

FAIRNESS IN THE BAY

Environmental Justice and Nutrient Trading

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Fairness in the Bay: Environmental Justice and Nutrient Trading

The Chesapeake Bay, the largest and most biologically diverse estuary in North America, has suffered from the effects of excess nitrogen, phosphorus, and sediment pollution for decades. This pollution comes from urban wastewater treatment plants, agriculture, and runoff from urban parking lots and suburban sprawl. Agriculture is the biggest contributor of pollution, generating roughly 44 percent of the nitrogen and phosphorus that enters the Bay.¹ The impacts of pollution—algal blooms, beach closures, fish consumption advisories, and dead zones—are getting worse. In 2011, the dead zone covered one-third of the Bay.² Communities in the Bay region nevertheless rely on its waters and tributaries for sustenance, employment, and recreation. The ongoing failure to clean up the Bay hurts every community, and the Bay’s low-income and minority populations are particularly vulnerable.

In an effort to accelerate Bay restoration, the Environmental Protection Agency (EPA) has established a “pollution diet” for pollution sources, known formally as the Chesapeake Bay Total Maximum Daily Load (Bay TMDL). The Bay TMDL imposes mandatory limits on the amounts of nitrogen, phosphorus, and sediment that can enter the Bay and its tributaries. As a result, Bay states have embraced water quality trading programs as one tool to achieve these limits in a cost-effective manner. Water quality trading aligns *buyers*—typically point sources—that are legally obligated to meet a specific environmental standard with *sellers*—typically nonpoint sources—that can meet that standard at a significantly lower cost. Trading sounds ideal on paper, but in practice it is an entirely different story. Despite the creation of trading programs in various locations throughout the country, nonpoint sources have been reluctant to participate. EPA and state governments have simply not had the necessary experience to fine-tune this pollution control tool.

As troubling, Bay states are largely ignoring the potential impact of trading on low-income and minority communities throughout the watershed. **“Nutrient trading” is a clinical term that masks an unpleasant reality.** The majority of trades that will ultimately occur around the Bay will involve excess manure generated by industrial-scale agriculture, stormwater runoff from urban sprawl, and sewage discharges and overflows from treatment plants. These discharges contain more than simply nutrients and sediment. Pathogens such as fecal coliform and cryptosporidium, antibiotics, cleaning fluids, heavy metals, synthetic fertilizers, and pesticides are often mixed in with nutrient pollution. When this untreated pollution flows into local waterways and ultimately the Bay, myriad human health and ecosystem impacts are inevitable.

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This paper examines nutrient trading through the lens of environmental justice. It assesses the potential impacts of trading on low-income and minority communities and recommends ways to integrate environmental justice into trading programs in the Bay region. As trading programs develop, EPA and Bay states should be aware of potential environmental injustices, including:

- **Disproportionate health and environmental impacts on low-income and minority communities.** If trading programs are not carefully designed and monitored, trading can cause localized concentrations of nutrients and accompanying contaminants in local waters, posing a significant threat to human health and aquatic ecosystems. For example, a sewage treatment plant could address its additional pollution by either purchasing reductions elsewhere or by installing control measures onsite. If the plant purchases credits, it will be able to discharge more sewage. These additional discharges may create “hot spots” or high concentrations of pollution in adjacent waterways that could expose residents of nearby communities, especially local fishermen and their families, to pathogens and other harmful co-pollutants.
- **Failure of governments to ensure that low-income and minority communities enjoy the potential benefits of trading.** If successful, nutrient trading will improve water quality throughout the watershed. All populations should have equal access to those improvements. Effective trading programs also rely on ample credit-generating activities. Municipalities may generate credits by implementing stormwater best management practices (BMPs) such as urban revegetation, bioswale construction, and greenspace expansion. These practices have secondary benefits for the communities in which those BMPs are implemented, including flood control, enhanced opportunities for exercise and recreation, increased property values, and aesthetic value. Such benefits should be enjoyed equally, throughout the watershed.
- **Failure of governments to provide opportunities for full and fair participation by low-income and minority communities.** Excluding low-income and minority communities from the discussion—about trading program design, safeguards to avoid environmental injustice, and the potential to improve neighborhoods—increases the likelihood that these communities will experience the negative impacts of trading.

