

## Disease Vectors

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## Disease Vectors

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## Supplement Aims and Scope

This supplement is intended to focus on the identification and characterization of disease vector hazards and associated risks for human health and the environment and development, implementation and evaluation of prevention or intervention strategies to limit disease vector hazards and associated risks.

Environmental Health Insights aims to provide environmental health practitioners, researchers and the general public with online, open access to scholarly articles on environmental health hazards and associated risks. The journal aims to explore how these hazards and risks can be eliminated or limited or prevented to help protect human health and our environment.

In a field where the literature is ever-expanding, practitioners and researchers increasingly need to have ready access to up-to-date, high-quality scholarly articles on areas of on-going interest in environmental health. This supplement aims to address this need by presenting contemporary articles by leading scholars, allowing readers to distinguish the signal from noise. We hope that through this effort, practitioners and researchers will be aided in finding answers to some of the most complex and pressing issues of our time.

### Part 1: Viral Agents

Part one of the Environmental Health Insights Disease Vectors supplement focuses on viral agents transmitted

by insects, ticks, and other arthropods and mechanical vectors (vehicles). Also included within the scope of part one are the development, implementation and evaluation of intervention strategies to prevent, control or eliminate arthropod disease vector viral hazards and associated risks.

### Part 2: Bacterial Agents

Part two of the Environmental Health Insights Disease Vectors supplement focuses on bacterial agents transmitted by insects, ticks, and other arthropods and mechanical vectors (vehicles). Also included within the scope of part two are the development, implementation and evaluation of intervention strategies to prevent, control or eliminate arthropod disease vector bacterial hazards and associated risks.

### Part 3: Protozoal Agents

Part three of the Environmental Health Insights Disease Vectors supplement focuses on protozoal agents transmitted by insects, ticks, and other arthropods and mechanical vectors (vehicles). Also included within the scope of part three are the development, implementation and evaluation of intervention strategies to prevent, control or eliminate arthropod disease vector protozoal hazards and associated risks.



Vector-borne diseases are a significant and growing human health risk that must be addressed at both local and global scales within the broad context of Environmental Health. The topic of this special Environmental Health Insights supplement, Disease Vectors, seeks to help environmental health practitioners, researchers, and the general public understand the broad public health impacts of vector-borne disease. It also facilitates learning about important factors that contribute to increased exposure to the vectors and the pathogens they carry. This supplement explores arthropods involved in enzootic, epizootic, and epidemic transmission cycles. Articles include discussions of vectors including, but not limited to, mosquito-borne viruses, triatomine-borne parasites, and tick-borne bacteria. We are thankful that supplement authors provided a diverse set of studies including laboratory analyses of vector competence, field studies of vector biology and control, and spatiotemporal analyses of vector-borne disease.

Vector-borne diseases affect >1 billion people and kill >1 million people annually<sup>1</sup>, resulting in significant health and economic burdens throughout the world. Emerging vector-borne diseases are also important issues for public health as the geographic range of many of these diseases has increased in recent years.<sup>2</sup> Ideally, entomological surveillance and risk assessments should be conducted in disease-endemic areas, as well as areas at predicted risk of vector and/or pathogen introduction<sup>3</sup>; however, this rarely occurs. The most common reason surveillance and risk assessments are not conducted is due to budget reductions in some vector control programs. These reductions have inevitably resulted in a reactive rather than proactive approach, hence leaving the public at higher risk in

regions where vector-borne disease is prevalent and potentially allowing an infected vector population to expand.<sup>4,5</sup>

Range expansion of potential vectors and emerging pathogens, climate change, pesticide resistance, human encroachment on vector habitat, and international travel have all contributed to increased vector-human interactions and the health burden from vector-borne diseases.<sup>3,6</sup> A major theme established in this supplement to improve health outcomes is the need for increased surveillance of current and emerging vector-borne diseases and enhanced communication between vector control programs, local environmental/public health departments, veterinarians, and physicians. This information provides a basis for future studies that will continue to improve risk assessment/prediction models and control methods to alleviate the health effects of vector-borne disease and improve public health response.

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