U. S. Climate Change Science Program
Forum to Provide Input on Future Directions of Climate Change Research
American Public Health Association Annual Meeting
October 29, 2008
San Diego, CA

Background:

In an effort to gain valuable input from public health professionals regarding the information, tools, and resources they need to successfully address public health impacts of climate change, the U.S. Climate Change Science Program convened a listening session on October 29, 2008 at the American Public Health Association's Annual Meeting, held in San Diego, CA.

The session was designed to include background information on climate change and public health impacts as presented by the following individuals:

- Allen Dearry, PhD; National Institute of Environmental Health Sciences
- Kristie L. Ebi, PhD, MPH; ESS, LLC
- Howard Frumkin, MD, DrPH; CDC's National Center for Environmental Health
- Paul B. English, PhD; California Department of Public Health
- Jonathan A. Patz, MD, MPH; University of Wisconsin at Madison

The session brought together approximately fifty public health professionals (see Appendix A for participant list) and a two-way discussion ensued, based on the following questions:

1. What major climate-related challenges or questions are you currently facing as a public health professional or researcher dealing with human health effects of climate change?
2. How can climate change science and information needed to support your decisions and discussions be better provided?
3. How can public health research & practices better inform climate change planning and response? (E.g. how can behavior science theory, or monitoring and surveillance be used to inform climate change and health effects research, development of mitigation and adaptation options, or other climate change interventions)?
4. Are there training needs or tools that could better assist you in protecting the public from health impacts related to climate change? Who should provide such resources?
5. What are the roles and responsibilities of the federal government in climate science and information provision?

Due to time constraints, it was not possible to fully discuss all of the questions listed above. However, the following report summarizes some key comments the panel received.

Copies of this summary and presentation slides that were used by panel members during the session may be accessed at:

http://www.climatescience.gov/Library/stratoptions/all-sessions.php

Part I: Summary of Comments from CCSP Listening Session:

General Comments:

The presentations as delivered during the panel session lay out a good potential framework for the future. To date, no single Agency has laid out a comprehensive program for climate change as related to public health.

The climate change issue must be addressed through an interdisciplinary approach. Education and training programs should include cross-disciplinary training of public health specialists in sciences, and vice versa. When out in the workforce, public health professionals must also make an attempt to talk to climatologists and other earth/physical scientists when developing and carrying out climate change plans and activities and vice versa.

Public health representation and participation in climate change discussions must be strengthened. When climate change discussions occur, even if the main topic of focus is not health impacts, public health representation may help to identify potential unintended consequences of both mitigation and adaptation measures. This may especially be true as technology advances.

> *CCSP principals (Howard Frumkin and Allen Dearry) responded with the offer to do a briefing on the links between public health and climate change to the broader CCSP audience in order to attempt to bring it to the forefront.*

The idea of co-benefits must be pushed further.

The total allotment for climate change security is approximately 1% of the traditional securities budget, much of which is taken up by satellites and labs. The links between climate change and national security are strong, and should include economic analysis. For example, climate change is likely to increase the propensity for more conflict, which will require more military involvement. In a time when funding is limited, we need to think more creatively on how to stimulate funding for health impacts and climate change, including the links to national security, links to the upcoming transportation reauthorization bill, etc.

What major climate-related challenges or questions are you currently facing as a public health professional or researcher dealing with human health effects of climate change?

When addressing climate change adaptation, it is critical to consider what we have learned from environmental justice and strive for equitable distribution of risks and benefits.

We need to identify particularly vulnerable populations and be sure to have them represented and pay attention to any possible inequities. It is critical to spend the time to figure out how we can get stakeholders involved. For example, the first national assessment attempted to get stakeholder input. Of the current RISA programs in NOAA, only one makes a real effort to include health although they do a model job in ensuring stakeholder input.

There is a lack of adequate funding to carry out interventions once impacts and populations at risk are identified. There should be a strengthening of efforts to address multifactorial issues and morbidities within identified risk groups.

There is a lack of baseline data for public health impacts that can be used for comparison to help identify new trends.

