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TESTIMONY OF
SUZANNE E. SCHWARTZ
ACTING DIRECTOR, OCEANS AND COASTAL PROTECTION DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SUBCOMMITTEE ON OCEANS AND FISHERIES
OF THE
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION
UNITED STATES SENATE

May 20, 1998

Good morning Madam Chairwoman and Members of the Subcommittee. I am Suzanne Schwartz, Acting Director of the Oceans and Coastal Protection Division, U.S. Environmental Protection Agency (EPA). Thank you for this opportunity to discuss EPA's efforts to work with our federal, State and local partners to address harmful algal blooms (HAB), hypoxia, and their associated threats to public health and safety and environmental impacts.

Hypoxia, anoxia and eutrophication, as well as some harmful algal blooms have been associated with the effects of an overabundance of nutrients which impact coastal ecosystems. As recognized in S. 1480, the "Harmful Algal Bloom Research and Control Act," harmful algal blooms (HAB) -- such as toxic outbreaks of *Pfiesteria piscicida* or red and brown tides -- may reflect habitat deterioration and have important implications both in terms of fish disease and human health. Harmful and toxic algal blooms have impacted many coastal areas in recent years. Marine biotoxins can be carried by shellfish, water or air to humans and wildlife. Outbreaks can: kill and injure fish, wildlife, and people; harm the viability of the fishing and aquaculture industries

and related enterprises; and, ruin the aesthetic and economic benefits of the affected waters.

These environmental impacts, and concern over public health and safety, are immediate and require immediate response. These concerns also require a long-term plan for preventing and responding to future outbreaks of *Pfiesteria* and other HABs. In my testimony today I will review briefly what we know about these toxic algae, and discuss our approach to addressing this matter, which includes: supporting State response efforts, coordinating research with the National Oceanic and Atmospheric Administration (NOAA) and other federal agencies, and enhancing prevention activities.

The Administration's Clean Water Action Plan provides a considerable increase in attention to, and financial support for, efforts to control and mitigate the impacts of harmful algal blooms. Specific elements of the Clean Water Action Plan directly address the need for federal agencies to coordinate both their support to States responding to toxic *Pfiesteria* outbreaks and other HABs, and also their research and monitoring activities. Overall, the Clean Water Action Plan is designed to provide States with financial and technical assistance to identify and restore priority watersheds. Such support should significantly improve the States' ability to control and mitigate the impacts of toxic *Pfiesteria* outbreaks and other harmful algal blooms. The attached chart shows the total EPA funds that can be used to address *Pfiesteria* in particular, and nutrient reduction more generally. I will also highlight particular expenditures throughout my testimony.

BACKGROUND

Marine biotoxins and harmful algae represent a significant and expanding threat to human health, marine mammals, and fisheries resources throughout the United States. Although the human health and environmental effects of *Pfiesteria* and other HABs are still in the research phase, public health officials and coastal and ocean resource managers have had to increasingly respond to the adverse impacts from similar micro-organisms in other parts of the country. In addition to human health effects potentially associated with *Pfiesteria*, a variety of human illnesses are associated with other forms of toxic algal blooms and consumption of toxin-contaminated fish or shellfish in the United States. Sea mammals, seabirds and other animals may also be victims of these biotoxins.

In addition to well known fish kills, fish with lesions and suspected human health impacts from toxic *Pfiesteria* outbreaks which have occurred in several tributaries to the Chesapeake Bay and in North Carolina rivers in recent years, the impacts associated with other harmful algal blooms are a familiar and growing concern around the country. The death and decay of algal blooms can lead to partial oxygen depletion known as hypoxia, or total oxygen depletion, known as anoxia, in the water, resulting in widespread mortalities of fish, shellfish, and invertebrates. In addition, macroalgae can proliferate, resulting in displacement of native species and habitat alteration.

There is evidence that associates these algal blooms with nutrient pollution -- excessive nitrogen and phosphorus -- in the water. The sources of these pollutants vary widely from one geographic location to another. However, in general, we see

three significant sources: human waste, from septic systems or sewage treatment plants; agricultural runoff, from fertilizer or animal waste; and air deposition, from motor vehicles and electric utility facilities.