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Recommendations

To ensure that low-income and minority communities are protected and enhanced, we recommend that EPA and Bay states:

- **Explicitly and specifically consider environmental justice impacts when designing and implementing trading programs.** Bay states should document and clearly describe how they will consider environmental justice and the extent to which they will rely on input from affected communities. For example, only Pennsylvania mentions environmental justice in its trading policies, and EPA’s recent review of Bay states’ trading programs did not consider environmental justice issues. This lack of attention to environmental justice concerns is unacceptable. Bay states should also consider opportunities to redress past injustices through trading. Many low-income and minority communities already suffer from declining water quality and past regulatory failures. Trading could allow EPA and Bay states to prioritize water quality improvements in areas that have historically suffered disproportionately.
- **Incorporate design elements that would help avoid hot spots and alleviate disproportionate impacts.** Design elements that Bay states should consider include:
 - **Geographic restrictions on trades.** EPA and Bay states should define a regulatory preference for *upstream* trades within a single basin to create the best chance for water quality improvement and to avoid disproportionate impacts. Downstream trading—when an upstream source purchases credits from a downstream credit-generator—can cause local water quality violations and lead to degradation in the interim segment. Likewise, interstate trading can generate a “race to the bottom” as sources seek the weakest regulatory baseline for their credit purchases. Virginia’s proposed regulations prohibit trades that would lead to water quality violations by specifically limiting downstream and inter-basin trading.³ Bay states can also restrict trades that impact areas that are particularly important for recreation or fishing.
 - **Temporal restrictions on trades.** To minimize hot spots, and ensure that trades do not exacerbate known water quality problems Bay states should consider when credits may be used. For example, runoff from agricultural lands is seasonal and may not coincide with seasonal pollutant extremes in the watershed. A trade that decreases pollution at a time of year when it is least effective, while increasing pollution during a seasonal extreme, is not only ineffective but also potentially harmful.

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- **Net improvement and ratios.** Bay states should require that all trades lead to net improvements in water quality. To ensure net improvement and offer an additional buffer of protection against uncertainty, Bay states should adopt trade ratios—requiring buyers to purchase more credits than they need to offset their pollution—greater than 1:1. Bay states should also require that a portion of all credits generated is permanently retired, thereby ensuring that the total amount of pollution decreases over time.
- **General restrictions on trades.** Bay states should require that certain dischargers directly reduce some portion of their pollution effluent by limiting the amount of credits they may purchase. Discharges that disproportionately impact low-income and minority communities should be forbidden. A trading scheme must not allow such discharges to simply be offset elsewhere, leaving vulnerable communities with unimproved water quality and heightened health risks.
- **Provide technical assistance for green infrastructure development in low-income and minority communities.** Urban BMPs such as green development will likely play a role in trading markets. EPA already gives grants for green infrastructure planning. The agency should make an effort to provide such grants and guidance to low-income and minority communities so that they receive the benefits of credit-generating activities in their communities.
- **Use existing tools to develop benchmarks to measure increased risks to vulnerable populations from offsets and trading.** Where possible, EPA and Bay states should avoid default assumptions about water use and fish consumption. Instead, they should rely on local or tailored data when available to develop site-specific numeric water quality criteria for particularly vulnerable populations that may fish or swim in impaired waters. For example, in general, EPA assumes that most people consume 17.5 grams of fish per day. For populations that include recreational and subsistence fishing, however, EPA increases this assumption to 142.5 grams of fish per day, resulting in regulations that are tailored to protect those communities. This site-specific approach to address the needs of vulnerable communities must be implemented across the Bay region.
- **Inform communities to empower them.** EPA and Bay states should keep low-income and minority communities informed about developments in trading programs and the potential impacts on people living in the Bay region. Bay states should also allocate dedicated funding to these outreach efforts.

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- **Extend opportunities to participate in trading decisions.** Bay states should invite low-income and minority stakeholders to participate in decisions about trading program design and operation and solicit their opinion on programs or practices that affect their communities. Bay states should also ensure that stakeholder input is valued and explicitly incorporated into the decision-making process.
- **Improve data gathering to better understand how communities in the Bay use the watershed.** Improving knowledge of how low-income and minority communities use the Bay and its resources will allow public officials to better identify pathways of exposure to waterborne diseases, determine the most popular areas of the watershed for recreational use, and ultimately achieve environmentally equitable outcomes for all who live, work, and play in the Bay.

