

Mr. Bob Wayland  
Director, Office of Wetlands, Oceans, and Watersheds  
Office of Water, US Environmental Protection Agency

Rm. 7130  
1301 Constitution Avenue, NW  
Washington, DC 20004  
voice: 202/566-1146  
fax: 202/566-1147  
<http://www.epa.gov/owow>

In further response to the questions sent as follow-up to my presentation:

Question:

How does EPA assure the independence of its (marine) research efforts as it simultaneously develops (marine) related regulations?"

Answer:

EPA has several line program offices (Water, Air, Prevention, Pesticides & Toxic Substances, Solid Waste and Emergency Response), headed by Presidentially-appointed, Senate-confirmed Assistant Administrators, who report to the Administrator. The Office of Research and Development (ORD) is a separate entity, also headed by a Presidentially-appointed, Senate-confirmed Assistant Administrator. Both the Program AA's and ORD AA provide advice to the Administrator who typically makes regulatory policy decisions. While EPA's Office of Research and Development works closely with EPA's Program Offices with regulatory responsibilities to determine the areas of research that will address Agency needs, ORD does not develop its research agenda based: (1) on the results the Program Offices might like to see, (2) to support the regulatory views of the Program Offices, or (3) solely in the immediate needs of the Program Offices. ORD research provides much of the scientific basis for the development of the regulatory, criteria development and/or standards development process. ORD does not set the regulatory agenda nor does it develop its research programs based on EPA's desired regulatory outputs.

However, ORD does provide sound scientific research results that can, along with data from other researchers, inform regulatory decisions. For example, EPA is developing guidance for the establishment of a dissolved oxygen criterion. ORD is conducting research to determine the effects of low dissolved oxygen exposure to selected marine and estuarine organisms and will provide the results of this research to those involvement in directly developing guidance or a criterion.

Both ORD and EPA program offices subject scientific and technical products to peer review.

Finally, EPA's Science Advisory Board plays a key advisory role in both research and the application of scientific information to regulatory decisions.

## EPA's K-12 Education Programs

The Environmental Education Act authorizes EPA to issue and administer an environmental education grants program to enhance the public's awareness, knowledge, and skills so that citizens can make informed decisions on issues that affect environmental quality. Over the past ten years, EPA's Office of Environmental Education has utilized this grants program to increase the quality and quantity of K-12 environmental education programs throughout the country. Since 1992, EPA has awarded between \$2 and \$3 million in grant funding per year totaling about 1,700 grants. Recipients of these grants include teachers and schools and science centers as well as nonprofit institutions. In recent years, much of the funding has been targeted to help schools and educators more closely tie environmental education with education reform and state standards. (note: EPA's Office of Environmental Education now offers a searchable database of previous grant awards)

EPA's Office of Environmental Education is also responsible for the Environmental Education Training Partnership (EETAP), a national educator training program. The University of Wisconsin-Stevens Point (UWSP) administers EETAP through a cooperative agreement with EPA. Eleven other organizations work with UWSP to coordinate and deliver support services and training to increase opportunities for, and the quality of, professional development available in environmental education. EETAP's activities support pre and in-service classroom teachers as well educators working for nature centers, museums and government agencies. EETAP trains thousands of educators each year. Read more at <http://www.eetap.org>.<sup>1</sup>

In addition, many of EPA's program offices (e.g., Office of Water, Office of Air and Radiation, Office of Solid Waste, etc.) have also supported K-12 environmental programs. Through discretionary grants, EPA has, for example, provided financial support for the *Adopt-A-Watershed* program, *GREEN* (Global Rivers Environmental Education Network), as well as many other successful educational initiatives. Funds have been used to support teacher training as well as curriculum development. A group of drinking water partners that included EPA, the Groundwater Foundation, and the American Water Works Association, among others, developed the *Blue Thumb* project. In addition, many of EPA's twenty-eight National Estuary Programs, a collaborative federal-state-local partnership program, have also developed educational materials for students and teachers specific to their local watershed.

