbates public health issues," Luber said. "A loss of electricity affects those on durable medical equipment. We do see a spike in mortality during power outages. Those systems — communications for EMS, transportation for egress from storms, power — when those go down, public health is affected. And those types of incidents are expected to increase in frequency and magnitude from storms. That is of critical importance."

Luber reiterates Balbus' comment about regions needing to prepare for surprises and anomalous weather events. Profound changes in ecology lead to the potential for the emergence of pathogens in areas where they have never been seen before. "We are seeing a food-borne illness, paralytic shellfish poisoning, in Alaska that extended the northernmost range 1,000 kilometers," he said. And he pointed to the 2003 heat wave in Europe, which killed approximately 70,000 people, and for which public health officials there were unprepared. "In subsequent heat waves, they learned their lesson," Luber said. "It drove home to them that they need to prepare for an event they have never experienced before."

Regional public health officials are making the connection between climate change and chronic health conditions. The increase in ground-level ozone causes airway inflammation that can damage lung tissue, said Anne Kelsey Lamb, director of the Oakland, Calif.-based [Regional Asthma Management and Prevention](#) (RAMP), a project of the Public Health Institute. "We also see climate change is leading to an increase in particulate matter, which are tiny particles, which, if inhaled, can damage the lungs and cause chronic breathing problems," she said.

Another way climate change is impacting asthma is through increasing the length of ragweed pollen season, which is a significant asthma trigger. "We see that this is already happening and is only going to get worse," Lamb said. RAMP has been working with other Public Health Institute projects toward the goal of increasing public health engagement in climate action. "We are recognizing that climate change is one of the most significant public health issues of our time, and we want to see the public health community increasing the level of engagement with this issue," Lamb said. "Asthma is just one example, and it is the one my organization is most focused on, but there are so many other ways that climate change is already impacting public health. We want to see the public health community become more engaged."

There are ways that the whole array of public health strategies — policy advocacy, surveillance and monitoring, health education and case management — can integrate climate change, Lamb said. "Even recognizing the financial constraints of many people working in public health, we would recommend there are ways they can integrate climate change into what they are already doing as part of their everyday job."

The release of the third annual National Climate Assessment in 2014 was a milestone for public health, said Georges Benjamin, executive director of the [American Public Health Association](#).

"The significance of the National Climate Assessment is the recognition that climate change is here now," he said. "We have been hearing that it is coming. Well, people now realize that it is already here and affecting every region of the nation."

Public health agencies need to think about how they are going to respond, Benjamin said. "They have to know where their vulnerable citizens are so that when there is a severe event, they can respond to their needs," he said. "When the power goes off, they can prioritize people who will need help right away because they are at home with electronics-dependent equipment."

More work needs to be done around systems preparedness and doing out-of-the-box thinking about cascading failures, Benjamin said. "We know that in Hurricane Sandy, EMS units had to move out of firehouses because of flooding. What do you evacuate to and maintain response capacity? What is the backup plan if 911 goes down?"

Many states and some cities are starting to do vulnerability assessments as part of the Climate-Ready States and Cities Initiative, which Luber's office at the CDC oversees. With federal grant funding, 16 states and two cities (San Francisco and New York) are going

through a five-step process to anticipate health effects by applying climate science to predict health impacts and prepare flexible programs.

The program, called BRACE ([Building Resilience Against Climate Effects](#)), takes a hazards assessment approach. "It is guided by principles of adaptive management, which is an iterative, learning-based process," Luber said.

The first step is projecting current climate hazards into the future. States identify their principal hazards, such as heat waves and floods, and use climate models to project how those will change in the future. North Carolina, for instance, would look at flood plains, coastal zones and urban heat islands, and which populations are most vulnerable, as well as risk factors for exposures.

The assessment would also look at rates of respiratory problems, water-borne disease incidents, septic systems and other aggregations of risk to project disease burden. Officials look at the current health profile of the state and project how that could change in the future. "The next question is: Which ones can we do something about now?" Luber said. "They identify which interventions would have the most impact and work to put those in place. They are also building capacity to track health outcomes over time."

For example, the BRACE program at the Florida Department of Health collaborated with the University of South Carolina Hazards and Vulnerability Research Institute to assess hurricane winds, storm surge, sea-level rise, drought and wildfires. To quantify social and medical vulnerability to these hazards, they used a Social Vulnerability Index and Medical Vulnerability Index linked to hazard maps to display the intersection of vulnerabilities and hazards throughout the state.

Some states are trying new technologies and approaches. For instance, Vermont is using crowdsourcing and a Web-based tracking tool to identify the presence of ticks.

A 2014 report in the *Journal of the American Medical Association* notes that in response to heat waves, "cities with investments in early warning and response programs have seen some success. For example, after Milwaukee implemented an extreme heat conditions plan following 91 fatalities during the 1995 heat wave, a subsequent heat wave in 1999 resulted in only 10 deaths, or 49 percent less than expected."

Benjamin said it is important for public health agencies to form tighter partnerships with other emergency response organizations. "The time to plan is now," he stressed. "In the middle of a disaster is not the time to exchange business cards." Agencies need to plan and drill together and understand each other's capabilities, he added. They should provide redundancies in systems and make sure they have adequate communications capacity. "We have lots of multijurisdictional responses to things, and frequently the responders can't talk to each other."

["The time to plan is now. In the middle of a disaster is not the time to exchange business cards."](#)

Even primary care providers should begin talking to patients about emergency preparedness, Benjamin said. Doctors can help people think through how they should prepare for emergencies, especially if they have a medical condition that requires some urgency. "In the hospital settings, we have seen several cases where patients had to be evacuated. We need to be more imaginative about what can go wrong." While there were some improvements after hurricanes Katrina and Rita, he said, there were evacuations again during Sandy.

Balbus is leading an initiative called Sustainable and Climate-Resilient Healthcare Facilities, a public-private partnership developed to ensure that facilities such as hospitals, nursing homes and dialysis centers are getting information to help them prepare for their role in extreme weather situations. "Having to move patients in a storm is a huge issue," he said. "We've seen very straightforward, low-tech things cause problems, like getting an emergency generator out of a basement during a flood." The goal is to look at innovative architectural designs for new structures as well as doing vulnerability assessments on existing ones.

Benjamin called it a tragedy that climate change has become unnecessarily political. "Climate change, hurricanes and tornadoes don't know political parties or pick victims. People need to follow the science. Shame on us if we can't put aside the politics on this," he said. "The scientific community is clear about it. There was a time, not that long ago, when this was a bipartisan issue. We are hoping it will get back to that."

[David Raths](#) | Contributing Writer for *Emergency Management* magazine.
