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Toxic Words Over Algae

Article questions

1. Where does Dr. JoAnn Burkholder work?
2. What is the controversy?
3. What is pfiesteria?
4. What are the dangers according to Burkholder?
5. What universities support Burkholder?
6. What book was written about Burkholder?
7. What is your view?

Toxic words over algae

NEWS PHOTOGRAPHER 24 SEP 02

Biologist defends her pfiesteria work

BY CATHERINE CLABBY
STAFF WRITER

The first assault came in June. A small journal published word that North Carolina scientist JoAnn Burkholder misjudged pfiesteria, the toxic marine algae that threatened the Eastern Seaboard five years ago.



JoAnn Burkholder rebuffs skeptics' criticisms.

In August, two papers in big-gun publications said some scientists were concluding that pfiesteria may pose no risk to people.

And the woman the world looks to as the expert — the one who battled to be taken seriously — decided she was under attack again.

Now she is fighting back.

"I see this as an attack on one lab in particular," said Burkholder, an N.C. State University scientist and co-discoverer of pfiesteria. "They talk about 'the Burkholder group,' even though there are multiple labs conducting this science."

In the mid-1990s, Burkholder angered state health experts, fishermen and farmers with claims that pfiesteria (fis-tear-ee-ah) blooms posed an environmental and human health threat in North Carolina coastal waters. She said pollution from human sewage and hog waste encouraged pfiesteria's fish-killing activity.

When fishermen and boaters fell sick with memory problems and other ailments during a 1997 pfiesteria outbreak in Maryland, the algae became a national research priority. North Carolina officials apologized that state employees had "disparaged" Burkholder's work, and the legislature ponied up money for a well-appointed lab.

Nationally, environmentalists heralded her as a hero. Now the

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PFIESTERIA

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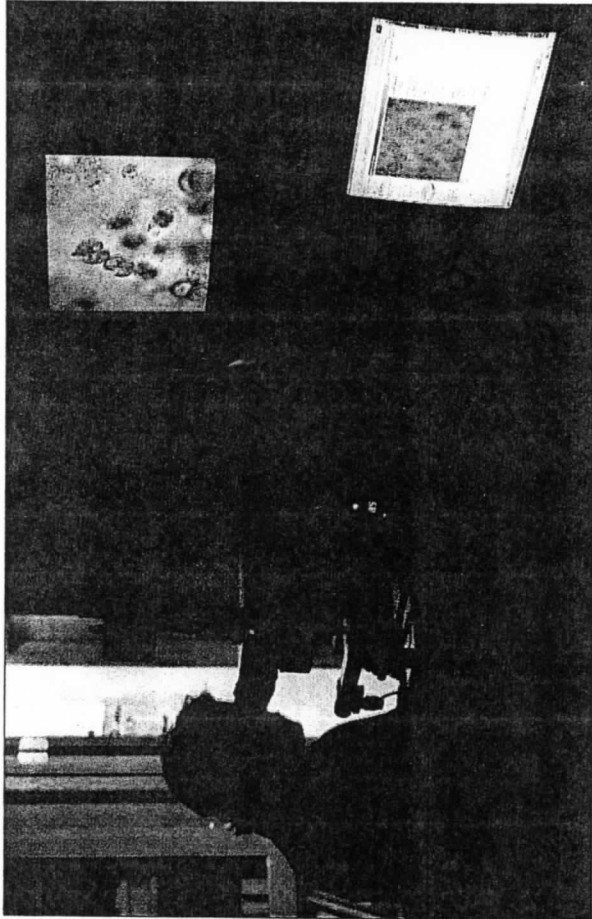
biologist faces a new battle. The research papers published during the summer challenge some of the fundamental scientific claims about pfiesteria. In interviews, the authors questioned Burkholder's ethics, complaining that she will not make her pfiesteria strains available for others to test. In the *Journal of Phycology*, Wayne Litaker, a research biologist with the National Oceanic and Atmospheric Administration, and others said precise DNA tests contradicted Burkholder's claim that pfiesteria has a complex life cycle that passes through 24 ages.

Then, in the Proceedings of the National Academy of Sciences, researchers from UNC-Wilmington, Florida and Virginia reported that they found no toxin in pfiesteria samples nor any evidence of a gene often linked to toxins.

A report in the *Journal of Nature* so found no trace of toxin and argued that the microbe's biggest threat is its ability to attack fish. "It's not about her," said Wolfgang Vogelbein of the Virginia Institute of Marine Science and lead author of the *Nature* report. "That's not the point. It's possible r. Burkholder and her colleagues work with strains different than hers. It's also possible that this new mechanism has been missed by the other labs."

Be fair, she says

Still, Burkholder and scientists supporting her want the three journals that published the dissenting papers this summer to publish critiques of those papers. Burkholder said the authors didn't acknowledge that more than 20 labs have corroborated her findings, including one at Old Do-



Matthew Parrow, a graduate student working with Burkholder, examines pfiesteria organisms in a lab at NCSU. Some scientists now say pfiesteria poses no threat to people.

STAFF PHOTO BY SHAWN ROCCO

search associate, Howard Glasgow, suffered severe memory loss and other ailments while studying the algae in her former N.C. State lab. As one pfiesteria bloom after another killed more than a billion fish in North Carolina's waters by mid-decade, she pushed unsuccessfully to convince state and local officials that a potential human health threat thrived in polluted coastal waters.

Her message gained a wider audience in 1997 when author Rodney Barker wrote "And the Waters Turned to Blood," a book casting her as a scientific heroine. But it really took off when pfiesteria bloomed in Chesapeake Bay that summer. People believed to be exposed there suffered memory loss and other problems.

Maryland's governor closed rivers. Congress staged hearings. The American Association for the Advancement of Science handed her a scientific freedom award. New research dollars swelled into the millions, funding Burkholder and many of the scientists now challenging her findings.

Answering the critics

Now Burkholder is posting critiques of the dissenting studies and subsequent news coverage on her Web site, www.pfiesteria.org.

And she is watching closely for progress among angry activist allies. Like them, she says some dissenting researchers gained funding by saying they could unmask a pfiesteria toxin but failed to deliver.

The Waterkeeper Alliance, led by Robert F. Kennedy Jr., demanded last month that federal officials and universities and scientists turn over grant applications, meeting minutes, e-mail messages and other records related to pfiesteria research. Kennedy and staff member Rick Dove, a former Neuse River riverkeeper and longtime Burkholder supporter,

said they are outraged that researchers who got more than \$12 million to study pfiesteria have concluded the algae don't make toxin.

"The no-data, no-progress findings should gravely concern federal agencies that provided millions of dollars to conduct these studies," Kennedy said.

Comments like that infuriate researchers challenging Burkholder's findings, including Robert E. Gawley, a University of Miami chemist who was lead author of the National Academy report.

"We set out to isolate and characterize the toxin," Gawley said. "Science doesn't always turn out the way you expect. You have to follow the facts."

The demand for records is filed using a federal law that corporations backed in Congress to get power to unearth specifics on research into pollution that influences public policy. Some institutions are expected not to comply; if they do not, Dove said, the alliance will sue for the records.

Burkholder, meanwhile, intends to use science to further challenge the skeptics. She will test samples of the cultures the competing labs used in their published experiments deposited in a culture bank in Maine.

Burkholder said she will either prove they are the wrong strain or rev them up to make a toxin, something that would give her great satisfaction.

"It won't surprise me if we hand back in an actively toxic mode," Burkholder said.

Vogelbein said that prospect doesn't upset him in the least and she is welcome in the samples. "They are available," he said, "to anyone."

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