

Research News

Pesticides speed the spread of deadly waterborne pathogens

Environmental pollutants can increase exposure and susceptibility to infectious diseases



A man waters his crops near Lamptar, in the lower Senegal River Basin in West Africa.

[Credit and Larger Version \(/discoveries/disc_images.jsp?cntn_id=300933&org=NSF\)](#)

July 23, 2020

Widespread use of pesticides and other agrochemicals can speed the transmission of the debilitating disease schistosomiasis while also upsetting ecological balances in aquatic environments that prevent infections, finds a new study led by researchers at the [University of California, Berkeley \(/cgi-bin/good-bye?https://news.berkeley.edu/2020/07/17/pesticides-speed-the-spread-of-deadly-waterborne-pathogens/\)](#).

Schistosomiasis, also known as snail fever, is caused by parasitic worms that develop and multiply inside freshwater snails. It is transmitted through contact with contaminated water. The infection, which can trigger lifelong liver and kidney damage, affects hundreds of millions of people every year and, in terms of its global impact on human health, is second only to malaria among parasitic diseases.

The [U.S. National Science Foundation <https://www.nsf.gov/awardsearch/showAward?AWD_ID=1646708&HistoricalAwards=false>](#)-funded study, published in [Lancet Planetary Health \(/cgi-bin/good-bye?https://www.sciencedirect.com/science/article/pii/S2542519620301054\)](#), found that agrochemicals can increase the transmission of the schistosome worm in myriad ways: by directly affecting the survival of the waterborne parasite itself; by decimating aquatic predators that feed on the snails that carry the parasite; and by altering the composition of algae in the water, which provides a major food source for snails.

"We know that dam construction and irrigation expansion increase schistosomiasis transmission in low-income settings by disrupting freshwater ecosystems," said UC Berkeley's Christopher Hoover, lead author of the study. "We were shocked by the strength of evidence we found also linking agrochemical pollution to the amplification of schistosomiasis transmission."

The researchers found that even low concentrations of common pesticides can increase rates of schistosomiasis transmission and interfere with efforts to control it.

"Environmental pollutants can increase our exposure and susceptibility to infectious diseases," said Justin Remais of the UC Berkeley School of Public Health and senior author of the study. "From dioxins decreasing resistance to influenza virus, to air pollutants increasing COVID-19 mortality, to arsenic impacting lower respiratory tract and enteric infections -- research has shown that reducing pollution is an important way to protect populations from infectious diseases."

-- NSF Public Affairs, researchnews@nsf.gov (<mailto:researchnews@nsf.gov>)