EPA also sponsors the GLOBE Program, which is a partnership effort involving NOAA, NASA, NSF, and over 140 colleges and universities, state and local school systems, and non-government organizations. The GLOBE program (Global Learning and Observations to Benefit the Environment) is a worldwide hands-on primary and secondary school-based science and education program. <http://www.globe.gov/fsl/welcome.html>

---

<sup>1</sup> The President's Fiscal Year 2003 budget proposes to eliminate EPA's Office of Environmental Education and recommends transferring the overall EE function out of the EPA into the National Science Foundation

EPA has developed and published a limited number of K-12 materials on its own or in collaboration with other partners. Some examples of these efforts include:

- *Water Source Book (EPA Region IV)*
- *Girl Scout Water Drop Patch Project*
- *Volunteer for Change: A Guide to Environmental Community Service*
- *What's Up with Our Nation's Waters*
- *Turning the Tide on Trash: A Learning Guide to Marine Debris*
- *Year of the Ocean materials (in collaboration with NOAA and other federal agencies)*
- *Drinking Water Activities for Students, Teachers and Parents*

EPA's web sites also include a number of science projects and activities for use both inside and outside the classroom. Many of the projects and activities can be downloaded.

EPA's student and teachers page can be found at:

<http://www.epa.gov/epahome/students.htm>

And finally, since 1971, EPA has sponsored the President's Environmental Youth Awards. The program recognizes young people across America for projects demonstrating a commitment to the environment. Young people in all 50 states and the U.S. territories are invited to participate in the program

## **Minimizing Oil Pollution to Waters of the United States EPA's Oil Spill Prevention, Preparedness, and Response Activities**

The Environmental Protection Agency's Oil Program was established to implement response, preparedness, prevention, and contingency planning elements under the Clean Water Act (also known as the Federal Water Pollution Control Act), as amended. Since the 1970 passage of the Water Quality Improvement Act the responsibility for oil and hazardous substance response in inland waters has been delegated to the EPA. The US Coast Guard is responsible for response activity in the coastal area.

Under the CWA, and its subsequent amendments, the EPA issues pollution prevention (SPCC), facility response planning (FRP), and oil pollution exercise requirements (PREP) for non-transportation-related facilities located throughout the United States (see 40 CFR part 112). These regulations are applied to certain non-transportation-related facilities, including but not limited to bulk storage tanks and oil drilling, oil production and workover facilities, and certain facility transfer operations. In addition, EPA works with various federal, state, and local agencies to implement over 30 Federal contingency plans to ensure that the nation is adequately prepared for oil and hazardous substance discharges and substantial threats of discharges to US waters and the environment.

As a cornerstone of EPA's strategy to prevent oil spills from reaching our nation's waters, the Agency requires that non-transportation-related facilities develop and implement oil spill prevention, control, and countermeasures, or SPCC Plans. Approximately 465,000 facilities are subject to these requirements. Unlike oil spill contingency plans that typically address spill cleanup measures after a spill has occurred, SPCC plans ensure that facilities put in place containment and other countermeasures that would prevent oil spills that could reach navigable waters. Each SPCC plan, while unique to the facility it covers, must address certain elements including good engineering practices and a commitment from facility management. A spill contingency plan is required as part of the SPCC Plan if a facility is unable to provide secondary containment (e.g., berms surrounding the oil storage tank). A copy of the entire SPCC Plan must be maintained at the facility. The SPCC Plan must be available to EPA for on-site review and inspection during normal working hours. To ensure that facilities comply with the spill prevention regulations, EPA periodically conducts on-site facility inspections. EPA also requires owners and operators of facilities that experience two or more oil spills within a 12-month period to submit their SPCC Plans and other information to EPA for review.

