

BRIEF ANALYSIS

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Sick Argument: Global Warming and the Spread of Tropical Diseases

Over the past year the media have reported that one possible effect of global warming will be the expansion of tropical, communicable diseases borne by rodents or parasites into the United States. Fortunately, even if a warmer climate is in the offing, there is no reason for alarm, since the prime factor controlling communicable diseases is not global temperature, but relative wealth and the ecological and medical interventions people use to control diseases and their hosts.

Could Global Warming Cause the Spread of Tropical Diseases? Ground-level measurements of temperature show that the earth has warmed between 0.3 and 0.6 degrees Celsius in the last 100 years.

Scientists at the World Health Organization (WHO) say that among the potentially deadly results of a warmer world are unusual weather patterns that favor "opportunistic pests" — rodents and parasitic insects — that often carry and transmit tropical diseases, including cholera, dengue fever, yellow fever and malaria. They further hypothesize that as these pests enter new regions, the diseases they carry will spread.

Evidence of a Link between Global Warming and a Looming Plague. According to a recent WHO report by Professor Paul Epstein of the Harvard School of Public Health, mosquitoes carrying malaria and dengue fever have been found at higher altitudes in Africa, Asia and Latin America due to warmer temperatures.

Scientists have noted that in 1995, the hottest year ever recorded, new outbreaks of dengue fever and the more deadly dengue hemorrhagic fever (DHF) occurred throughout Central America, where the number of dengue fever cases rose from 23,603 to 46,532 between September and November 1995.

In addition, in Mexico a 1995 outbreak of these diseases killed more than 4,000 people. And malaria expanded into new regions, becoming the ninth leading cause of death in developing countries in 1990, claiming more than 856,000 lives.

Dr. Epstein contends that if the earth warms another 4 degrees Fahrenheit, the malaria-bearing mosquito's domain will expand from 42 percent of the globe to more than 60 percent.

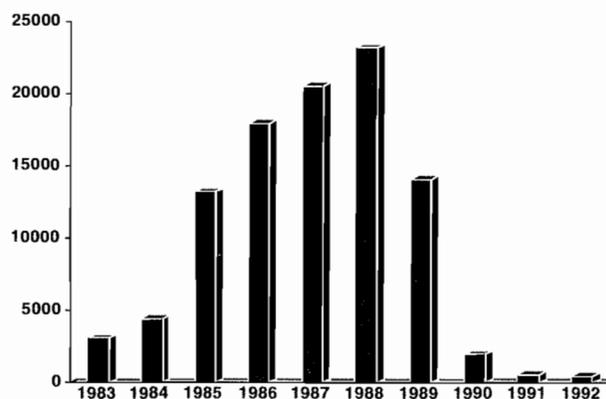
Evidence Refuting a Link between Global Warming and Disease. While these and other tropical disease outbreaks are troubling, historical evidence and current medical data from the WHO indicate that they don't portend the spread of communicable diseases. A warm climate is a necessary condition for the mosquitoes that can carry malaria and dengue fever but is not a sufficient condition for the diseases to become epidemic.

The climate in North America and most of Europe has long been suitable for the existence of several tropical diseases. From the 14th through the 19th centuries, the world experienced a "little ice age," with temperatures in the Western hemisphere averaging 2 to 3 degrees Fahrenheit lower than current temperatures. Despite the cooler temperatures, tropical diseases were fairly common in the United States. Indeed, malaria and yellow fever were endemic as far north as New York City,

Philadelphia, Baltimore and Minnesota. In addition, between 1827 and 1946 there were eight pandemics of dengue fever, with more than 500,000 cases in 1922 alone. Malaria was widespread in the United States until quite recently, with more than 120,000 cases reported in 1934 and 63,000 cases in 1945.

Today, despite the warmer temperature, the U.S. rates of these diseases are quite low, even though the diseases are raging just beyond the U.S. border. For instance, when dengue fever struck Reynosa, Mexico, in 1995 there were 2,361 confirmed cases. By contrast, there were only 86 cases in the United States, all of which occurred in Texas, including 78 that were imported by immigrants arriving with the disease and only a couple

Malaria Cases Reported for Africa by WHO
(in thousands)



Source: WHO, Malaria Control Program, Geneva, Switzerland.