Bay states should be applauded for taking the Bay TMDL seriously and pursuing strategies for achieving long-overdue improvements in water quality. Nutrient trading offers a potentially economically efficient and environmental effective tool that merits consideration. However, it is imperative that EPA and Bay states avoid creating new injustices while attempting to reduce nutrient pollution.

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Environmental Justice in the Bay: An Overview

Environmental justice seeks equal protection from environmental and public health hazards for all people regardless of race, income, culture, and social class. Additionally, environmental justice means that no group of people including racial, ethnic or socioeconomic groups should bear a disproportionate share of the negative environmental consequences resulting from industrial, land-use planning and zoning, municipal and commercial operations or the execution of federal, state, local and municipal program and policies.⁴

The Bay and its tributaries are fundamental to the social fabric and cultural identity of the mid-Atlantic, as well as a significant economic driver. Many vulnerable communities depend on the Bay. Some communities depend on fish, shellfish, and plants harvested from local rivers, lakes, and estuaries, while others depend on nearby waters for recreational opportunities. Other communities have limited public funding and minimal political support for urban beautification and the development and maintenance of parks, ponds, and other community green spaces. For these communities, water quality trading presents both a potential new threat to health and safety and an opportunity for neighborhood renewal.

The environmental justice movement recognizes that every person should have equal access to a healthy environment and some minimum level of natural resources to pursue a safe, purposeful, and dignified existence.⁵ In 1994, President Clinton issued Executive Order 12,898, which initiated official federal consideration of environmental justice and equity in earnest.⁶ The order directs federal agencies to collect data on the health and environmental impacts of agency actions and develop policies to achieve environmental justice in their programs, activities, and regulations. It also states that environmental justice must be part of every agency mission “[t]o the greatest extent practicable and permitted by law.”⁷

Environmental justice has since evolved to encompass more than fair treatment and equal protection principles. **Governments should consider not only the distribution of environmental burdens, but also how benefits are distributed, the ability of citizens to influence regulatory decisions that affect them, and the long history of disproportionate treatment of vulnerable populations.** Under the tenure of Administrator Lisa Jackson, EPA issued interim guidance on considering environmental justice in rule-making. EPA’s guidance directs the agency to “address the needs of overburdened communities by decreasing environmental burdens, increasing environmental benefits, and working alongside them to build healthy, sustainable, and green communities.”⁸ Moreover, environmental justice is not exclusively forward-looking. Today, governmental actions may also present opportunities to rectify previous and existing disproportionate impacts.

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EPA defines environmental justice as the “fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.”⁹ *Fair treatment* means that the environmental impacts of industry and government, both good and bad, should not have disproportionate impacts. *Meaningful involvement* requires that vulnerable communities have the opportunity to participate in decisions that affect them; that their opinions and concerns are heard and addressed by decision-makers; and that decision-makers seek out and proactively ensure public input. The *environment* includes the urban and built environment where people live, work, and play.

Given the potential for harm to minority communities, the failure to consider environmental justice concerns in Bay states’ nascent trading programs is unacceptable. Subsistence fishermen and their families are especially vulnerable because surface waters such as the Baltimore Harbor where such populations live are heavily contaminated by nutrients. A 2005 report surveyed anglers at various locations in Baltimore, Washington, D.C., and Virginia. Among the Baltimore anglers, roughly two-thirds had a high school degree or less, while roughly 40 percent made less than both the mean and median incomes for the mid-Atlantic region.¹⁰ Ninety-nine percent of Baltimore anglers lived within 25 miles of their fishing location.¹¹ The survey also revealed that African-American fishermen constituted a third of anglers, and other minority fishermen included Hispanics and Asians.¹² Nearly all anglers said that fishing was very important for relaxation and being outdoors, and a notable portion said that fishing was very or somewhat important to providing dinner and reducing food costs.¹³

Ensuring environmental justice in nutrient trading programs requires that policymakers consider three broad principles:

- *Low-income and minority populations should not experience disproportionately high or adverse human health and environmental impacts from nutrient and sediment pollution, credit use, or environmental regulation.*
- *Policymakers must recognize that low-income and minority communities have distinct interests and should be given the opportunity for full and fair participation in trading schemes that may affect them.*
- *Regulators and government agencies must guarantee that low-income and minority communities do not experience any disproportionate delay or reduction in receiving any benefits of trading, such as the aesthetic benefits and ecosystem services from such credit-generating activities as urban revegetation and greenspace development.*

