

# *Pfiesteria*: Facts about a Coastal Concern



## A PUBLIC SERVICE BULLETIN

Since the late 1980s, a new word — “*Pfiesteria*” — has entered our vocabulary. *Pfiesteria*, a microscopic marine organism, has been linked to fish kills and human health problems along the Mid-Atlantic coast and beyond. The organism has become the subject of national press coverage, as well as the cause of considerable confusion and speculation.

Thanks to the efforts of the scientific community, we are steadily learning more about *Pfiesteria*, its biology, and its impacts. Researchers also are advancing our ability to detect *Pfiesteria* in coastal waters.

### Biology of *Pfiesteria*

*Pfiesteria* is a one-celled organism called a dinoflagellate. It exhibits characteristics of both plants and animals. One of *Pfiesteria*'s most remarkable features is its multiple life stages. Most of these stages are benign. However, a few are toxic and harmful to fish and humans.

Laboratory experiments have demonstrated that *Pfiesteria* can become toxic in the presence of fish. In a matter of hours, the organism can change from a resting cyst stage, to an amoeba-like form, to a swimming stage — the stage most threatening to fish. Affected fish, partially paralyzed from toxin, start gasping at the water's surface, or may be found dead or dying, sometimes with round, bleeding sores in their flesh.

These changing forms make *Pfiesteria piscicida* and its close relatives — now often referred to as the “*Pfiesteria* complex” — both intriguing and difficult to confirm. Scientists have developed molecular probes that detect the presence of *Pfiesteria* in coastal waters, and they are working on new probes that will aid coastal states in rapidly detecting and responding to toxic *Pfiesteria* incidents.

### Human Risk

*Pfiesteria* has the unusual ability to produce toxins which can aerosolize, or become airborne. Medical researchers have found that people with high exposure to waters surrounding fish kills may experience short-term memory loss as well as the loss of concentration needed to perform daily tasks. Over time, the ability to concentrate and maintain memory is regained. Exposure to *Pfiesteria* also has been linked to skin rashes.

More critical symptoms — including narcosis (“a drugged effect”), severe headaches, acute loss of short-term memory, and impaired liver and kidney function — have been reported by researchers who worked with high concentrations of the organism in its toxic form in the laboratory.

Scientists are continuing to pursue intensive research to identify *Pfiesteria*'s chemical toxins and to study *Pfiesteria*'s impact on human health.

**For more information, visit this Web site developed by the Sea Grant programs in the Mid-Atlantic region:**

**[www.pfiesteria.seagrant.org](http://www.pfiesteria.seagrant.org)**

### *Pfiesteria* and Seafood

There have been no confirmed reports of people getting sick from eating seafood that may have been exposed to *Pfiesteria*. While a number of fish and shellfish may be affected, most fish kills in which *Pfiesteria* has been implicated have involved menhaden, an oily fish which is not marketed as human food but rather as bait fish and fertilizer. Restaurant and retail seafood must meet state and federal safety guidelines.

### Precautions

- ◆ Leave an area where fish are floating at the water's surface — a fish kill may be in progress.
- ◆ After swimming or wading in coastal waters, rinse with tap water.
- ◆ If you fish recreationally, do not keep fish with sores or lesions.
- ◆ Avoid touching sores or lesions of dead or dying fish. If you must handle fish with sores, use gloves.
- ◆ As a general precaution, consumers should completely cook finfish and shellfish. Never eat fish that exhibit evidence of sores or disease. Do not eat fish that seem diseased or dying when caught.
- ◆ If you experience illness you think is related to exposure to *Pfiesteria*, please see your physician.

## REPORTING FISH KILLS

If you observe numerous fish gasping at the surface of the water, or come upon many dead fish with sores and lesions, notify the appropriate authority in your state:

In **Delaware**, call the Department of Natural Resources and Environmental Control at 302-739-3441 or 1-800-523-3336.

In **Maryland**, call the Department of Natural Resources toll-free hotline at 1-888-584-3110.

In **New Jersey**, call the Department of Environmental Protection hotline at 609-292-7172.

In **New York**, call the Department of Environmental Conservation at 631-444-0435.

In **North Carolina**, call the nearest regional office of the Department of Environment and Natural Resources or 1-800-858-0368.

In **South Carolina**, call the Department of Natural Resources at 843-762-5068 (daytime) or 843-570-3062 (evening).

In **Virginia**, call the Department of Environmental Quality at 804-698-4113 (daytime) or the Department of Emergency Services at 804-674-2400 (evening).