How can climate change science and information needed to support your decisions and discussions be better provided?

There is huge variability associated with climate change impacts. This requires consideration of the local/regional environment and other factors that vary in each community, which are not currently addressed by climate change science.

There is so much focus on the earth and physical sciences, but there is a need from practitioners to have a focus on impacts, thresholds, and sensitivities in order to address climate change at the local level. More research is needed in this area.

The development of public health indicators related to climate change would help when local and state agencies are developing climate change action plans.

The public health community is currently pushing for stronger use of public heath impact assessments (often done in relation to urban or regional planning). This could become a mandate for assuring the safety of any new technology related to climate change mitigation and adaptation.

How can public health research & practices better inform climate change planning and response? (E.g. how can behavior science theory, or monitoring and surveillance be used to inform climate change and health effects research, development of mitigation and adaptation options, or other climate change interventions)?

Surveillance and monitoring are fundamental aspects of Public Health that could be expanded to help track other impacts caused by climate change, not just health impacts.

State health departments are good at communication and advocacy, both of which are important for increasing awareness of the links between climate change and human health.

Are there training needs or tools that could better assist you in protecting the public from health impacts related to climate change? Who should provide such resources?

A list of climate change "hot spots" or geographical areas that are more likely to be impacted, along with a list of the types of impacts to be expected, would be helpful in prioritizing how local and state agencies can be most effective in responding to climate change with limited resources.

State health departments require additional training and support in modeling and metrics. Currently, there are no tools for state and local public health departments to do their own internal assessments or to run models at the local level that consider local/regional variables. Additional training, resources, and capacity building for local and state agencies to run models and other prediction methods or tools that would take into consideration local/regional variables and other key activities would greatly improve regional response to climate change.

What are the roles and responsibilities of the federal government in climate science and information provision?

Agencies may wish to re-look at the way in which they approach climate change. For example, if you structure programs based on outcomes or societal benefits, the entire way in which to approach issues changes (i.e. exposure→response). This is different from the ways in which federal agencies and CCSP is currently structured.

Some entity should develop standard methodology that will allow local or state agencies to enter additional variables for local or regional factors which could be used to predict and quantify impacts that may occur at that level. They don't want/need the federal government to actually run the data but would benefit more from some sort of standard regional output that takes into consideration local variables that could produce an attributable fraction relative to such things as greenhouse gas emissions, wildfire likelihood, etc. This could be used to identify impacts that are occurring right now, as well as future impacts at the level in which response can be developed.

Legislative and executive branches should be involved in climate change planning and response. Additional work is needed in order to help educated elected officials on climate change and the links to human health.

For a research agenda at the federal level, we need to carry forward what is already known. We can start with prevention and/or disparities without scrambling to reinvent what we know from research already conducted or assessments that have already been done. It would be helpful to also have more of a goal-oriented research agenda for the future.

A coordinating body, such as CCSP, could serve an operational role of guiding federal agencies in general agency mitigation and adaptation planning, which could then be trickled down to state and local agencies.

The federal government should consider impacts on a global scale as well and how that can relate back to the interests of the United States (i.e. humanitarian relief, policy issues, national security, etc.)

Part II: Additional Notes from APHA Conference

Session 3292: Public Health Response to Climate Change

Jonathan E. Fielding, MD, MPH, MBA

Local public health officer perspective (LA County)

Beating the Heat: Public Health and Climate Change

Climate change is happening now and the warming of the climate system is unequivocal, as witnessed by: 1.) Increasing global air and ocean temperatures; 2.) Rising global average sea levels; and 3.) Reductions of snow and ice levels

Human contribution is evident (IPCC, 07)

Global atmospheric concentrations of GHGs increased markedly as result of human activities, with the leading sources of GHGs: combustion of fossil fuels including coal, oil, and natural gas.

World Health Organization estimates in 2000: 150,000 excess deaths/yr. due to climate change. Climate change is already affecting health around the world, and its impact will continue to grow.

