

Virginia's Public Policy & Environmental Management

In the 1960s, Virginians faced a wide variety of environmental problems, from the pollution of air and water to the decline of wildlife and other living resources. For example: fish in the James River were contaminated due to illegal Kepone disposal; people could not swim in the Potomac River due to inadequate sewage disposal; and the bald eagle and osprey became nearly extinct due to DDT bio-accumulation. While many environmental problems still persist, most Virginians today live in an age when the risk of human exposure to potentially harmful pollutants has dropped significantly.

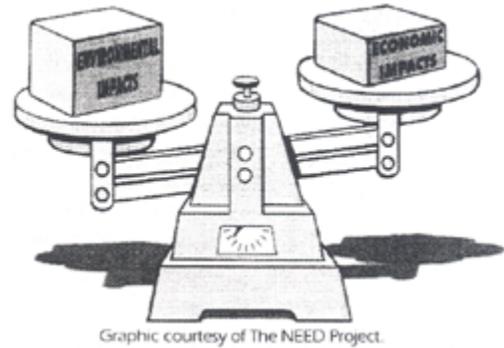
Natural Resource Management

Improved environmental quality in many areas is a result of scientific investigation, public concern, private efforts, new technology, and environmental laws. Environmental laws passed by Congress and the Virginia General Assembly place limits on the amount of pollutants that can be discharged into the land, air, or water. Across the state, dozens of private organizations as well as businesses have adopted educational campaigns and stewardship initiatives. Research into the fate of toxic chemicals discarded into our rivers has helped set environmental policy. Participation of individuals, communities, and private groups also helped foster environmental protection. An example of this type of participation is the Chesapeake Bay Program, a cooperative effort by state and federal governments, private industries, and citizen groups to restore the quality and ecological integrity of the Bay.

Much of Virginia's environment, including the Chesapeake Bay, has been altered over the last 400 years by people plowing, planting, cutting trees, and building cities, roads, dams, or reservoirs. Some of these alterations have immediate and obvious environmental problems (clearing a forest or building a dam, for example), while other effects are more subtle and long-term (e.g., introduction of a competing species, loss of a species, change in water quality). It is the job of environmental managers to constantly weigh the costs, or consequences, of all management actions against the benefits to society.

Management Challenges and Tools

Natural resources management involves setting goals and making choices that benefit people while preserving a clean, healthy environment. Everyone has a unique perspective and as a result, some management options, such as harvest restrictions, can lead to conflicts among different members of society.



Today, computer models help managers assess the effects of various management options and scenarios, and project the cumulative impacts of individual actions (e.g. one more car per household, or one less pound of trash per household). Much emphasis is being placed upon "sustainable development," or ways of benefitting from resources without using them up. Scientists are also looking at new ways of reusing and disposing of wastes. For example, sometimes waste by-products from one industry can become the raw materials for another. Sawdust turned into paper board and used tires that help produce mulch or asphalt paving are two good examples.

Pollution Prevention

When natural resources are used to make goods, usually some "waste" is created in the process. Think about it: even when you make a glass of fresh lemonade, you have the rinds left to deal with. Pollution prevention is a relatively new way of thinking about managing waste. By reducing or eliminating pollutants before they are created, we can minimize the cost of disposing of the waste and protect the environment at the same time. For example, the final cost to clean up contamination from Avtex Fibers in Front Royal is estimated to be \$100 million. The idea behind pollution prevention is to have as little waste to deal with in the first place. Companies have come to realize that they can substitute less toxic raw materials and actually save money (and the environment) in the process. They may also discover a way to recycle by-products and re-use them during production processes. Businesses that use efficient equipment and maintain it well are saving raw materials and preventing waste-producing spills and accidents along the way. Also, by keeping strict track of their inventory, companies can prevent waste and loss from products expiring or decomposing.

Pollution Prevention at Work

- At Dupont (Richmond) a maintenance program and ground water protection system prevents chemical leaks.
- By segregating its chemical solvents and monitoring methods, Hercules, Inc. (Hopewell) reduced its hazardous waste generation by 95%.
- Colonial Circuits (Fredericksburg) has saved \$25,000 per year in water and sewer fees by installing a wastewater recycling system that removes heavy metals and organics. The metals are then recycled rather than disposed as hazardous waste.
- Fewer chemicals are used at White Oak Semiconductor (Sandston) due to an on-site sulfuric acid waste reclamation system and an innovative chemical delivery /storage system.
- Through a comprehensive environmental management system, Nestles (Danville) reduced its energy consumption, food, and nonfood wastes and saved more than \$500,000 annually.
- At Coors Brewing Company (Elkton) the wastewater treatment process was altered by adding an anaerobic treatment process followed by an aerobic process which reduced the volatile organic compounds by 95% and eliminated the need for ammonia and phosphoric acid.
- Boaters who use Wormley Creek Marina (Yorktown) must sign a "protecting the environment" agreement and use the dock-side sewage pump-out station and other "clean" practices.
- Steel paint drums and other metal used for aircraft carriers at Newport News Shipbuilding (Newport News) are recycled instead of being sent to a landfill.
- At NASA Langley Research Center (Hampton) hazardous wastes from laboratories have been reduced by 70% through solvent replacements, best management practices, and materials reuse.
- The Naval Amphibious Base Little Creek (Norfolk) is reducing its paint, solvent, and gasoline waste as part of its commitment to reduce its hazardous waste by 50% by the end of 1999.