Hypoxia occurs in many parts of the world, and in the United States it occurs in several estuaries and near-coastal waters, including the Chesapeake Bay, New York Bight, and the Gulf of Mexico. For example, on the Gulf of Mexico's Texas-Louisiana Shelf, an area of hypoxia forms during the summer months covering 6,000 to 7,000 square miles, an area that has doubled in size since 1993. This condition is believed to be caused by: a complex interaction of excessive nutrients transported to the Gulf of Mexico by the Mississippi River; physical changes to the river, such as channelization and loss of natural wetlands and vegetation along the banks; and, the interaction of freshwater from the river with the saltwater of the Gulf.

The nature of the Gulf hypoxia problem is further complicated in that some nutrient load from the Mississippi River is vital to maintaining the productivity of the Gulf fisheries. However, the natural resources at risk, and the potential economic consequences for the productive fishery, are cause for concern. Approximately 40% of the U.S. fisheries landings, including a substantial part of the Nation's most valuable fishery (shrimp), comes from this productive area.

The Chesapeake Bay Program has also recognized a close link between the frequency of low dissolved oxygen events and the health of benthic communities in the Bay. Benthic communities are composed of those organisms that live on the bottom of the Bay including worms, clams and crustaceans. These organisms are a very

important food source for fish and crabs, and they can also serve as biological indicators of water quality in a given location since these organisms generally stay in one place. Since low oxygen conditions in the Bay are significantly determined by nutrient impacts, the Bay Program's targeted 40% reduction of nutrients (nitrogen and phosphorus) is expected to raise oxygen levels and improve habitat for the bottom-dwelling community as well as other organisms which otherwise do not currently use this habitat. This improvement also should expand the forage range for several key fish species, including striped bass.

National Estuary Program

Eighteen of the 28 estuaries in EPA's National Estuary Program, from every region of the country, have identified the impacts of nutrient over-enrichment and associated harmful algal blooms as either a high or medium program priority.

- ▶ An algal bloom in 1988 killed shellfish in Maquiot Bay in Brunswick that led to concerns about excessive nitrogen-loading into parts of Casco Bay, Maine and prompted creation of a program to monitor oxygen levels in coastal Maine waters.
- ▶ From mid-July through September each year, up to half of Long Island Sound experiences dissolved oxygen levels that are insufficient to support healthy populations of marine life. The hypoxic conditions are due to excessive algae blooms which die and rob the water of oxygen as the algae decompose.
- ▶ Algae production in Narragansett Bay has approximately doubled since the first European settlers came to Rhode Island, contributing to hypoxic conditions in the bay in mid to late summer and disappearance of eelgrass beds over most of the Bay. Rooted aquatic plants, such as seagrasses, are generally sensitive to reductions in light penetration which can be caused by increased algae.

- ▶ Brown Tide blooms have occurred in the Peconic Estuary main bays system in 1985-88, 1991 and 1995. Localized blooms occurred in West Neck Bay and Great South Bay in late spring 1997, and in Shinnecock and eastern Moriches Bays in late summer/early fall of 1997. These blooms decimated the region's bay scallop industry, which was, until 1985, the major shellfish industry on the East End of Long Island, producing approximately 90% of the scallops harvested in New York State.
- ▶ *Gymnodinium breve*, better known as red tide, invaded the Texas Coastal Bend bays and estuaries last fall. Carried by winds and tides, these organisms washed in from the Gulf of Mexico, leaving beaches covered with millions of dead fish. People who consume shellfish contaminated by red tide may contract neurotoxic shellfish poisoning (NSP). In addition, ocean spray blown by sea breezes near red tides can carry toxins and irritants ashore, which can cause respiratory, nose, throat and eye irritation. These public health threats require closure of beaches and shellfish beds to recreational and commercial uses.
- ▶ The Petaluma River, a tributary to San Francisco Estuary, has historically been seasonally compromised by algal growths, oxygen sags, and fish kills.

In response to the human health and environmental risks and impacts associated with such marine biotoxins and harmful algae, EPA, NOAA and other federal agencies have been working together to better understand and, as a result, manage or respond to harmful algal blooms in general, and most recently, to *Pfiesteria* in particular. In addition, EPA is working with other federal agencies (including NOAA), States, and Tribes to address the hypoxia in the Gulf of Mexico. EPA is especially interested in steps that can be taken to reduce nutrient pollution, in an effort to potentially help reduce and eventually prevent these outbreaks and their effects.