Projected impacts:

Food: Falling crop yields, especially in developing regions; possible rising yields in some regions;

Water: small mountain glaciers will disappear-water supplies will be threatened in several areas, leading to significant decreases in water availability in many areas (Mediterranean, so. Africa). Sea Level rise also threatens major cities around the globe.

Ecosystems: extensive damage to coral reefs; rising # of spp face extinction

Extreme Weather events: Rising intensity of storms, forest fires, droughts, flooding and heat waves

Risk of Abrupt and Major irreversible changes: increasing risk of dangerous feedbacks and abrupt, large-scale shifts in the climate system.

Extreme weather events and disaster with associated clusters of diseases:

El Nino 97-98: Mosquito borne: dengue, enceph, malaria, RVF; Rodent: Hanta Virus; Waterborne

Effects of Sea Level Rise:

Coastal areas will become vulnerable to storms and flooding
Loss of coastal wetlands and erosion of beaches
Saltwater contamination

In California, warmer temperatures results in premature and rapid snowmelt of Sierra snow pack, altering timing of run off water supplies for ½ of California's surface water. Severe flooding may occur during winter and spring; slower water flow in summer season.

Los Angeles projected to have Increase of 62-88% heat related mortality. Health impacts are usually seen 1-3 days after onset of heat waves (heat cramps, exhaustion, stroike, syncope (fainting)); with greater risk to those w/out AC (may not be able to afford, etc.); Elderly and Low Socio-Economic Status.

Wildfires common in Southern California. Santa Ana winds may prolong and promote fires and prevent control. Climate models predict the summer months to be longer and hotter, dry soil and vegetation become fuel for wildfires.

Potential Environmental Impacts in Southern California on Air Quality:

Increased temp and CO2 lead to increased ground level ozone (smog)
Increased allergen production
Longer allergen seasons
Seniors, children, and those with respiratory and chronic dx are most vulnerable

You don't see air pollution or heat wave on death certificates.

Ports are a vulnerable community(LA county; long beach)

Time for action has long since past, and the scale of threat is global-- touches all, everywhere

Climate change threatens all basic survival mechanisms (food, water, shelter, and health)

Scale of response must engage every sector of society

Timeframe for response: "We have at most 10 years , not 10 yrs to decide upon action, but 10 yrs to fundamentally alter the trajectory of GHGs. There is still time, but just barely"—James Hansen, NASA

Pub Health already utilizes multi-level prevention approach:

Primary prevention : CC mitigation (Slow, stabilize reverse CC by reducing GHGs, efforts in other sectors (energy, etc))

Secondary/Tertiary Prev: CC Adaptation

Mitigation: reduce GHGs, Reduce, Reuse, Recycle

Adaptation: Prepare for impact of CC: Emergency Preparedness

Mitigation and Adaptation: Advocate for healthy policies; support legislation; support sustainable lifestyles and communities.

Transportation Bill Reauthorization up in Congress this year (Big opportunity for public health to affect what is in bill and tie it into climate change).

Need variety of approaches to deal with variety of vulnerable populations.

Co-benefits of Reducing GHGs:

Primary: reduction in expected long-term consequences of global warming; avoided damage of climate change

Co-benefits: economic, social, environmental, pub health, and other independent of any direct benefits from mitigating climate change

Benefits of climate change mitigation strategies that have a positive effect on health (e.g. promote cleaner energy production and cleaner fuels)

Reducing vehicle miles traveled (lower mv GHG emissions; higher physical activity rates)

Promote cleaner energy production and cleaner fuels (reduce GHG emissions from energy production; co-benefit of less pollution, less respiratory distress

Key mitigation technologies and practices:

Transport: fuel efficiencies; hybrids; road to rail; public transport; non motorized transport; land use planning

Buildings: daylighting; energy efficiency; improved cook stoves; solar heating and cooling

Agriculture: crop land management; livestock & manure management; improved nitrogen based fertilization

Industry: energy efficiency; heat and power recovery

Energy supply: coal to gas; nuclear power; renewable energy

Adaptation: Emergency Preparedness

Prepare now for inevitable effects. Preparing for one type will work for most

Policy decisions occur at all levels of government-opportunity for Pub Health input: Health impact assessments; surveillance data tracking spread of disease.