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In a recent guidance document, *Plan EJ 2014: Legal Tools*, EPA identified a number of legal tools that may be used to identify and address environmental justice concerns in the regulatory and decision-making processes.¹⁴ Among other authorities, *Plan EJ 2014* identifies parts of the Clean Water Act (CWA) that may be used to protect populations that recreate in urban waters, to protect fishing uses, and to provide for improved public participation.¹⁵ For example, EPA can account for impacts on minority, low-income, or indigenous populations by adjusting allocations for regulated point sources and unregulated nonpoint sources in a TMDL.¹⁶ *Plan EJ 2014* is a valuable document that will guide agency actions for decades to come and can be especially useful in designing fair trading programs. EPA and Bay states should abide by the principle that “all communities and persons across the Nation, including minority, low-income, and indigenous populations overburdened by pollution, [deserve] full human health and environmental protection.”¹⁷

The Role of Water Quality Trading in Restoring the Bay

Under the Bay TMDL, pollution sources that are regulated under the CWA face mandatory but potentially costly requirements to further reduce their discharges. In response, the three central Bay states—Maryland, Pennsylvania, and Virginia—have enthusiastically embraced nutrient trading in an effort to placate strong resistance to regulatory intervention by pollution sources. Trading is a market-based approach to satisfying TMDL limits that promises to accomplish such reductions in a relatively cost-effective manner. In theory, water quality trading allows certain facilities to discharge more pollution into a watershed in exchange for obtaining reduced discharges elsewhere, ideally in the same watershed or along the same river segment.¹⁸ **Because trading allows regulated sources to purchase reductions from other regulated and unregulated entities that can reduce discharges with less expense, it potentially creates a sizable financial incentive for the otherwise unregulated agricultural and other sectors to reduce pollution.**

On paper, trading sounds rational and economically efficient: an agricultural operator earns a premium for behavior that society would like to encourage in the first place; the regulated polluter achieves compliance with its permit; and nutrient levels in the Bay are reduced. However, the reality of nutrient trading suggests caution and a strong dose of realism are needed. A robust and effective trading program requires steady supply and demand as well as significant resources for continual monitoring and enforcement. Given the difficult economic times and political polarization, it is highly uncertain that the Bay trading programs will experience the supply, demand, or support required for a robust and effective market.¹⁹

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In practice, nutrient trading programs around the country have failed to produce results.²⁰ With EPA assistance, dozens of pilot programs across the country have been conceived, designed, and implemented. However, just a handful of programs have seen more than a few actual trades, and most programs have experienced none.²¹

Lessons from Other Media: Failed Experiments with Environmental Markets in Los Angeles

In the 1990s, California's South Coast Air Quality Management District (SCAQMD), the agency responsible for meeting air quality standards in Los Angeles, implemented two market-based programs aimed at reducing the atrocious air pollution in the region. The first, a cap and trade program for SO₂ and NO_x called RECLAIM, suffered from several fatal flaws—including a cap that was set too high—leading to only very modest emissions reductions.

Even worse, though, was SCAQMD's other effort: a car-scraping program, in which stationary sources were allowed to offset their emissions by paying owners of old cars to take them off the road. Because regulators placed no limits on the number of allowances stationary sources could purchase and lacked the resources and will to properly oversee the program, the car-scraping program caused devastating hot spots around several participating stationary sources. As a result, the communities around those sources, which ranged from 75 to 90 percent people of color compared to an average of 36 percent in the region, suffered enhanced cancer risk.

Sadly, it took years to abate the increased environmental burden in these communities, leaving communities already at risk to suffer the ill effects of offsetting. The experience in Los Angeles highlights what happens to the lowest income and most marginalized communities when regulators fail to take their best interests to heart when regulating pollution and implementing such "innovative" solutions as trading programs.

See Richard T. Drury et al., *Pollution Trading and Environmental Injustice: Los Angeles' Failed Experiment in Air Quality Policy*, 9 DUKE ENVTL. L. & POL'Y F. 231, 268-72 (1999).

