REGULATORY DEVELOPMENTS

CLIMATE CHANGE AND THE CLEAN WATER ACT—ENVIRONMENTAL GROUP PETITIONS EPA TO ADDRESS OCEAN WATER QUALITY

The Center for Biological Diversity (CBD) has recently petitioned the Environmental Protection Agency (EPA) under § 304 of the Clean Water Act (CWA) to address the effects of climate change on ocean water quality. The environmental group is asking EPA to curb ocean acidification—defined broadly here as the lowering of pH to a point that affects marine life—by strengthening federal water quality criteria for pH and issuing guidance to states to strengthen protection of U.S. waters from the effects of carbon dioxide. The CBD's petition, if successful, has significant implications for federal water policy as well as for more regional considerations in coastal states. If EPA adopts the recommendations advocated by CBD, the new pH water quality standards would mark a significant expansion of the CWA to encompass carbon dioxide and to regulate it as a pollutant in ocean waters. In addition, the revision of the water quality standard for pH would require affected coastal states to list many segments of ocean waters under the states' jurisdiction as impaired, which would in turn require significant state efforts to reduce carbon dioxide pollution to bring those impaired waters back into compliance.

Ocean Acidification

The CBD's recent federal petition is based on well-publicized scientific studies in the past few years suggesting that increases of carbon dioxide in the atmosphere are having a deleterious effect on ocean health that could lead to irreversible loss of marine ecosystems. When seawater absorbs and reacts with carbon dioxide in the atmosphere, ocean pH is lowered—a phenomenon referred to as "ocean acidification." The debate over ocean acidification generally is not about whether ocean acidification is occurring, but instead, on the significance of the effects of acidification on marine ecosystems and the timeframe for observing its negative effects. According to several recent reports, carbon dioxide pollution has lowered average ocean pH by 0.1 units from pre-industrial levels; average ocean pH levels are projected to decrease by an additional 0.5 units by 2100, according to certain studies. Both blue-ribbon Ocean Commissions that worked on federal ocean policy issues in 2003-2004 characterized climate change impacts on ocean acidification as a significant technical and policy challenge warranting increased federal attention.

These recent studies suggest that the main impact of ocean acidification is impairment of calcification, or the process by which crabs, corals, abalone, oysters, sea urchins and other animals make shells and skeletons. Acidification is also likely harmful to calcifying phytoplankton and zooplankton, which form the basis of the marine food web. Furthermore, acidification may affect organisms such as fish by decreasing metabolic, immune, and reproductive function.

The Clean Water Act

In its petition, the Center for Biological Diversity asserts that EPA should exercise its authority under the CWA to address the problem of ocean acidification. The CBD petition recites the national goal of the CWA to guarantee "water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation." 33 U.S.C. § 1251(a)(2). CBD also notes that EPA is required to promulgate rules necessary "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1241(a).

The CBD petition focuses on the national water quality criteria for pH established under § 304, which mandates that EPA revise national water quality criteria "from time to time" to reflect the "latest scientific knowledge." 33 U.S.C. § 1314(a)(1). EPA developed water quality criteria for pH in 1976. The CBD argues that EPA's water quality criteria for pH is significantly outdated relative to the current science, and that EPA is required by CWA § 304 to review the new evidence and evaluate a change in the water quality standard for pH.

According to the CBD's petition, under the current pH standard, a decline of 0.2 pH units in ocean waters subject to CWA jurisdiction is acceptable. According to CBD, this currently allowed alteration of ocean pH will decimate ocean life. The petition therefore requests that EPA adopt criteria that allow no measurable deviation of pH, stating that new scientific information shows that harm to aquatic life can occur at levels below the EPA's standard. In the alternative, the petition requests that EPA publish new pH criteria that are more stringent than the current criteria and take into account the adverse effects of carbon dioxide on aquatic life.

The second aspect of the CBD's petition builds on a series of petitions under the CWA's TMDL program that CBD has submitted to several coastal states to address ocean pH issues. The CBD's recent federal petition requests that EPA issue guidance to states under existing water quality standards programs to protect U.S. waters from the effects of carbon dioxide. The CBD based this request on a requirement in the CWA that EPA develop and publish "and from time to time thereafter revise" information on four topics necessary to protect water quality. 33 U.S.C. § 1314(a)(2). These topics include the factors necessary to restore and maintain physical, chemical, and biological integrity of certain classes of water, including oceans; the factors necessary to protect fish, shellfish, and wildlife; the measurement and classification of water quality; and the identification of pollutants suitable for maximum daily load measurement. *Id.* The CBD specifically requested that EPA publish guidelines for states informing them how to prevent harmful pH changes in seawater, how to prevent acidification's adverse effects on sea life, and how to adequately measure for pH in coastal and ocean waters.

The CWA grants EPA a "reasonable" amount of time to reply to the CBD's petition. The CBD has indicated that it will likely pursue litigation to force EPA's reply if it is delayed for much more than a year.