FEDERAL RESPONSE TO HARMFUL ALGAL BLOOMS

Support State Responses to Harmful Algal Blooms

Pfiesteria piscicida

Most recently, EPA and NOAA worked together with our field offices and the States of Maryland, Virginia, Delaware, North Carolina, and Florida to identify activities which would benefit all States, such as expanding laboratory capacity to process water and fish tissue samples or providing training for worker safety and fish lesion identification. Other mutually-beneficial activities include: developing a standard monitoring protocol, expanding the Woods Hole Oceanographic Institute National HAB clearinghouse, developing public education/outreach materials, and, providing regional workshops. In FY 1998, EPA and NOAA agreed to dedicate about \$395,000 to these cross-cutting activities.

To support specific State *Pfiesteria* monitoring and rapid response activities, EPA and NOAA provided about \$1,555,000 in direct funding assistance to the States of Maryland, Virginia, Delaware, North Carolina, and Florida in FY '98. These funds will be used by the States to: hire fish and water quality field personnel; purchase or rent monitoring equipment, vehicles and boats; staff phone banks to respond to calls from concerned citizens; evaluate monitoring data; and, keep the public informed on specific events.

The Administration's Clean Water Action Plan calls for EPA, NOAA and other federal agencies, in consultation with the States, to develop a coordinated response system that supports State and local efforts in coastal waters for major events, such as

harmful algae blooms and *Pfiesteria* outbreaks. This effort will build on the efforts initiated last fall by a group, primarily composed of federal field office representatives and led by NOAA's Chesapeake Bay Program Office, to coordinate federal activities to help the mid-Atlantic States effectively respond to potential *Pfiesteria* outbreaks. Our initial scoping exercise has identified preparation and planning, monitoring and surveillance, and rapid response as potential elements of a national contingency plan.

EPA has a website dedicated to providing information and connecting to other sites on *Pfiesteria* (<http://www.epa.gov/OWOW/estuaries/pfiesteria/index.html>). EPA has also been working with NOAA, other federal agencies, the mid-Atlantic States, the Association of State Interstate Water Pollution Control Administrators, and others to develop a public fact sheet on *Pfiesteria piscicida*. This fact sheet will provide the general public with information to help protect their health and safety in the event of a toxic outbreak of *Pfiesteria*. EPA will provide an initial supply of fact sheets to be distributed by our federal and State partners and provide electronic copies so that the fact sheets may be modified to meet the needs of target audiences.

Other Harmful Algal Blooms

EPA is working with State, local and Tribal agencies to develop Rapid Response Teams, including standardized protocols, for HAB events, unknown toxic outbreaks and aquatic mortality events.

Coordinated Federal Research Strategy for *Pfiesteria*

Harmful algal blooms were formally identified as a national concern in the 1993 report, "Marine Biotoxins and Harmful Algae: A National Plan." This report, produced by research scientists and agency representatives, provides a comprehensive research agenda required to adequately manage HAB species in U.S. coastal waters. Using this national plan as a template, EPA and NOAA, working together, led a multi-agency group to ensure that there is a well-coordinated federal research strategy for *Pfiesteria*. The "National Harmful Algal Bloom Research and Monitoring Strategy: An Initial Focus on *Pfiesteria*, Fish Lesions, Fish Kills and Public Health" was completed in November 1997.

The Strategy identifies eight specific objectives which all federal agencies have agreed to use to direct HAB funding and research activities:

- ✓ To protect human health and the environment, immediate support is needed to:
 - ▶ isolate, identify, and characterize the microorganisms and their toxins;
 - ▶ develop assays for detection of cells and toxins and improved capabilities for morphological identification and enumeration;
 - ▶ better understand the impact of the organisms and their toxins on human health, marine ecosystems, and the economies of coastal areas; and
 - ▶ ensure the flow of timely, accurate, and consistent information concerning HAB events to local managers, professionals and the general public.
- ✓ To ensure that responsible agencies can respond rapidly and, if necessary, implement effective management and mitigation measures, capabilities need to be in place to:

