

Nutrient Innovations Task Group Report

August 2009

Introduction

In October 2008, state and EPA water quality and drinking water directors and national program managers formed a State-EPA Nutrient Innovations Task Group (Task Group) to review past nutrient control efforts and evaluate the potential for creating a new combination of existing tools and innovative approaches for addressing nutrient pollution. The Task Group recognized that eutrophication and nutrient overloading are significant environmental problems, not just for aquatic resources, but also for drinking water supplies. The Task Group identified and framed key nutrient issues and options on how to improve nutrient pollution prevention and reduction at the state and national level.

Background

As the United States population expands, nutrient pollution from urbanization and stormwater runoff, municipal wastewater discharges, air deposition, and nitrogen and phosphorus from agricultural livestock and row-crop activities is expected to grow as well. Increased public health risks and treatment costs from contamination of drinking water supplies is a major concern. Nationally, nutrient pollution is one of the top causes of water quality impairment and is linked to over 14,000 water segments listed as impaired. Over two million acres of lakes and reservoirs across the country are impaired and not meeting water quality standards due to excess nutrients. Seventy-eight percent of the assessed continental U.S. coastal areas exhibit symptoms of eutrophication. The sidebar illustrates numerous well documented impacts from this pollution.

The costs of these impacts across the country have not been comprehensively estimated. The Chesapeake Bay is a national example of research, information collection, analysis, voluntary partnerships, stakeholder involvement, extensive outreach and collaboration, and a collective investment of over \$10 billion that, to date, has achieved only about 27% of the water quality standards targets for dissolved oxygen, water clarity, and chlorophyll-a. The estimated remaining cost of restoration for the Chesapeake Bay exceeds \$25 billion.

The spreading environmental degradation associated with excess levels of nitrogen and phosphorus in the nation's waters has been studied and documented extensively.

- Disinfection by-product & methemoglobinemia (blue baby syndrome)
- Co-occurring contaminants (pathogens, pesticides, industrial chemicals)
- Toxic algal blooms (neuro-toxins, paralytic, & diarrhetic effects)
- Increased treatment costs
- Recreation and tourism economic impacts
- Widespread water quality impairments
- Low dissolved oxygen levels (hypoxia/anoxia)
- Decreased species diversity and increased species vulnerability
- Significant habitat loss (seagrasses & submerged aquatic vegetation)

Examples of recent key reports on nutrient pollution:

- ✓ EPA SAB: Reactive Nitrogen in the United States: An Analysis of Inputs, Flows, Consequences, and Management Options (USEPA, 2009)
- ✓ EPA SAB: Hypoxia in the Northern Gulf of Mexico (USEPA, 2007c)
- ✓ NRC: Mississippi River Water Quality and the Clean Water Act: Progress, Challenges, and Opportunities (NRC, 2008)
- ✓ NRC: Urban Stormwater Management in the United States Draft (NRC, 2008b)
- ✓ EPA: National Coastal Condition Report III (USEPA, 2008)
- ✓ EPA: Wadeable Streams Assessment (USEPA, 2006b)
- ✓ NOAA: Effects of Nutrient Enrichment in the Nation's Estuaries: A Decade of Change. (Bricker et al, 2007)

Task Group Findings

The Task Group presents a summary of scientific evidence and analysis that characterizes the scope of nutrient impacts and the major sources of nutrients. This information is not new; it has been synthesized from a number of reports and surveys and examined in a holistic framework.

Key findings include:

- The problem of nutrient pollution is nationally significant, expanding, and likely to substantially accelerate.
- TMDL implementation, while an effective tool for point sources, has not been able to address the larger problem of non-point sources.
- Current tools such as numeric nutrient criteria, water quality assessments and listings, urban stormwater controls, wastewater treatment plant nutrient limits, and animal feedlot controls are underutilized and lack coordination.
- Current regulations address certain sources (e.g. municipal sewage treatment) at the exclusion of others (e.g., row crop agriculture).
- Specific aspects of state non-point source programs have been highly successful in addressing individual sources of nutrients, but broader application has been undercut by the absence of a common multi-state framework of mandatory point and non-point source accountability within and across watersheds.

Task Group Recommendations

The Task Group believes that a coordinated and innovative synthesis of existing regulatory authorities and voluntary tools must be used across all sources and sectors of nutrient pollution.

The Task Group makes these primary recommendations:

- Fuller utilization of existing tools; some tools are only partially utilized and others could be expanded in scope.
- A national framework of accountability for nonpoint sources is necessary to make significant and essential difference.
- Broader reliance on incentives, trading, and corporate stewardship within a multi-state framework of public transparency, common responsibility, and point/non-point source accountability for meeting water quality and drinking water goals.

Call to Action

Combating the challenge of widespread nutrient pollution will require a renewed emphasis on prevention and a profound change in how we share accountability and responsibility between sources, within watersheds and across state lines.

The Nutrient Innovation Task Group believes that national leadership is vital to supporting and requiring a more consistent and fuller utilization of existing tools from state to state and source to source. Establishment of a cross-state enforceable framework of responsibility and accountability for all point and non-point pollution sources is central to assuring balanced and equitable upstream and downstream environmental protection.

Innovation in the context of nutrient pollution means acting on what we know, fully utilizing the tools we have, exploring new authorities that we need, and demanding of each other stronger multi-sector cross-state engagement and support for our shared commitment to environmental protection, public health and shared economic opportunities.

The Task Group report can be found online at www.epa.gov/waterscience.