

**U.S. EPA State and Local Climate & Energy Webcast:
Communicating the Connection between Climate Change and Heat Health
July 22, 2015**

Questions in bold were asked during the webcast.

Questions for All Speakers

- 1. Have any of the speakers created materials and a toolkit for pharmacists? Many medications, including psychotropic drugs, impact the body's ability to handle heat.**

Kristin Raab: In our toolkit, we have a list of drugs that increase risk for heat-related illnesses. We have not targeted that list to pharmacists. I think that's actually a great idea. But, we did compile a list of those drugs. See:

http://www.health.state.mn.us/divs/climatechange/docs/appendix_b.pdf

2. If you could reach every American with a public health message on the climate and health connection and the importance of climate solutions to protect and promote health, what might that message be?

Victoria Ludwig: Climate change contributes to an increase in average temperatures and unusually hot days, which have been documented to lead to heat-related illnesses and even deaths. The urban heat island effect exacerbates these heat waves, making people living and working in urban areas more vulnerable to these impacts. However, efforts to cool cities, such as increasing the tree canopy and number of cool roofs in the urban core, can help to reduce the negative health impacts of heat waves.

Surili Patel: APHA's messaging around climate change has been simple: it IS a public health issue *and* it's happening today. The bright side is that you can take action today by preparing yourself and your family against potential climate events in your area. You can also take action by talking to your member of Congress:

http://action.apha.org/site/MessageViewer?dlv_id=61943&em_id=58001.0

Questions for Victoria Ludwig (U.S. Environmental Protection Agency)

1. How much do we know about the relative contribution of waste heat from vehicles, building air conditioning, etc. to hot temperatures in cities? And, is there research on the warm nighttime temperatures that you can point us to? People ask about how warm it has to remain at night for people's health to suffer.

Victoria Ludwig: Anthropogenic or waste heat contributes to heat islands and refers to heat produced by human activities. It can come from a variety of sources and is estimated by totaling all the energy used for heating and cooling, running appliances, transportation, and industrial processes. Anthropogenic heat varies by urban activity and infrastructure and typically is not a

concern during the summer and in rural areas. In the winter, though, and year round in dense, urban areas, anthropogenic heat can significantly contribute to the urban heat island. There is an emerging body of literature on the role anthropogenic heat plays in heat island formation, including studies that estimate the contribution of specific types of heat (see: <http://onlinelibrary.wiley.com/doi/10.1002/2013JD021225/full>).

The annual mean air temperature of a city with one million or more people can be 1.8 to 5.4°F (1 to 3°C) warmer than its surroundings, and on a clear, calm night, this temperature difference can be as much as 22°F (12°C). Due to the dense infrastructure in some developed areas, urban areas cannot easily release stored heat to the cooler sky, and this trapped heat contributes to the urban heat island. This lack of nighttime relief in air temperatures is strongly correlated with increased mortality during heat waves. One study of this topic can be found here: <http://www.pnas.org/content/107/21/9552.full.pdf>.

2. What classifies something as an extreme heat event? Does this classification differ between states/areas?

Victoria Ludwig: Extreme heat event conditions are defined by summertime weather that is substantially hotter and/or more humid than average for a location at that time of year. The National Weather Service defines a heat wave as “a period of abnormally and uncomfortably hot and unusually humid weather. Typically a heat wave lasts two or more days.”

3. Isn't "Global Warming" a misnomer for "Climate Change?" Or a less accurate or complete description of the ongoing climate change that is happening?

Victoria Ludwig: Global warming refers to the recent and ongoing rise in global average temperature near Earth's surface. It is caused mostly by increasing concentrations of greenhouse gases in the atmosphere. Global warming is causing climate patterns to change. However, global warming itself represents only one aspect of climate change. Climate change refers to any significant change in the measures of climate lasting for an extended period of time. In other words, climate change includes major changes in temperature, precipitation, or wind patterns, among other effects, that occur over several decades or longer.

Questions for Connie Roser-Renouf (George Mason University)

1. Do you have results stratified by region of the US? Of particular interest would be areas affected by hurricanes and regions with undeniable temperature increases (e.g. Arizona).

Connie Roser-Renouf: The short answer is no. We do have the data that we could do that. But, we haven't done that kind of an analysis. I can tell you that there is more inclination to accept the reality and danger of climate change in the Northeast and West, less in the South and in the Midwest, particularly in the South.

2. Connie's presentation concluded that American's knowledge of even the link between climate change and heat illness was quite "shallow," but isn't this a reasonable position for the public

given the complexity of the issue? Almost every study that has examined historical trends in heat-related deaths reports significant declines over time (including work by Columbia IRI, London SHTM) and our knowledge of how the future will play out continues to grow. It seems like the fact that there is not overwhelming worry about heat illnesses in the future is actually more consistent with the research in this field than was suggested.

