

Biotoxins Encyclopedia Article

Biotoxins

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Biotoxins

The term biotoxin refers to naturally occurring, poisonous agents that can cause illness or injury to humans, animals, and marine life. They may come from bacteria, **fungi**, algae, or virii.

Some of the more well-known bacterial biotoxins include *Bacillus anthracis* (**anthrax**), *Brucella melitensis* and *Brucella suis* (brucellosis), *Vibrio cholerae* (**cholera**), and *Yersinia pestis* (**plague**).

Diseases spread by viral biotoxins include encephalomyelitis, viral hemorrhagic fever (yellow fever, ebola-marburg, dengue fever), and variola major (smallpox).

Biotoxins may be distributed through wind-borne spores or through contaminated food or water. Some biological agents have also been aerosolized or deliberately introduced into food and water supplies for use as bioweapons.

Marine biotoxins are often responsible for large-scale **fish kills** and can cause severe illness in humans who consume tainted fish or shellfish. Symptoms of shellfish **poisoning** include diarrhea, stomach cramps, headache, nausea, vomiting, and in extreme cases neurotoxic effects including paralysis, seizures, and death. Common marine biotoxins include ciguatera fish poisoning (CFP) toxin and domoic **acid**. Harmful algae blooms (HAB) are sometimes called red tides or brown tides. Some HABs, such as *Pfiesteria piscicida*, can be sources of marine biotoxins that potentially harm marine life and humans.

Resources

Books

Gaffield, William and Anthony Tu, eds. *Natural and Selected Synthetic Toxins: Biological Implications*. Washington, DC: American Chemical Society, 2000.

Periodicals

Burrows, W. Dickinson and Sara Renner. "Biological Warfare Agents as Threats to Potable Water." *Environmental Health Perspectives* 107, no.12 (Dec 1999): 975 (10pp).

Other

U.S. Environmental Protection Agency, Office of Water. *Pfiesteria piscicida Home Page*. [cited May 15, 2002]. <<http://www.epa.gov/owow/estuaries/pfiesteria/>>.



Organizations

National Office for Marine Biotoxins and Harmful Algal Blooms; Woods Hole Oceanographic Institution, Biology Dept., MS #32, Woods Hole, MA USA 02543 (508) 289-2252, Fax: (508) 457-2180, Email: jkleindinst@whoi.edu, <<http://www.redtide.whoi.edu/hab> />