The Oil Pollution Act of 1990, which amended the Clean Water Act, requires certain high risk facilities to prepare and submit detailed response plans which must assure, by contract or other approved means, the availability of response resources and personnel to respond to a worst case discharge from the facility. The response plan also identifies response strategies and sensitive areas which may be affected by the worst case discharge. In addition, response equipment must be identified for small and medium discharges from the facility. Approximately 5,000 facilities have prepared and submitted response plans to EPA Regions.

## How does EPA manage antifoulants and biocides?

In the United States, the EPA regulates pesticides.<sup>1</sup> The principal legal authority is established by the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). FIFRA section 3(a) provides, with some exceptions, that no person may distribute or sell in the United States any pesticide that is not registered under the Act (7 U.S.C. 136(a)). Before EPA may register a pesticide under FIFRA, the applicant must show that the pesticide “when used in accordance with widespread and commonly recognized practice, . . . will not generally cause unreasonable adverse effects on the environment” (7 U.S.C. 136(a)(c)(5)).<sup>2</sup> Some pesticides currently in use were registered many years ago based on scientific evaluations that relied on less data and information than now considered appropriate and required by current regulations. These pesticides are subject to “reregistration” in accordance with up-to-date scientific protocols and generally may remain in use while the reregistration evaluation takes place.

Antifoulants and biocides are classified as antimicrobial pesticides.<sup>3</sup> This category encompasses pesticides with a wide array of uses. For example, antimicrobial pesticides act as preserving agents in paints, metalworking fluids, wood supports, and many other products to prevent their deterioration. Antimicrobials are especially important because many are public health pesticides. They help to control microorganisms (viruses, bacteria, and other microorganisms) that can cause human disease.

EPA requires both human health and environmental data as part of its review and approval process of antimicrobial pesticides. These data requirements are tied to the intended use and certain properties of the pesticide. Therefore, some antimicrobial uses may not require as extensive a data set as others. The purpose of these studies is to allow EPA to assess risks to human health, domestic animals, wildlife, plants and other environmental effects. In the case of antimicrobial products that make public health claims, the Agency requires submission of product efficacy data to make sure the product performs as claimed. **An antimicrobial product is registered only after the Agency**

---

<sup>1</sup> FIFRA section 2(u) defines "pesticide" as: "(1) any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, (2) any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant, and (3) any nitrogen stabilizer" (7 U.S.C. 136(u)).

<sup>2</sup> The term "environment" includes "water, air, land, and all plants and man and other animals living therein, and the interrelationships which exist among these" (7 U.S.C. 136(j)). FIFRA section 2(bb) defines the term "unreasonable adverse effects on the environment" to mean: "(1) any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide, or (2) a human dietary risk from residues that result from a use of a pesticide in or on any food inconsistent with the standard under section 408 of the Federal Food, Drug, and Cosmetic Act" (7 U.S.C. 136(bb)).

<sup>3</sup> EPA regulates as antimicrobial pesticides, such as disinfectants & sanitizers, are pesticides that are intended to "(i) disinfect, sanitize, reduce, or mitigate growth or development of microbiological organisms; or (ii) protect inanimate objects (for example floors and walls), industrial processes or systems, surfaces, water, or other chemical substances from contamination, fouling, or deterioration caused by bacteria, viruses, fungi, protozoa, algae, or slime."

has determined that its use will not cause unreasonable adverse effects to human health or the environment.

Antifouling paints containing tributyltin (TBT) are undergoing reregistration. The evaluation is examining the risks and benefits associated with the use of antifouling paints containing tributyltin. At the same time, EPA is working with registrants to encourage the voluntary phase-out of existing TBT registrations. The U.S. has also recently participated in finalizing an international treaty which aims to phase-out TBT antifouling systems. The treaty is pending approval and ratification. With respect to TBT antifouling paints, the Agency has dual authorities under FIFRA and the Organotin Antifouling Paint Control Act of 1988.

