The decline of the eastern oyster Crassostrea virginica in Chesapeake Bay from overfishing, disease, and habitat degradation is well documented (1–3). Oysters provided important ecological and economic benefits to the Chesapeake Bay states of Maryland and Virginia, which have poured millions of dollars into their restoration (4). Recently, these states have effectively conceded that restoration has been ineffective (5), and they are developing an Environmental Impact Statement (EIS) to evaluate alternatives for increasing oyster populations (6). Under the EIS, the preferred (proposed) action is to introduce diploid populations of an Asian oyster, Crassostrea ariakensis, into the Bay. Such an introduction could occur in 2006 (7).

Adjacent states currently have no recourse to prevent (or alter) such an introduction despite the likelihood of being affected by it. A recent National Academy of Sciences (NAS) study that examined the proposed introduction concluded: "The existing regulatory and institutional framework is not adequate for monitoring or overseeing the interjurisdictional aspects of open-water aquaculture or direct introduction of C. ariakensis. There is no federal legislation that gives specific criteria for regulating the introduction of a nonnative marine species...there is no statutory mechanism for resolving differences among the interests of affected states" [(4), p. 7].

Delaware Bay, the estuary just north of Chesapeake Bay, has experienced a similar decline in its once lucrative oyster fishery (8). Delaware and New Jersey, which border Delaware Bay, have not given up on native oyster restoration. They object to the Chesapeake introduction of nonnative species because reproductively viable populations in Chesapeake Bay would make the spread of C. ariakensis outside of the Bay, by unintended or deliberate means, "highly likely" (4). Currently, New Jersey and Delaware have no regulatory role in an introduction in the Chesapeake. In a joint statement, they have taken the position that the introduction is premature and that they would like Maryland and Virginia to fund further research on the little-known basic life history of the oyster before any introduction (9).

Federal legislation could provide a mechanism to address this loophole by establishing a process for the governors of any states potentially affected by an intentional introduction to appeal to either the U.S. Fish and Wildlife Service or the National Marine Fisheries Service. If the federal agency was not satisfied with the biosecurity measures accompanying the proposed introduction, that agency could block the introduction, with judicial review for dissatisfied parties in the federal courts. The pending authorization of the federal Invasive Species Act could provide a forum for discussion of these or similar changes in federal law, to provide a better-coordinated and better-focused approach to intentional introductions.

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References and Notes
4. Committee on Nonnative Oysters in the Chesapeake Bay, National Research Council, Nonnative Oysters in the Chesapeake Bay (National Academies Press, Washington, DC, 2004).
5. See www.dnr.state.md.us/dnrnews/infocus/infocus/oysters.asp.
7. See www.dnr.state.md.us/dnrnews/infocus/eischedule.html.

Regulating Mercury: What’s At Stake?

The U.S. Environmental Protection Agency (EPA) has issued a new rule regulating mercury emissions from power plants. But is the rule sensible?

The best way to answer this question is to tote up the benefits and costs of the rule and compare them. The EPA did not do such an exercise when it issued its proposed rule, so we did our own analysis.

We started with the two alternatives that EPA had on the table. One called for a 30% reduction in mercury emissions by 2008 through the use of command-and-control regulation—where all utilities must meet the same standard. A second was a cap-and-trade program that would reduce emissions 70% by 2018; this was the proposal that the Bush administration adopted in its final rule. It puts a cap on mercury emissions but lets firms sort out the least costly way to achieve those emission reductions. That option appears to cost about $15 billion less than the command-and-control approach while achieving roughly the same environmental outcome.

Is the cap-and-trade program really worth it? We estimate that the costs will be somewhere in the neighborhood of $4 billion on the basis of existing models. There is a lot of uncertainty in these estimates because some of the technologies needed to reduce mercury emissions are not commercially proven.

The main benefit from reducing mercury emissions from power plants is an increase in IQ. But the chain of reasoning that takes us from power plant reductions to IQ increases is uncertain. The basic idea is that reduced mercury emissions will reduce mercury in waterways, which will reduce mercury in fish, which will reduce mercury in pregnant mothers who eat fish, which will make newborns smarter.

We tried to quantify this information, recognizing there are major potential weaknesses in most links in the chain. We find some points worth noting. First, shifting down all