- ▶ enable federal and State agencies to respond rapidly through better support for monitoring, research, and assessment during *Pfiesteria* and other HAB events; and
 - ▶ maintain and update data bases and information relevant to *Pfiesteria* and other HAB events that are easily accessible, reliable and accurate.
- ✓ To support management and mitigation efforts, research must also begin immediately to:
- ▶ develop capabilities to identify systems potentially supporting *Pfiesteria*, related species, and HABs through integration of the organism's ecology and physiology with ambient environmental conditions;
 - ▶ explore new and existing technological means to prevent, control, or mitigate *Pfiesteria*, related organisms, and other HAB species, such as improving farm and watershed-scale Best Management Practices to reduce or eliminate movement of nutrients, sediments, pathogens, trace elements, and other specific organic compounds to surface and ground water.

The Administration's Clean Water Action Plan calls for NOAA, EPA, USDA, DOI, and other federal agencies to work with States, academia and others to implement the National HAB Research and Monitoring Strategy. Efforts coordinated under this strategy will complement and augment, as appropriate, State programs, and be implemented through a mix of in-house research and monitoring and research grants to universities and States.

To help implement this Strategy, EPA, NOAA, USDA, NSF, NASA and ONR are jointly funding the Ecology and Oceanography of Harmful Algal Blooms (ECOHAB) interagency research program. In 1997, the ECOHAB program funded several research projects which will help us to understand the human health and environmental effects of HABs, and to understand the environmental factors (nitrogen, phosphorus

and other factors) which contribute to HABs. Both of these areas of research are critical to responding to HABs to protect public health and safety while avoiding undue economic impacts on fishing and tourism industries in regions, States and local communities. Total funding for the ECOHAB program this year is \$5.0 million, of which \$4.0 million is targeted towards addressing specific research needs associated with *Pfiesteria* outbreaks. EPA provided \$1.5 million for *Pfiesteria*-specific research and \$500,000 for research on other HABs. The deadline for proposals was February 23, 1998 and, after peer review, award decisions are planned for June with projects beginning this Summer. More information can be found at <http://www.redtide.whoi.edu/hab/nationplan/ECOHAB/ECOHABhtml.html>.

Additionally, a major emphasis of EPA's Office of Research and Development (ORD) research will be directed towards toxic dinoflagellates such as red tide blooms, *Pfiesteria piscicida* and *Pfiesteria*-like species. A five-year ORD research program has been planned and is under development to determine:

- ▶ techniques, including bio-optical signatures, biochemical, and genetic sequences, to rapidly and positively identify HAB species;
- ▶ critical environmental factors, including nutrient concentrations and ratios, regulating HAB cell and population growth, life cycles, and toxin production;
- ▶ effects of HAB toxins on water quality, higher trophic level species, and ecosystem condition;
- ▶ acute and chronic human health effects of HAB toxins using laboratory model organisms; and
- ▶ potential strategies to control, mitigate, and prevent HABs in coastal ecosystems.

It is anticipated that the results of this research will assist in: forecasting the occurrence of HABs; predicting human health and ecological effects from exposure to HAB toxins; determining the cause(s) of HABs; and, evaluating alternative control, mitigative, and prevention strategies. This ORD research program is coordinated among internal EPA research organizations as well as with the Science to Achieve Results (STAR) program. The ECOHAB program will facilitate collaboration.

In addition, in support of the Committee on Environment and Natural Resources (CENR), EPA is participating in the National Environmental Monitoring and Research Initiative. In connection with this program, EPA has been joined by NOAA and NASA to develop a program of grants in Research and Monitoring on Ecological Effects of Environmental Stressors Using Coastal Intensive Sites (CISNet). Applications were requested December 28, 1997, with a closing date of April 1, 1998. Grants will be announced this Summer.

The National Environmental Monitoring and Research Initiative also includes a pilot project in the Mid-Atlantic region which is designed to improve our understanding of the linkages among air, land, water, biota, and people that will contribute to better environmental decision-making across the Mid-Atlantic region. This CENR pilot will increase our understanding of cause and effect, and allow us to better document current nutrient levels in Mid-Atlantic estuaries.