Examining Nutrient Trading with an Environmental Justice Lens

Potential problems that could occur as a result of poorly designed trading programs include the creation of hot spots that threaten public health and the unequal distribution of the benefits of trading. These adverse effects could be exacerbated if vulnerable communities are excluded from the design and implementation of trading regimes.

Hot Spots and Human Health

Nutrient trading effectively moves pollution from one water segment to another, concentrating pollution in some places while reducing it in others and producing an overall reduction in pollution. Not all pollution is created equally: “nutrient pollution” is largely composed of sewage, wastewater, and manure, which contain differing amounts and types of bacteria and pathogens such as fecal coliform, *E.coli*, and cryptosporidium; heavy metals and toxins; antibiotics and other pharmaceutical products, in addition to the nitrogen, phosphorus, and sediment that suffocate the Bay.

Although the total amount of pollution should theoretically decrease, areas of high pollution concentration pose a risk of harmful localized nutrient loading, or “hot spots” of excessively nutrient-rich waters where algae and other water-borne pathogens thrive. Excess nutrients in the Bay also drive algal blooms that support the growth of toxic algae, antibiotic resistant bacteria, and other pathogens.²² Hot spots may put low-income and minority communities, and especially subsistence fishermen, at risk of the human health impacts that may decline elsewhere in the Bay. Moreover, if states adopt interstate trading, discharges will become increasingly detached from credits, and the risk of hot spots will increase.

Climate change will further affect water temperature and precipitation in ways that are likely to exacerbate the human health risk caused by hot spots and thus the risk to vulnerable communities. Regional climate models indicate that Maryland will experience sea level rise and increased storm intensity and precipitation. These weather events can be expected to send more pollutants and nutrients into the Bay and its tributaries through runoff and sewer overflow events. In addition, the waters of the Bay are expected to warm considerably, conditions that favor the explosive growth of waterborne pathogens.

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The table below identifies several of the most probable or common human health risks that may be associated with hot spots created by trading.

Potential Human Health Threats Exacerbated by Nutrient Trading		
Problem	Description	Impact on Human Health or the Environment
<i>Pfiesteria</i>	<p>A toxic microorganism that is found throughout the Bay, including such Eastern Shore tributaries as the Chicamacomico, Manokin, and lower Pocomoke Rivers.</p> <p><i>Pfiesteria</i> produce toxins that numb fish to prey on them. Blooms of <i>Pfiesteria</i> occur during periods of high nutrient levels.</p>	<p>During particularly large blooms of <i>Pfiesteria</i>, fish may develop deep lesions that lead to death, releasing the toxin into the water. In the late 1990s, these blooms caused several significant fish kills on the Eastern Shore of Maryland and the Middle River.²³</p> <p><i>Pfiesteria</i> toxins can harm humans by causing skin irritations or lesions. At worst, the toxins can cause respiratory problems, short-term memory loss, confusion, and other cognitive impairments.²⁴</p>
<i>Vibrio</i>	<p>A family of bacteria that have a symbiotic relationship with zooplankton called copepods. These bacteria are native to warm, low salinity waters worldwide.</p> <p>When nutrient levels rise in the Bay, they trigger algal blooms that copepods consume, causing copepod populations to explode. When the copepods die, <i>Vibrio</i> enters the water.</p>	<p>In high concentrations, <i>Vibrio</i> causes illness in people who consume or expose open cuts or wounds to the water. Some species of <i>Vibrio</i> can cause life-threatening skin and blood infections, gangrene, intestinal illness, and vomiting.²⁵</p> <p><i>Vibrio</i> infections have been on the rise in Maryland since 2001.²⁶</p>
Toxic cyanobacteria, or blue-green algae²⁷	<p>Warm water and high nutrient levels promote the algal blooms seen throughout the Bay every year. Toxic cyanobacteria also use photosynthesis to produce energy, and bloom under the same conditions.</p> <p>Toxic algae, including cyanobacteria, are increasing as invasive algae from other parts of the world enter the Bay.²⁸</p>	<p>Contact with cyanobacteria blooms—usually through swimming or boating—can cause nausea, fevers, and skin rashes. In the worst cases, cyanobacteria exposure can lead to liver and kidney disease.</p> <p>Cyanobacteria have been associated with bird and livestock deaths and significant fish kills throughout the Bay.</p>

