Climate change to bring a wave of new health risks

February 21 2005

As a result, governments and health officials need to begin to think about how to respond to an anticipated increase in the number and scope of climate-related health crises, ranging from killer heat waves and famine, to floods and waves of infectious diseases.

That, in a nutshell, was the message delivered to scientists at the annual meeting (Feb. 20) of the American Association for the Advancement of Science (AAAS) by Jonathan A. Patz, an authority on the human health effects of global environmental change.

As the world's climate warms, and as people make widespread alterations to the global landscape, human populations will become far more vulnerable to heat-related mortality, air pollution-related illnesses, infectious diseases and malnutrition, Patz says.

"We are destined to have some warming," says Patz, a professor of environmental studies and population health studies at the University of Wisconsin-Madison.

But it won't be a gradually warming world that triggers future health crises, says Patz, a scientist based at the UW-Madison Center for Sustainability and the Global

Environment. It will be a dramatic increase in severe weather events - major storms, heat waves, flooding - triggered by a shifting global climate that will wreak most of the human health havoc.

"Averages don't kill people - it is the extremes," Patz explains.

The issue, Patz says, is how are we going to adapt? If we don't do something to mitigate the potential human health effects of climate change, the world, beginning at the local and regional level, will begin to experience climate-related catastrophe.

"In the face of climate change, what are the adaptive measures at many and variable scales that we can take to reduce the health impact of climate change? That's what we need to be thinking about," he says.

The Wisconsin scientist suggests we may already be seeing the health consequences of a warmer world: The heat wave that struck Europe in the summer of 2004 claimed an estimated 22,000-35,000 lives, mostly the infirm, elderly and poor.

"That event was so far out of the normal climate range that one analysis pegs it as a signal of climate change," Patz explains. "So what are we going to be adapting to? It won't be creeping temperatures. What we may see is an increased frequency of these extreme events."

Moreover, as temperature regimes change, weather patterns will be altered and increased rainfall will facilitate the spread of waterborne and food-borne disease. And increased local rainfall also will make life easier for the insects and animals that carry some human diseases.

One strategy to mitigate future climate-related health problems, according to Patz, would be to develop and use climate forecasts and warning systems to avert disease and adverse health outcomes.

Such tools are already coming into play. Strong El Nino events, for example, tend to trigger heavier rainfall in the American southwest, setting the stage for rodent population booms and increased risk of

exposure to hanta virus, a sometimes deadly disease transmitted through rodent urine and droppings.

Such events can be predicted with confidence, and if higher risk is forecast, people can prepare by mouse-proofing their homes and taking other measures to minimize contact with the source of a serious disease.

"The key will be early detection, warning and responding to threats," Patz says.

In urban areas, steps are already being taken to mitigate the effects of warmer climate and the "heat island" effect created by cities. Rooftop gardens are being encouraged by, among others, the U.S. Environmental Protection Agency, and creating more reflective surfaces by painting rooftops white and using reflective materials in paving projects may reduce overall warming.

It will be important, says Patz, to avoid maladaptation. Increased use of air conditioners, for example, will provide immediate relief and is an important protection during an acute heat event. But the fossil fuels burned to generate the electricity to drive those air conditioners, as well as over-dependence on electric power grid functioning could potentially exacerbate the problem.

"Short-sighted fixes must be avoided," Patz says.

Improving deficiencies in such things as watershed protection, infrastructure and drainage systems would ease the risk of water contamination events. At present in the United States, a developed nation where most people have access to treated water, as many as 9 million cases of waterborne disease are estimated to occur each year.

With climate change, those numbers are likely to go up, says Patz, unless

significant steps are taken to minimize the likelihood of sewage overflows and other weather related events that contaminate water supplies.

Source: University of Wisconsin-Madison