These examples illustrate the goals of cost-effective pollution prevention. Industries may never be able to eliminate waste production altogether, but they can try to reduce it. If that is not possible, they can strive to reduce the toxicity of the waste, while conserving natural resources and raw materials by preventing spills and accidental losses.

One response to this new consciousness is Virginia DEQ's new "VIP2" program (Virginia Innovations in Pollution Prevention). The VIP2 program encourages businesses and other organizations to adopt pollution prevention methods, and it signals a new era of environmental management in Virginia. In return for their efforts, participants will be offered incentives such as technical assistance and recognition.

A Case in Point

Fisheries managers are struggling with an issue they call "sustained yield," which raises many public policy and environmental issues. At its core is the following question: How can we manage a fishery in such a way to maintain the livelihoods of the fishermen and provide a product in high demand, while at the same time prevent depletion of a species?

Scientists are working to understand the dynamics of blue crab populations in the Bay. Many variables affect populations, including harvest levels, ocean currents, and habitat conditions-making the idea of "sustainable yield" that much harder to pin down. While scientists struggle to understand the effects of each variable, the Virginia Marine Resources Commission has implemented a conservation plan to stabilize blue crab numbers and halt expansion of the commercial fishery. Recent measures established fishing seasons and placed limits on the sale of crabbing licenses and the amount of equipment used by commercial fishermen, among other things. Even stricter limits have been proposed on crabbing licenses and, if implemented, they will significantly reduce harvesting activity in the coming years.

Scientists also are examining the possible effects of a blue crab sanctuary to cover the length of the Bay. The sanctuary would expand beyond the lower Bay spawning grounds to include a deep water migratory path at mid-Bay and shallow water nursery areas in the upper Bay and tributaries. It is believed that such a protective zone could help more female crabs reach their spawning areas each summer.

Crabbing is a \$70 million-a-year industry and the mainstay for commercial fishermen in Virginia and Maryland. The Commonwealth is a national leader in the seafood industry because of the volume and value of its crab harvest. Sustaining this industry, therefore, has wide-reaching economic and ecological benefits. Scientists and fisheries managers are working to strike a balance between preserving the

species over the long term and maintaining the ongoing economic benefits of this fishery.

When it comes to setting public policy, a number of state agencies have environmental management responsibilities (see each chapter for specific duties).

The [Department of Environmental Quality](#) is the agency responsible for clean air, clean water, proper waste management, environmental impact assessment, and pollution prevention. Industries and public facilities, like waste treatment plants, must get permits from DEQ to discharge pollutants into the air, land, or water. DEQ's engineers inspect permitted facilities, monitor the air and water, and ensure that such facilities comply with the environmental standards set forth in existing laws.

In essence, public policy and environmental management can be considered two sides of a coin that rolls along the pathway of human development. Like any coin, the more hands it touches along the way, the higher its yield.

Additional Resources

Web Sites:

- Virginia Department of Environmental Quality, [Office of Pollution Prevention](#)
- [U.S. Environmental Protection Agency](#)

Fundamental Learnings Related to Public Policy & Environmental Management:

- Natural resources can be harmed or damaged by pollution.
- Environmental problems, including pollution, result from the overuse or misuse (exploitation) of natural resources (air, water, forests, etc.).
- The environment has a limited capacity to cycle or disperse pollutants. Some pollutants, such as organic wastes, decompose in weeks or months into harmless components. Other materials, such as plastics, decompose after many years, and still others (chemicals such as PCBs and radioactive materials) persist as toxic compounds and may never decompose.

- Environmental management seeks to identify all the "costs" or potential impacts of the action or alteration of the environment and weigh them against the benefits to society. Some management options such as harvest restrictions can lead to conflicts among different members of society.
- Preventing pollution costs less financially and environmentally than cleaning up after it has occurred.
- New technologies (both equipment and processes) can improve environmental quality and be cost-efficient.
- Government has adopted and enforces various environmental laws and regulations to protect the environment. Government also provides incentives for voluntary actions to protect or enhance the environment.
- Environmental policy is based on either regulation or voluntary action (meaning people are compelled to act either by law or through their own initiative.)