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Potential Human Health Threats Exacerbated by Nutrient Trading		
Problem	Description	Impact on Human Health or the Environment
Fecal Coliform	Fecal coliform is a class of bacteria commonly found in human and animal feces. Although generally not a direct threat to human health, fecal coliform is associated with dangerous pathogens such as <i>Escherichia coli</i> , <i>staphylococcus aureus</i> , and <i>enterococci</i> .	Swimming and eating contaminated shellfish from waters where fecal coliform is high can be a health risk. Exposure to high levels of fecal coliform can lead to ear infections, bacterial gastroenteritis, hepatitis A, typhoid fever, and dysentery.
Antibiotics, Toxics, and Endocrine Disruptors	<p>Sewage contains not only human waste but also everything else that people flush down their toilets. This includes antibiotics, pharmaceuticals, toxic compounds, and endocrine disrupting chemicals.</p> <p>Because trading programs are focused on nutrient pollution, not other types of pollution, if hot spots form they will not only contain nutrients but high levels of all the other compounds found in human sewage and urban runoff.</p>	<p>Studies have not confirmed many of the hazards of pharmaceuticals in drinking water, but some studies have found that chemicals, including endocrine disruptors and some pharmaceuticals, can cause birth defects lower sperm counts in humans and damaged fins and premature spawning in fish and amphibians.</p> <p>A recent study found that pregnant women in the U.S. are exposed to a stew of toxic chemicals including PBDEs, PCBs, dioxins, and phthalates.²⁹ Exposure to chemicals, including toxins and pharmaceuticals, in drinking water raises the risk of adverse health effects in fetuses.</p>

For all communities, hot spots can put an end to clean water, economic growth, and days spent fishing, crabbing, swimming, and boating in and on the Bay and its tributaries. The 2005 survey of Baltimore area fishermen found that the vast majority of anglers travel less than 25 miles to their fishing spot.³⁰ Low-income and minority communities may lack alternative recreational opportunities if their nearest swimming or fishing holes are harmed or engage in water-based activities in higher proportions than the general population. As a result, they may be disproportionately exposed to health risks caused by trading nutrients and shifting pollution around the Bay. A recent article in the *Baltimore Sun* highlighted how low-income and minority communities use the watershed for numerous everyday activities, even when raw sewage overflows into the waterways they use.³¹ Trading programs should not create new environmental injustices.

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Sharing the Benefits of Trading

For Bay states to succeed in creating a well-designed and transparent trading market, they will need to ensure that water quality improvements occur throughout the watershed and that low-income and minority communities benefit from such improvements. Nutrient trading programs have the potential to create secondary ecological and aesthetic benefits that should be extended to low-income and minority communities. In addition to improving water quality, urban stormwater BMPs—bioswales, revegetated urban spaces, oyster aquaculture, and stormwater retention projects—that generate credits can improve quality-of-life and property values in the communities where they are implemented. Communities that already suffer disproportionately from the ecological impacts of nutrient pollution should share in the benefits of remediating that pollution.

Full and Fair Participation

Nutrient trading programs raise an additional concern: that low-income and minority communities may not have the opportunity to fully and fairly participate in decisions that affect their lives. Full participation means not only being adequately informed in order to participate in discussions, but also being given the opportunity to participate in making decisions regarding the design and operation of trading programs.

EPA has reached out extensively to environmental groups and the agricultural industry for input and comments on Bay state trading programs. EPA and Bay states should make a similar effort to reach out to low-income and minority communities. EPA has emphasized the importance of expanding public participation, explicitly in the TMDL context, in its *Plan EJ 2014* document.³² To date, Maryland and other Bay states have not made significant efforts to reach out to vulnerable citizens or communities. Only Pennsylvania makes any mention of environmental justice in its trading plans and its outreach to vulnerable communities is not well documented.

Nutrient trading programs require access to information and accountability. But for too long, Bay restoration has failed because of a series of overly optimistic promises that have not materialized. No one has been held accountable for these past failures. Accountability depends on having information about the potential impacts of trading, both the environmental and human health risks as well as any benefits. Without such information, community leaders cannot fully participate in decisions that affect their families and neighbors. Information should be provided through socially appropriate channels, including at community centers or churches, and in languages spoken in the community.