Reduce Nitrogen and Phosphorus Loadings from All Sources

While it is not known exactly what triggers the toxic form of *Pfiesteria*, 75 percent of the known outbreaks have occurred in waters with high concentrations of nutrients. In addition, there has been extensive research and strong evidence that excessive nitrogen and phosphorus levels can lead to other harmful algal blooms (some of which are toxic and cause the human illnesses and fatalities I mentioned earlier), low levels of oxygen, and fish kills. Research to gain a more complete understanding must be a high priority. However, we believe further reducing the levels of nitrogen and phosphorus in our nation's waters is an important tool to help prevent the risks to human health and our food supplies, as well as the associated environmental degradation and economic impacts, caused by *Pfiesteria* outbreaks and other harmful algal blooms.

State and Local Efforts Underway

Efforts to control harmful algal blooms and hypoxic conditions at the State and local level are focused on reducing nutrient loadings, as evidenced by the Chesapeake Bay Program and the National Estuary Programs:

- ▶ In order to meet the Chesapeake Bay nutrient reduction goals by the year 2000, Bay Program partners have committed to: accelerate nutrient reduction at wastewater plants currently scheduled for improvements after 2000; implement low cost modifications where such accelerated installation is not feasible, in order to obtain near-term partial nutrient reductions; encourage voluntary efforts to achieve additional interim reductions from major wastewater treatment plants where nutrient reduction technologies are in place or will be by 2000, but where still higher levels of removal can be obtained from process changes or year-round operation; encourage commitments for additional nutrient reductions

from private sector facilities with high loading rates; and prioritize implementation of point and nonpoint source reduction and prevention actions which will be minimally affected by lag times associated with groundwater nutrient delivery, with particular focus on areas with critical living resource or human health concerns.

- ▶ In Long Island Sound, the States of New York and Connecticut have established interim targets for improving dissolved oxygen levels and are implementing a phased approach to achieving these targets by freezing point and nonpoint nitrogen loadings at 1990 levels, committing to cost-effective actions to further reduce the annual load of nitrogen, and developing nitrogen targets for specific geographic management zones.
- ▶ In the western Peconic Estuary in the State of New York, a nitrogen guideline has been adopted, permits have been modified to implement a nitrogen freeze on current point source dischargers, and a TMDL is being developed to reduce nitrogen inputs.
- ▶ In Florida, Indian River Lagoon is developing and implementing pollutant loading reduction goals based on the ecological requirements of the seagrass community.
- ▶ In the Sarasota Bay area, Florida State legislation requiring sewage treatment plants to meet advanced wastewater treatment standards has virtually eliminated wastewater discharges to the Bay. Only a few plants now discharge directly. Sarasota County is working toward the replacement of septic tanks with central sewers. Manatee and Sarasota Counties have not only worked to eliminate wastewater discharges, but are now working on a regional wastewater reclamation system to reclaim 50 mgd of wastewater. Additionally, both counties, with assistance from EPA, NOAA and the Florida Department of Environmental Protection, are conducting studies of air deposition impacts of NOx on the Bay and Gulf of Mexico.
- ▶ In San Francisco, California, the Regional Water Quality Control Board could adopt individual waste discharge requirements on approximately 25 dairies within the watershed to limit nutrient input, but instead has chosen to take a more voluntary compliance approach. The Department of Fish and Game and the Board have cooperated on investigation and enforcement proceedings against flagrant violators, but have relied primarily on citizen complaints to initiate such proceedings.

EPA and Partners Response to Gulf Hypoxia

In addition to the activities described above to alleviate algal blooms and nutrient over-enrichment, EPA and our partners have coordinated actions to address hypoxia in the Gulf of Mexico. In December, 1995, the EPA, working through the Gulf of Mexico Program Office (GMPO), and the State of Louisiana held a scientific conference to outline the issue and identify potential actions. Subsequently, we convened three meetings of senior representatives of federal Departments and agencies to explore how best to address the hypoxia issue. The agencies have included the Departments of Agriculture, Commerce, Defense, Justice, and the Interior, as well as the Food and Drug Administration and Office of Science and Technology Policy. The agencies agreed to organize themselves as the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force and to combine their expertise, authorities, and programs to better characterize hypoxia and coordinate implementation of their programs to address its likely causes. The agencies further agreed to invite a cross-section of counterpart State agencies from throughout the Mississippi River Basin to actively participate on the Task Force. The combined federal-State-Tribal Task Force has met twice since last December.