## How should the nation address nonpoint source pollution?

According to the *National Water Quality Inventory* 1998 Report to Congress, nonpoint source pollution is the main reason that approximately 40 percent of surveyed rivers, lakes, and estuaries are not clean enough to meet basic uses such as fishing or swimming. States and other jurisdictions reported in the *National Water Quality Inventory* that agriculture, followed by hydromodification and urban runoff, are the leading contributors to water quality impairments nationwide. The most common nonpoint source pollutants causing water quality problems include nutrients (nitrogen and phosphorus), siltation (soil particles), metals, and pathogens (bacteria and viruses).

The most effective way to address nonpoint source pollution is to use an appropriate combination of education, technical assistance, financial assistance, and, where needed, regulatory and enforcement programs. Congress adopted this approach when it enacted Section 319 of the Clean Water Act in 1987, establishing a national program administered by EPA to control nonpoint source pollution. Through Section 319 program grants, states have successfully demonstrated on-the-ground technical controls to prevent and reduce nonpoint source pollution; implemented hundreds of information and education activities and technology transfer workshops; and have utilized state regulatory programs for enforcement where necessary to achieve nonpoint source reductions (see *Section 319 Success Stories Volume III, USEPA, February 2002; Putting the Pieces Together: State Nonpoint Source Enforceable Mechanisms in Context*, Environmental Law Institute, June 2000). States will need to place increasing focus on implementing successful on-the-ground projects and targeted programs to meet the challenge of nonpoint source pollution.

Other Federal agencies also play critical roles in providing technical and financial support through grants and loans to states, local communities, farmers, and other landowners to implement nonpoint source pollution controls. Most notably, the U.S. Department of Agriculture has in recent years increasingly supported the implementation of nonpoint source management practices (e.g., establishment of buffers and conservation easements), both financially (e.g., via the Farm Bill) and through its technical expertise (e.g., via the Extension Service). Many states and local entities are also dedicating increasing amounts of funding to control nonpoint source pollution. Despite gains made to date, more resources will need to be focused on nonpoint pollution if we are to restore water quality.

The diffuse nature of nonpoint source pollution, in that it derives from many different sources over large geographic areas, lends itself well to a watershed management approach. A watershed framework offers many opportunities to streamline data collection, coordinate agency programs, promote a higher level of stakeholder involvement, and prioritize implementation activities on a watershed basis. The watershed approach integrates targeting tools, such as total maximum daily loads (TMDLs), to help focus restoration activities on the most significant problems. A watershed approach allows communities to focus resources on a watershed's most serious environmental problems, which in many instances are caused by nonpoint source pollution. States and local communities must work together to develop more good-quality TMDLs, together with watershed-based plans that implement the TMDLs, in order to assure that effective implementation takes place on a watershed basis to restore impaired waters. Such

watershed-based planning and implementation approaches are also essential to assure the protection of good-quality waters that are threatened by development or other stressors.

## Invasive Species Management by EPA

About one in seven species (plants, animals, and pathogens) that are inadvertently brought into this country become invasive, leading to problems that cost billions of dollars in attempts to correct them. The costs to natural systems when alien plants or animals come to dominate can be staggering. Keeping all alien species out of the country is an impossible task, but it is far more difficult and costly to deal with invasive species once they are established. Increased world commerce and travel, coupled with more extensive use of the land and lakes and rivers, have transformed the once academic concern about alien species into a practicable and exceedingly costly problem for the United States. Because of its low profile in relation to many other ecological concerns, the problem of introduced species is not widely appreciated. However, some now concede that invasive alien species are a greater problem than habitat loss and chemical contamination and are the second most important cause of the loss of biodiversity worldwide. Recognizing this, the U.S. government created the Aquatic Nuisance Species Task Force, which is charged with implementing the Aquatic Nuisance Species Control Act of 1996. EPA is a member of the Task Force and the National Invasive Species Council.