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Conclusion

A close look at nutrient trading and environmental justice in the Bay reveals that, unless carefully designed and monitored, trading may disproportionately harm low-income and minority communities. Bay states must ensure that low-income and minority communities are protected from any harms that trading programs may cause. EPA and Bay states must also provide information to communities that may be impacted by additional discharges, allowing those communities to participate in developing these programs and to make informed decisions. Potential benefits from the reductions in pollution that trading programs may achieve must be equitably directed to vulnerable communities.

The Bay is fundamental to the mid-Atlantic region, and perhaps no state benefits from its shorelines, sunsets, and cooling waters more than Maryland. These unique resources should be available to *all* Marylanders, regardless of race, ethnicity, or income. EPA and Bay states should recognize that environmental injustices occur in both blatant and insidious ways. Thoughtful consideration of environmental justice is an essential component of any future trading program. Any attempt to restore the Bay by implementing trading programs must not be achieved at the expense of low-income and minority communities.

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Resources

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Endnotes

- ¹ U.S. EPA, Final Chesapeake Bay Total Maximum Daily Load for Nitrogen, Phosphorus, and Sediment (December 29, 2010).
- ² Darryl Fears, *Alarming 'Dead Zone' Grows in the Chesapeake*, WASH. POST, July 24, 2011, available at http://www.washingtonpost.com/national/health-science/alarming-dead-zone-grows-in-the-chesapeake/2011/07/20/gIQABRmKXI_story.html.
- ³ EPA, Virginia's Trading and Offset Programs Review Observations 11 (2011).
- ⁴ Maryland Commission on Environmental Justice and Sustainable Communities, What is Environmental Justice?, http://www.mde.state.md.us/programs/CrossMedia/EnvironmentalJustice/WhatisEnvironmentalJustice/Pages/Programs/MultimediaPrograms/Environmental_Justice/ej_intro/index.aspx (2012).
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- ⁷ *Id.*
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- ¹¹ *Id.* at 27.
- ¹² *Id.* at 38.
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- ¹⁴ U.S. EPA, PLAN EJ 2014: LEGAL TOOLS (2012), available at <http://www.epa.gov/environmentaljustice/resources/policy/plan-ej-2014/plan-ej-2011-09.pdf>.
- ¹⁵ *Id.* at 23-29.
- ¹⁶ *Id.* at 29.
- ¹⁷ *Id.* at 1.
- ¹⁸ Not always, though. Some interstate and interbasin trading proposals conceive of trading between unrelated watersheds.
- ¹⁹ Rena Steinzor, Nick Vidargas, Shana Jones, & Yee Huang, *Water Quality Trading in the Chesapeake Bay*, CPR White Paper No. 1205 (May 2012).
- ²⁰ For a more in-depth discussion of nutrient trading, please see CPR's recent white paper, *supra* note 19.
- ²¹ This paper assumes that trading will go forward as part of the Bay restoration process but does not evaluate the legality of trading under the Clean Water Act. Instead, it is intended to raise awareness of potential environmental justice problems that may arise under Bay states' trading schemes.
- ²² CHESAPEAKE BAY FOUNDATION, BAD WATER 2009: THE IMPACT ON HUMAN HEALTH IN THE CHESAPEAKE BAY REGION 3 (2009).
- ²³ Maryland Department of Natural Resources, Harmful Algae, <http://www.dnr.state.md.us/bay/hab/pfiesteria.html>.
- ²⁴ J. Glenn Morris, Jr., *Human Health Effects and Pfiesteria Exposure: A Synthesis of Available Clinical Data*, 109 ENVTL. HEALTH PERSPECTIVES 787-90 (2001); Jonathan Bor & Caitlin Francke, *Memory Loss Led to Human, Toxin Link Pfiesteria Affects Brain, Scientists Say*, BALT. SUN, Aug. 31, 1997.
- ²⁵ BAD WATER, *supra* note 22, at 3.
- ²⁶ BAD WATER, *supra* note 22, at 4.
- ²⁷ Cyanobacteria is a class of bacteria not an algae, as its common name, blue-green algae, suggests.
- ²⁸ BADWATER, *supra* note 22, at 9.
- ²⁹ Tracey J. Woodruff, Ami R. Zota, & Jackie M. Schwartz, *Environmental Chemicals in Pregnant Women in the United States: NHANES 2003-2004*, 119 ENVTL. HEALTH PERSPECTIVES 878 (2011).
- ³⁰ CHESAPEAKE BAY ANGLER INTERVIEWS, *supra* note 10.
- ³¹ Timothy B. Wheeler, *Sewage Leaks Foul Baltimore Streams, Harbor: Chronic Seepage from Aging Pipes Worse Than Storm Overflows*, BALT. SUN (Dec. 10, 2011), available at <http://www.baltimoresun.com/features/green/bs-gr-sewer-leaks-20111210,0,5567174.story?page=2>.
- ³² PLAN EJ 2014, *supra* note 14, at 14.