Currently the Task Force is pursuing a two part plan of action. First, a Science Assessment is being undertaken to better characterize the causes and effects of hypoxia in the Gulf of Mexico. Second, Resource Science and Management Actions are underway to address what are thought to be contributing causes.

Status of Science Assessment Activities

In 1997 the Task Force recommended that an assessment of the existing scientific knowledge and understanding of hypoxia be conducted. The Task Force, through EPA, requested that the White House Office of Science and Technology Policy conduct this assessment through its Committee on Environment and Natural Resources (CENR). NOAA leads this effort which includes teams of academic, federal, and State scientists from within and outside the Mississippi River watershed. The assessment of the causes and consequences of Gulf hypoxia is intended to provide scientific information that can be used to evaluate nutrient management strategies, and to identify gaps in our understanding of this problem. The Hypoxia Assessment Group developed a process for the assessment which includes peer review and general comment periods. Five federal agencies have provided the funding for the assessment which totals about \$1.1 million.

Status of Management Actions

The federal agencies have developed an extensive inventory of activities, being implemented with or by States, intended to protect or improve water quality and aquatic habitats and to reduce the transport of nutrients to the Gulf of Mexico. The Clean Water Action Plan places new emphasis on these programs, and the President has requested substantial increases in resources in his balanced budget proposal. Most of these programs apply nationwide and are expected to have significant benefits in water quality throughout the watershed, as well as in the Gulf. There is some understandable

skepticism on the part of agricultural producers and others in the northern portions of the 31 State watersheds that their actions cause or contribute to hypoxia. However, many of the practices believed to account for significant nutrient delivery to the Gulf can be modified to reduce these deliveries and improve water quality locally without significant adverse consequences to agricultural productivity or other economic activity. The Task Force will work to improve the effectiveness of these actions and coordinate them with the Clean Water Action Plan activities. Simultaneously they will also work to reduce uncertainties about the causes and effects of hypoxia in the Gulf of Mexico, as well as reduce significant loadings of nutrients from all sources.

Clean Water Action Plan

These are just a few examples of the innovative and aggressive efforts underway around the country to prevent and reduce nutrient over-enrichment into our tributaries, bays and estuaries in an attempt to prevent and mitigate the impacts of harmful algal blooms and hypoxia. The Administration's Clean Water Action Plan identifies a number of EPA water program areas which can be better implemented to help the States and local governments achieve their clean water goals.

✓ *Protect Coastal Waters*

- ▶ Approve and assist the implementation of State coastal polluted runoff control programs.
- ▶ Build coastal partnerships to more effectively restore and protect the coasts.

- ▶ Develop a multi-agency coastal research and monitoring strategy to understand the mechanisms that transport pollutants to coastal waters and the impacts of pollutants on human activities, habitat, and living resources.
- ✓ ***Strong Polluted Runoff Controls***
 - ▶ Help States and Tribes implement strengthened nonpoint source programs.
 - ▶ Better define anti-degradation policies to reduce polluted runoff.
 - ▶ Promote establishment of enforceable State and Tribal nonpoint source controls.
 - ▶ Increase commitment of Clean Water State Revolving Fund to polluted runoff and improve priority-setting systems to make funding decisions.
- ✓ ***Reduce Nutrient Over-enrichment***
 - ▶ Define nutrient reduction goals.
 - ▶ Assess, better quantify risks, and determine appropriate reduction actions for air deposition of nitrogen.
 - ▶ Improve subsurface sewage disposal.
- ✓ ***Expand Clean Water Act Permit Controls***
 - ▶ Expand control of storm water runoff from cities and construction sites.
 - ▶ Substantially reduce pollution from animal feeding operations.
- ✓ ***Develop incentives for reducing polluted runoff***
 - ▶ Support States, Tribes and local governments and community organizations engaging in efforts to create more sustainable communities and to avoid development that can aggravate polluted runoff and related pollution problems that undermine their quality of life.