**EPA is very involved in trying to establish national and international standards for ballast water discharges from vessels to prevent the introduction of new species into waters of the US. EPA is an active member of the Invasive Species Taskforce and the US delegation to MARPOL. We have been responding to a petition to regulate ballast water under NPDES and have a white paper which can be found at [www.epa.gov/owow/invasive\\_species/](http://www.epa.gov/owow/invasive_species/)**

We have also established an intra-agency working group among EPA's Regional and programmatic offices to identify and discuss current invasions, potential threats, impacts, and possible eradication options.

EPA's Office of Research and Development's (ORD) role is to conduct ecological risk assessments for the control programs that are proposed to deal with certain species. For example, piscicides (fish-killing pesticides) have been proposed as a control method to reduce the impact of invasive fish (e.g., round goby and Eurasian ruffe) that have become a problem in the upper Midwest. It is important to compare the risks of using pesticides to reduce the invasive species to the risks of the invading species themselves. ORD's knowledge and experience in conducting risk assessments will continue to be supplied by the intramural portion of the program. An extramural component is anticipated to deal with the broader aspects of alien species, their life histories, and control options and costs, following the completion of the hazard evaluation.

Currently, the key questions for this area of research are focused on hazard identification. The issues that need to be addressed include:

- Should this country be concerned about alien species?
- Why are alien introductions any more of a problem than the natural movement and expansion that have always characterized plant and animal species?
- What and who are at risk when an introduced species becomes invasive?
- What steps can be taken to limit harmful introductions, and what can be done to reduce the damage once the alien species are here?
- Are present controls adequate?

In 2001, research grants totaling more than \$3.5 million were awarded to seven universities and one nonprofit agency to study invasive species in the United States. Invasive species, such as the zebra mussel, constitute irreversible environmental changes in ecosystems and have displaced many native plants and animals, causing one of the largest significant economic and natural resource losses. The research will address issues related to plants and animals introduced into the United States and will help minimize and understand these losses.

Our great water bodies programs and national estuary programs have identified invasive species as one of the seven greatest risks to ocean and coastal ecosystems. For example, over 160 nonindigenous aquatic organisms have been documented in the Great Lakes Ecosystems since the 1800s. The single largest source of unintentional introductions over the past 40 years has resulted from shipboard commerce via ballast water. The Great Lakes National Program Office has since 1997, implemented an Invasive Species Program and provided \$300,000 per year in grant support to focus on prevention, control, impact assessment, contaminant transfer and education/outreach issues. Prevention projects are of highest priority, with a number of projects funded in recent years, including: examination of UV light as an effective secondary treatment for ballast water treatment; and a joint GLNPO, NOAA, Coast Guard project examining the risks of introductions from those organisms found in the bottom sludges of NOBOB vessels, and a biocides study looking at chlorine as a ballast water treatment method. More information can be found at <http://www.epa.gov/grtlakes/about.html>

The San Francisco Bay-Delta is the most invaded aquatic ecosystem in North America. It has approximately 240 non-indigenous species and over 200 species of unknown origin, with new species being introduced every 14 weeks. The San Francisco Bay is also one of the most studied of North American aquatic ecosystems. Researchers have determined that the top five routes of introduction into San Francisco Bay are: ship fouling (26 percent), ballast water (23 percent), shipments of Atlantic oysters (15 percent), fish or shellfish fisheries introduced to establish fisheries (nine percent), and intentional and accidental releases by individuals (seven percent). Four years after the first appearance of the aquatic nuisance species brown mussels in Corpus Christi, they had become firmly established, and their phenomenal growth has the potential to dramatically increase the maintenance requirements of navigation aids. Recently, new colonies have established in areas where salinities were thought to be prohibitive. Routine discharges from mariculture facilities may also introduce non-native species including not only the mussels, but any pathogens they may carry. In recent years, the Taura Syndrome virus has wiped out much of the shrimp farm production in Texas- the impact of exotic disease on native shrimp populations is unknown. Various management approaches are being implemented by the National Estuary Programs; they can be found at: <http://www.epa.gov/owow/estuaries/about4.htm#introduced>