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Chesapeake Bay Bibliography by CPR

- [*Manure in the Bay: A Report on Industrial Animal Agriculture in Maryland and Pennsylvania*](#), CPR Briefing Paper No. 1206 (June 2012). This paper provides a snapshot of the concentrated animal feeding operation programs in Maryland and Pennsylvania, as well as an overview of federal regulations. It recommends using designation authority to extend CWA permitting requirements, rigorous inspections of large animal facilities, fines for violations that have a significant deterrent effect, and co-permitting for the national companies that contract with local growers to raise chickens and other animals.
- [*Accountability: Water Quality Trading in the Chesapeake Bay*](#), CPR Briefing Paper No. 1205 (May 2012). To ensure accountability in water quality trading, this paper makes specific recommendations for designing the program, avoiding environmental inequities, and ensuring strong enforcement.
- [*Back to Basics: An Agenda for the Maryland General Assembly to Protect the Environment*](#), CPR Briefing Paper No. 1110 (October 2011). This paper recommends that MDE should increase permit fees to accurately reflect the cost of administering permits; increase the state penalty maximum to match the federal penalty maximum; explicitly recover the economic benefit of non-compliance in penalty calculations; and establish a mandatory minimum penalty for certain violations.
- [*Ensuring Accountability in Chesapeake Bay Restoration: Metrics for the Phase I Watershed Implementation Plans*](#) (August 2010). CPR developed a set of metrics to grade the Bay jurisdictions' Phase I Watershed Implementation Plans. The metrics address (1) the transparency of information in the WIPs in providing key information about their pollution control programs and (2) the strength of the programs in making actual pollution reductions. Using these metrics to grade the WIPs provides a clear and understandable tool for monitoring each state's commitment to restoration.
- [*Missing the Mark in the Chesapeake Bay: A Report Card for the Phase I Watershed Implementation Plans*](#), CPR White Paper No. 1102 (January 2011). This report card applied the metrics from *Ensuring Accountability* to the Chesapeake Bay states' and the District of Columbia's final Phase I Watershed Implementation Plans. The final grades reflected mediocre commitments and performance because the final plans were light on providing specific commitments for actions needed to achieve the required pollution reductions, and generally did not pledge dedicated funding for the proposed programs.
- [*Failing the Bay: Clean Water Act Enforcement in Maryland Falling Short*](#), CPR White Paper No. 1004 (April 2010). This paper examines trends in CWA enforcement and MDE's enforcement budget and workforce for the period between 2000 and 2009. The report recommends that the Maryland General Assembly provide additional funding to account for the dramatic increase in MDE's workload; that MDE recover any economic benefit achieved by noncompliance from violators and increase on-site monitoring and inspection activities; and that MDE embrace citizen suits as a tool to supplement its own enforcement program.
- [*The Clean Water Act: A Blueprint for Reform*](#), CPR White Paper No. 802 (May 2008). The CWA has accomplished much since its passage in 1972, but much more remains to be done. This Blueprint presents a number of specific and meaningful reforms for the CWA that address existing problems and prepare for the new problems climate change will create.

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About the Center for Progressive Reform

Founded in 2002, the Center for Progressive Reform is a 501(c)(3) nonprofit research and educational organization comprising a network of scholars across the nation dedicated to protecting health, safety, and the environment through analysis and commentary. CPR believes sensible safeguards in these areas serve important shared values, including doing the best we can to prevent harm to people and the environment, distributing environmental harms and benefits fairly, and protecting the earth for future generations. CPR rejects the view that the economic efficiency of private markets should be the only value used to guide government action. Rather, CPR supports thoughtful government action and reform to advance the well-being of human life and the environment. Additionally, CPR believes people play a crucial role in ensuring both private and public sector decisions that result in improved protection of consumers, public health and safety, and the environment. Accordingly, CPR supports ready public access to the courts, enhanced public participation, and improved public access to information.

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