

Pollutants, pathogens could team up to make us sick

March 20 2019



Credit: CC0 Public Domain

Many people view pollutants and pathogens as separate causes of illness. However, recent research indicates that the two can interact, changing how people and animals respond to infectious diseases. According to an

article in *Chemical & Engineering News (C&EN)*, the weekly newsmagazine of the American Chemical Society, environmental pollutants appear to weaken the immune system, reduce vaccine efficacy and increase pathogen virulence.

More than 20 years ago, researchers showed that exposing mice to low levels of a dioxin called 2,3,7,8-tetrachlorodibenzo-*p*-dioxin made them more susceptible to influenza virus. Since then, several studies have suggested that other chemicals, such as [perfluorooctanoic acid](#), mercury and arsenic, can also alter animals' immune responses and decrease their resistance to infectious diseases. And [epidemiological studies](#) in humans have linked chemical exposure in the womb to a child's increased risk of infectious disease. However, scientists are only now beginning to unravel how this happens, Senior Editor Britt E. Erickson writes.

Compounds called per- and polyfluoroalkyl substances (PFAS) are widely used in [household products](#), such as food packaging, nonstick products and cleaners. Researchers have linked elevated concentrations of some PFAS in mothers' blood to reduced responses to vaccinations and more illnesses in their children. Similarly, arsenic exposure in the womb has been associated with decreased levels of antibodies against diphtheria in vaccinated Bangladeshi children. Evidence also suggests that some chemicals, such as zinc or lead, may contribute to the rise of multidrug-resistant strains of methicillin-resistant *Staphylococcus aureus* (known as MRSA). Such interactions are complex and will require more interdisciplinary research in environmental health and infectious disease, Erickson writes.

More information: "Linking pollution and infectious disease," cen.acs.org/environment/persis...tious-disease/97/i11

Provided by American Chemical Society

Citation: Pollutants, pathogens could team up to make us sick (2019, March 20) retrieved 11 May 2024 from <https://phys.org/news/2019-03-pollutants-pathogens-team-sick.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.