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of the nonimported cases were found in Hidalgo, just across the border from Reynosa.

Also in the United States, while ground-level temperature levels were increasing, malaria cases fell from 63,000 in 1945 to 2,000 in 1950 and 72 in 1960. Most new U.S. cases occur in immigrants, foreign travelers and U.S. citizens returning from travel in the tropics.

Further evidence that climate is not a primary cause of tropical diseases is the fact that the tropical city-state of Singapore reported no malaria cases in 1992, while Malaysia, a nation that borders Singapore, suffered 36,853 cases of malaria, and Indonesia, the multi-island nation surrounding Singapore on three sides, reported 13,655 malaria cases. [See the map.]

Deaths from Tropical Diseases Are Falling. Despite periodic regional outbreaks of communicable tropical diseases, tropical disease rates are decreasing on average globally, and at an even higher rate in developing countries. From 1983 to 1992, the most recent year for which firm data exists in Africa — the most heavily infested region of the world — reported cases of malaria fell from slightly under 3.2 million, after a brief intervening rise, to just over 420,000. [See the figure.]

Why Are Tropical Diseases Causing Deaths? Bad Policies. When outbreaks of communicable diseases occur, misguided policies are often the cause. For example, Peru had been cholera-free for many decades until 1991, due largely to chlorination of the drinking water supplies. But in 1991, based primarily on a study by the U.S. Environmental Protection Agency (EPA) showing that chlorine use posed a hypothetical increased risk of cancer, Peruvian officials ended their policy of water chlorination. As a result, more than 300,000 Peruvians contracted cholera the following year. The epidemic spread across South America, making more than 1 million people ill and taking more than 11,000 lives. In 1992 new research by the EPA determined that there was no link between cancer and chlorinated drinking water, but by then the damage had been done.

Other examples of misguided policies resulting in unnecessary illness and death abound. Through the use of DDT, malaria mortality in Ceylon fell from tens of thousands of cases to a few hundred each year. DDT was considered one of the safest pesticides in use. However, DDT was banned in the United States by the EPA for fear it was causing death and reproductive problems in bald eagles and other raptors — despite the fact that most scientists found no links between DDT use and thinner eggshells or bird deformities. Following the EPA's lead, U.S. aid agencies have refused funding to countries that continue to use DDT. Fearing a loss of the aid, Ceylon discontinued the use of DDT and malaria returned, taking thousands of lives each year.

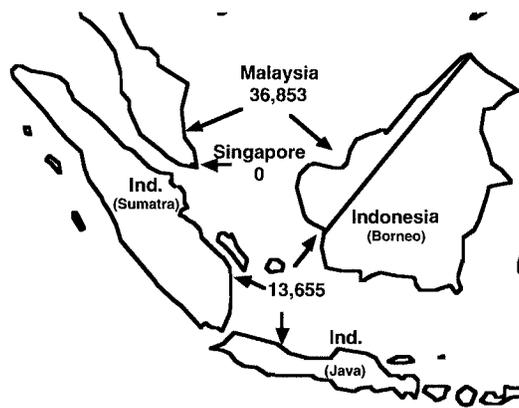
Why Are Tropical Diseases Causing Deaths? Poverty. Almost every health expert recognizes that the prevalence of tropical diseases in the developing world stems from poverty and the conditions it entails, including lack of access to medical care and basic sanitation. In North America, cholera and yellow fever were virtually eradicated with the advent of filtered, chlorinated water and basic sanitation. Malaria was almost exterminated through a combination of judicious application of pesticides (primarily DDT), the draining of

many of the nation's swamps, the use of screens on windows and doors, the rise of air-conditioner use and the widespread use of antimalarial drugs. Wherever this combination has been used, malaria rates have drastically declined.

Conclusion. Global warming is not promoting the spread of tropical diseases; bad policies are. Eliminate the policies that discourage economic growth, and regardless of the temperature incomes will rise and tropical diseases will decline.

This Brief Analysis was prepared by H. Sterling Burnett, NCPA environmental policy analyst and Merrill Matthews Jr., NCPA vice president of domestic policy.

Reported Malaria Cases in Malaysia, Indonesia and Singapore (1992)



Source: J. Hempel, Malaria Control Program, World Health Organization.