- ▶ An interagency task force will, in consultation with the Department of the Treasury, identify and assess tax incentive proposals related to water pollution prevention and natural resource enhancement and identify potential changes, with any appropriate offsets, for proposal in future budgets.

✓ ***Improve Information and Citizens' Right To Know***

Today, the dramatic advances in information technology have created a good opportunity to provide people with significantly improved information about the quality of waters where they live. Over the next several years, water quality information will become much more understandable to the public, more specific to the waters that are of interest to individuals, and more accessible using tools such as the Internet. By embracing new technologies, federal, Tribal, State and local agencies have the opportunity to empower citizens and foster a dramatic increase in protection of public health and safety and public involvement in water quality planning and management. EPA has established an Internet home page called "surf your watershed" at <http://www.epa.gov/surf>. Anyone with an Internet connection can go to this home page and locate the watershed where they live.

✓ ***Unified Watershed Assessments***

Unified assessments of water quality and watershed conditions will help make the assessment process more efficient and accountable, highlighting geographic areas where multiple problems exist (e.g., nutrient over-enrichment, harmful algal blooms, wetland loss, and threats to drinking water). These

assessments will also provide a basis for linking State, Tribal and federal programs with common objectives and the development of consistent agency priorities. States will take the lead, working with federal agencies, Tribes, and the public to prepare a single, Unified Watershed Assessment. Federal agencies will work cooperatively with States and provide guidance and technical assistance for unified watershed assessments. EPA and other federal agencies will provide technical assistance or funding support for State efforts to develop unified assessments of watershed health.

✓ *Watershed Restoration Action Strategies*

Based on the Unified Watershed Assessment, each State should establish an overall approach to defining priorities for watershed restoration. For those watersheds identified as having the greatest need for restoration, States and Tribes should develop a Watershed Restoration Action Strategy for the watershed. By taking a watershed approach, States and Tribes will be able to consolidate existing efforts to address problems on specific water bodies. By developing response plans on a "watershed" scale, rather than a smaller "water body" scale, States and Tribes will be able to better account for cumulative effects of diffuse pollution sources and for pollution in one river segment that comes from upstream segments. A Watershed Strategy can result in improvements in environmental conditions that are mutually reinforcing, with higher long-term success rates. Water bodies impaired by polluted runoff in

most instances will require a watershed-wide effort to achieve the necessary restoration and clean water goals. EPA and other federal agencies will focus current financial resources as appropriate to support watershed restoration plans. New federal resources available in FY 1999 will be targeted to support implementation of actions called for in Watershed Restoration Action Strategies.

✓ ***Build Strong Partnerships to Speed Restoration and Protection***

Federal, State and Tribal programs can help produce clean water and healthy watersheds, but the commitments and resources of local communities, private landowners, and citizens are essential to clean up and maintain lakes, rivers, coasts, and wetlands. Effective and strong partnerships are the foundation for both restoring impaired watersheds and sustaining watersheds that are currently healthy. To achieve this goal, the Administration's Clean Water Action Plan calls for the following:

- ▶ **Watershed Assistance Grants:** Federal agencies will coordinate with States and Tribes to provide small grants to enable organizations to build watershed partnerships and advance watershed restoration efforts.
- ▶ **Communities Supporting Watersheds:** Federal agencies will increase information and technical assistance available to local organizations and citizens in locally based watershed protection efforts and encourage the organization of such groups nationwide.
- ▶ **Expand Watershed Training:** Federal agencies will join together with States, territories, Tribes and other organizations to expand and improve watershed training offerings.

We believe strengthening implementation of EPA's water programs, as called for in the Administration's Clean Water Action Plan, will effectively reduce nutrient pollution problems which are associated with hypoxia and harmful algal blooms. While we must be prepared to respond to toxic outbreaks of *Pfiesteria* and other harmful algal blooms in the short term, we must also greatly increase our efforts to understand the phenomena, and to prevent and mitigate the impacts of such events, as well as hypoxia, by better controlling the factors which contribute to their occurrence.

FUNDING AND S. 1480

I note that I was asked for recommendations regarding S. 1480, as well as a breakdown of EPA funding levels for HABs and hypoxia. The attached chart shows the total EPA funds to address *Pfiesteria* in particular, and nutrient reduction more generally. I have also highlighted particular expenditures throughout my testimony.