The CBD's State Petitions

The CBD's petition to EPA dovetails with the CBD's pending state petitions regarding ocean acidification. The CBD recently petitioned several coastal states to list segments of the Atlantic and Pacific Oceans under the state's jurisdiction as "impaired" for pH on those states' CWA 303(d) lists, and to establish TMDLs for carbon dioxide. On February 27, 2007 the CBD petitioned California to list segments of the Pacific Ocean under its jurisdiction as impaired for pH. In August 2007 the CBD similarly petitioned Alaska, Washington, Oregon, and Hawaii. Simultaneously, the CBD petitioned New Jersey, New York, and Florida to list segments of the Atlantic Ocean.

The petitions contend that states are legally required to list all segments of ocean waters under their jurisdiction because ocean acidification impairs both water quality and beneficial uses of ocean waters and because current measures are not stringent enough to protect water quality. The petitions also contend that declining ocean pH violates states' anti-degradation policies, and that TMDLs for carbon dioxide are required to correct the impairment. Each petition, though similar in its general allegations, is customized to the individual states' water quality standards.

Ultimately, the CBD seeks to have these states institute pollution controls via the TMDL and water quality standards process to reduce ocean acidification in their coastal waters. The CBD has indicated it will likely petition other coastal states as well. Under § 303(d) of the CWA and its corresponding implementing regulations, states must identify and list water bodies within each state that fail to meet state water quality criteria or antidegradation requirements (303(d) list). 33 U.S.C. § 1313(d). States must rank waters on the 303(d) list in order of priority, taking into account the severity of the pollution and designated uses of the waterbody, and must "identify the pollutants causing or expected to cause violations of the applicable water quality standards." 40 C.F.R. § 130.7(b)(4). For waters on the 303(d) list, states must establish a total maximum daily load (TMDL) for pollutants "at a level necessary to implement the applicable water quality standards." 33 U.S.C. § 1313(d)(1)(C).

The CBD petitions to states seek to set in motion these processes to address ocean acidification the CBD asserts is being caused by climate change. The petitioned states will consider the CBD's 303(d) petitions as they identify impaired water bodies within their jurisdictions and submit their lists to EPA through the Water Quality Assessment Cycle. Most states are expected to submit their reports to EPA in early 2008.

Discussion and Analysis

The CBD's petitions to EPA and states present a novel interpretation and use of the water quality provisions of the CWA, both in terms of the geographic expanse and variation of the water bodies sought to be regulated as well as the broad goal of protecting marine water quality and aquatic life from harmful environmental impacts. CBD's effort is clearly an initiative driven by climate change, rather than water law, and yet, its success will depend on the creativity of EPA and states in how they interpret their authorities under the CWA. EPA, for its part, under the current Administration has declined to regulate carbon dioxie as a pollutant under the primary authority of the Clean Air Act Thus, the likelihood of the CBD's petition being persuasive to EPA on this issue in a more remote context—the water quality impacts of climate change—seems slim. On the other hand, the water science and its implications for marine life may present compelling reasons to exercise CWA authority.

On a practical level, although the CBD petitions give voice to a real and serious problem threatening marine ecosystem health, the CWA may not be realistic or the most effective tool to address the problem of ocean acidification. Several challenges are likely if EPA decided to use its CWA authorities to address ocean acidification. On a scientific level, ocean acidification may be viewed as nonpoint source pollutant, in that carbon dioxide from diffuse national and international sources that is dissolved into ocean water, lowering pH, poses special problems of traceability and redressability. The entire span of oceans exchange carbon dioxide with the atmosphere. Carbon dioxide is a long-lived and well-mixed gas in the atmosphere, making it difficult to assess which state (or even country) is responsible for the carbon dioxide pollution that shows up in the waters under any given state's jurisdiction. Although EPA has addressed atmospheric deposition of pollutants to water bodies in TMDLs (most notably, mercury), the blueprint for such regulation of ocean acidification form climate change pollutants is hardly apparent .

In addition to difficulties tracing the source of the pollutant, stricter national and state water quality standards for pH would pose a major challenge to EPA in redressing the problem. The TMDL program has traditionally been focused on landlocked, freshwater water bodies. Were EPA to expand the TMDL program to ocean bodies and require states to list coastal waters as impaired by carbon dioxide under their 303(d) lists, the states would be required to implement pollution controls to address the impairment and reduce acidification. However, even if water quality control strategies could be devised, the source of carbon dioxide emissions—mobile and stationary sources, in the U.S. and beyond—may not be regulable as point source dischargers under the CWA . Thus, even if the CBD's petitions cause EPA to act, the agency's ability to affect ocean acidification via the pH water quality standards of the CWA may have little practical application on any sources of climate change pollutants.

As for CBD's petitions to coastal states, similar issues abound. Given the longevity of carbon dioxide and mixing in the atmosphere, it would be difficult, if not impossible, for an individual state to implement any sort of pollution controls that would curb enough carbon dioxide emissions within that state to comply with more strict antidegradation standards for pH. In addition, there are questions of fundamental fairness in requiring a coastal state to implement costly pollution controls for a problem that is also caused in part by neighboring non-coastal states or even more remote sources.

Conclusion and Implications

The CBD's recent petitions present a creative and novel mechanism for seeking to force improvements in carbon dioxide air emissions for the purpose of water quality—specifically, ocean pH or acidification changes. The petitions may or may not succeed at EPA and the affected states, but do raise provocative questions about the ability of existing federal laws to adjust to current environmental challenges. (R. Davis/K. Hansen/ S. Piluso)