Victoria Ludwig: EPA believes that more outreach and education on the connection between climate change and heat-related illness is necessary to ensure the public fully understands the risks to their personal health and ways they can protect themselves. In the 2014 edition of our *Climate Change Indicators in the United States* report, we state that: Over the past three decades, nearly 8,000 Americans were reported to have died as a direct result of heat-related illnesses such as heat stroke. The annual death rate is higher when accounting for other deaths in which heat was reported as a contributing factor. Considerable year-to-year variability in the data and certain limitations of this indicator make it difficult to determine whether the United States has experienced long-term trends in the number of deaths classified as “heat-related.” I will add that even with these limitations, given that current climate models predict that heat waves will become more frequent and severe in the future, this could lead to an increase in heat-related illnesses. However, efforts to cool urban heat islands, such as increasing the tree canopy and number of cool roofs in the city center, can help to reduce the negative health impacts of heat waves.

Questions for Surili Patel (American Public Health Association)

1. **You mentioned a number of different outreach approaches (e.g., infographics, videos, fact sheets). Which have you found to be most effective?**

Surili Patel: That’s a really great question. I think it depends on your audience. If you are talking to the general public, infographics or something that’s easily digestible like a video tend to be helpful. If you are talking to policy makers, we’ve also found the infographics to be helpful, but also fact sheets that we can leave behind on a specific topic. And, then, for public health practitioners, I know they love their science. So, we like to give them a little bit more meat. But, not everyone has time to read everything. So, a short blog or blurb on a new report is often helpful. So, all of them – all the different avenues are helpful.

The other thing that I didn’t get a chance to mention is, it’s also really important to think about reaching the same audience through multiple channels – so, not just through a report or a fact sheet but you know combine it—do a report, a fact sheet and a tweet so they get the same information from different ways and it, you know, solidifies that information in their memory.

2. In Cincinnati we have begun the conversation about heat health and heat islands in a low income minority neighborhood using the ATSDR Action Model meetings & a survey. We decided not to talk about climate change because it seemed too abstract. We have discussions and questions related to health issues when it gets really hot. We then get answers about asthma and breathing issues and crime, particularly shootings. Have you found similar results?

Surili Patel: Climate change for many is a hard concept for many to grasp, especially if the audience you are speaking with is not steeped into the science of the subject. That is why it's important to know your audience, know what issues matter to them. Now that you've identified asthma and breathing issues as areas of concern, think of ways to bring the conversation back to climate change. I draw out the connection between extreme heat and climate change by talking about the root cause: By burning fossil fuels like coal and gas for energy, we release the heat-trapping gas carbon dioxide. This gas then builds up in the atmosphere and causes the earth's temperature to rise, much like a blanket traps in heat. The extra trapped heat disrupts many of the interconnected systems in our environment and consequently impacts our health in the form of asthma and breathing issues.

In underserved populations you might get some feedback on violence and crime. This is mainly because these are their daily concerns. Personal safety is an issue they face on a daily basis, and often the reason why these communities put all resources toward solving this underlying challenge to achieving good health, and therefore all other health concerns – immediate or not – become secondary.

Questions for Kristin Raab (Minnesota Department of Public Health)

1. How did you get data on air conditioner availability?

Kristin Raab: Great question. And we get this question a lot. We received that data when we went to the city's assessor office. So, apparently, in the city of Minneapolis, there are assessors that go out to look at buildings and assess them, and there is a database. And one of the things that they collect is air conditioning. So, that is how we received that information.

I don't know if every city does that. And it's, as far as I know, it's not available statewide. I think you would have to look for local sources.

2. FEMA produced some outstanding "Communications/Communicating" workbooks in the post-Katrina era. They are extremely useful, if ever doing a presentation on disaster preparedness/planning for librarians to engage their communities' (local government and non-government) workshops, programs, training, etc. Has Minnesota produced resources or publications for assisting communities in planning their programs?

Kristin Raab: MDH has several informational resources that are useful for understanding the public health impacts of climate change. Please see our website at:

<http://www.health.state.mn.us/divs/climatechange/index.html>.

We have tools to help with planning, such as: the Minnesota Climate Change Vulnerability Assessment (<http://www.health.state.mn.us/divs/climatechange/docs/mnclimvulnreport.pdf>), resources/data related to planning (<http://www.health.state.mn.us/divs/climatechange/data.html>) and a strategic plan that is currently being updated (<http://www.health.state.mn.us/divs/climatechange/docs/mdhspacc.pdf>).

3. What advice would you have for other northern states in doing outreach on climate and health?

Kristin Raab: Using good data can help you make the case between climate and health. For the most part, Northern states' average temperatures are increasing faster than Southern states. Showing data regarding the increases in heat and data from health impacts, e.g., emergency visits, hospitalizations and deaths related to heat, can be compelling. One fact that we used to get people talking is that there has been a 21-day increase in the length of the ragweed season in Minneapolis. The lengthening of the allergy season has implications for people who suffer from allergies and asthma. Local data can be very powerful to let people know that climate change is happening right now in their city/state.

4. How was the carp die-off tied back to climate change? Were there any native fish affected?

Kristin Raab: Increasing extreme heat events caused by climate change leads to increasing water temperatures; higher water temperatures kill fish. Although it is difficult to pin one specific event on climate change, as many factors influence a single weather event, we expect to see more extreme heat events like the one we saw in 2012 due to climate change. Several native fish species in Minnesota, especially of the coldwater guilds, such as lake trout and cisco, are particularly sensitive to increasing temperatures. Extremes can warm water temperatures to lethal levels and also increase the number of sub-optimal days that can adversely affect fish populations.