With respect to S. 1480, I note that the relevant agencies within the Administration currently have adequate authority to address harmful algal blooms and their causes. We recommend, however, that S. 1480 be revised to authorize increased funding for efforts to reduce polluted runoff in coastal areas at levels consistent with the President's FY 1999 budget proposal. Specifically, the bill should authorize not less than \$6 million for grants to States under the coastal nonpoint pollution control program (section 6217 of CZARA) to help all 32 States fully develop approvable Coastal Nonpoint Programs. At this time, EPA and NOAA have issued conditional approval decisions for 22 of the State coastal nonpoint programs, with the remaining 7 decisions

due by the end of June. The additional 6217 resources requested in the President's budget proposal are needed to help these States complete certain portions of their programs which are in need of further development in order to be unconditionally approved. These resources are also needed by three States (Texas, Georgia and Ohio) that are new to the Coastal Zone Management Program. In addition, the President requested \$6 million for grants to States under section 309 of the Coastal Zone Management Act, which is also needed to implement measures to reduce nonpoint pollution as prescribed in the conditionally-approved Coastal Nonpoint Programs.

As part of the Clean Water Action Plan, EPA will work with NOAA to increase our efforts to promote the establishment of legal authorities by coastal States needed to assure the implementation of nonpoint source controls to achieve water quality standards, with particular emphasis on nutrients and other nonpoint source pollutants of concerns in specific priority watersheds. EPA will provide financial and technical assistance to help coastal States implement programs to control various forms of runoff through our nonpoint source program authorized under CWA Section 319. Otherwise, I defer to my colleague from the Department of Commerce, as that is the only Department or agency specifically mentioned in the bill.

CONCLUSION

Thank you for the opportunity to testify on this important issue. In conclusion, I want to reiterate the Agency's commitment to protecting human health and our nation's

coastal and ocean resources from the risks attributable to *Pfiesteria* and other harmful algal blooms, and hypoxia. We look forward to working with the Subcommittee further on this important issue. I would be happy to answer any questions you may have.

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Programs

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EPA Resources to Address *Pfiesteria* and other Harmful Algal Blooms

	(\$ in thousands)		
	FY 97 Resources	FY 98 Resources	FY 99 Resources (Proposed)
Support to States:			
State Rapid Response / Monitoring :	\$350.00	\$950.00	
Training, Technical assistance/transfer, outreach, education :		\$50.00	
Subtotal:	\$350.00	\$1,000.00	\$500.00
Research:	\$500.00	\$2,000.00	\$1,500.00
Nutrient Reduction:	\$1,120.00¹	\$3,700.00²	\$7,400.00³
TOTAL:	\$2,320.00	\$7,700.00	\$9,400.00

¹ Includes resources for water quality criteria and animal feeding operation national pollution controls, and standards implementation (TMDLs) for national priority watersheds in mid-Atlantic States.

² Ibid.

³ Includes Clean Water Action Plan proposal for water quality criteria and animal feeding operation national pollution controls (\$6.2M) and standards implementation in mid-Atlantic States (\$1.18M).

Major Sources of Funding That Can Be Used For State *Pfiesteria*-Related Work

These grants can be used for a variety of *Pfiesteria*-related activities, per agreement between the state and its Federal Regional office (other federally funded programs, e.g. CZMA, may also be relevant).

	\$ thousands
	FY 98 Allocation
<i>EPA - Section 319 (nonpoint source) Grants</i>	
Maryland	\$1,394.00
North Carolina	\$2,430.80
Virginia	\$2,056.50
Delaware	\$749.30
Florida	\$4,093.70
TOTAL Section 319:	\$10,724.30
<i>EPA - Section 106 (water quality) Grants</i>	
Maryland	\$1,354.70
North Carolina	\$2,880.40
Virginia	\$1,990.40
Delaware	\$761.00
Florida	\$2,018.70
TOTAL Section 106:	\$9,005.20
<i>USDA - Environmental Quality Incentives Program (EQIP)</i>	
Maryland	\$2,249.00
North Carolina	\$5,720.00
Virginia	\$2,631.00
Delaware	\$1,113.00
Florida	\$4,774.00
TOTAL EQIP:	\$16,487.00