What should we do?

- Educate
- Partnerships and collaborations
- Lend PH credibility and experience in driving policy and behavior change

- Advocate for aggressive government and business mitigation policy and strategy that also promote health
- Leadership in advocating for personal, organizational, local government carbon footprint reduction
- Increase understanding and research of co-benefits
- Ensure health co-benefits included in policy and cost assessment
- Protect vulnerable pops
- Monitor health impacts of CC
- Preparedness and adaptation

Session 4173: Communication of Public Health and Climate Change

Simani Price, Westat

Despite the potential for great harm, there is little awareness regarding the health effects of climate change.

The majority of people are more concerned with ecosystem-type issues rather than human health when talking about climate change.

There are likely cognitive barriers (~20% understand the complex issue very well, current communications focus on environmental and economic issues), as well as psychological barriers (disconnect from immediate concerns, perceived low risk).

Public Health Framing of Implications:
Primary Prevention: Mitigation and support of co-benefits

Secondary Prevention: Preparedness and Adaptation

Current decision makers are focused on energy and economics, not human health.

Ed Maibach, George Mason University Center for Climate Change Communications:

Recent Study:

19% personally threatened; anxiously alarmed-CC is hurting people now, very serious
22% alarmed altruists; convinced & concerned-within 10 yrs people will be hurt
20% future advocates; cautiously concerned-within 20 yrs people will be hurt
12% fence sitters; prudent protectors-within 40 years, not very serious
16% soft core skeptics; distant doubters-within 75 years, not very serious
11% hard core skeptics; dismissive doubters- no one will be hurt from climate change

Buckets:

Public	**Business & NGOs**	**Government**
Eating	Assess	Carrots (incentives)
Traveling	Reduce	Sticks (regulations)
Domiciling	Advocate	Sermons (campaigns)
Buying	Report	
Working		

4 key beliefs needed to support public policy to respond to climate change:

- Climate change is real
- Climate change is caused by humans
- Climate change is harmful to people
- Climate change can be solved

Matthew Nisbet, American University

We need to re-frame climate change into a public health issue that can humanize the issue and connect it to vulnerable populations.

Tom Bowman, Climate Solutions Project

In order to communicate science effectively:

- Address the problem at the right scale
- Eliminate any jargon
- Eliminate the mixing of units (degrees Celsius/degrees Fahrenheit)
- Address the impacts that people care about (food, water, shelter, animals)

Climate Solutions Project, A "Disruptive Intervention"

- National scale outreach
- Peer to peer social learning
- High publicity profile
- Expert review

Appendix A:
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Identified Participants:

*Please note that the list below does not capture all of the participants that were present in the session, only those that signed in or were known by CCSPO Staff. The overall headcount for participants reached a maximum of 52, including presenters and moderators.

Hala Azzam, University of Florida
John Balbus, Environmental Defense
TJ Buratynski, U.S. Naval Reserve
Sandy Cummings, Marion County Health Department
Kristie Ebi, ESS, LLC
Paul English, California Department of Health Services
Howard Frumkin, Centers for Disease Control and Prevention
Barbara Gordon, U.S. Environmental Protection Agency
Robert Gould, Physicians for Social Responsibility
Maggie Grabow, University of Wisconsin-Madison
Aaron Hipp, University of California-Irvine
Tracy Kolian, American Public Health Assocaition
Gino Marinucci, Association of State and Territorial Health Officials
Tanya Maslak, U.S. Climate Change Research Program
Ryan Meyer, Arizona State University
Liam O'Fallon, National Institute of Environmental Health Sciences
Jonathan Patz, University of Wisconsin-Madison
Robin Salsburg, Public Health Law & Policy
Charlotte Sideman, American Journal of Preventive Medicine
Erin Simms, Council for State and Territorial Epidemiologists
Melissa Stephens, American Lung Association of California
Theodora Tsongas, Portland State University
Don Zeigler, American Medical Association