PUBLIC POLICY IMPLICATIONS OF PHOSPHORUS TRADING

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Effluent trading offers promise for promoting more cost-effective water quality protection by, among other potential benefits, (1) encouraging early and "beyond compliance" voluntary reductions in effluent discharges, (2) reducing the cost of implementing TMDLs, and (3) achieving reductions of nonpoint source discharges that are currently not regulated by federal law.

Nevertheless, effluent trading is in its early stages, and a number of public policy implications of effluent trading must be recognized and addressed if effluent trading is to fulfill this promise. "Public policy" issues are those that primarily relate to economic, political, legal, and behavioral factors, as distinguished from questions that predominantly involve scientific and engineering approaches. The combination, controversiality, and complexity of the policy issues relating to a particular trading proposal will depend on factors such as the location of the trading area and the nature of the trading system (i.e., point/point or point/nonpoint). The following outline is intended to provide a general framework for identifying public policy issues applicable to trading phosphorus discharges to waterbodies.

1. <u>How will a phosphorus effluent trading regime account for scientific uncertainties?</u>

One of the axioms of effluent trading theory is that shifting load reductions should ensure that traded pollution reductions are environmentally equivalent or superior to reductions that would have occurred without trading.

But profound uncertainties (both knowledge and measurement uncertainties) surround the environmental impacts of phosphorus discharges: (1) complexity of eutrophication dynamics – What are the relevant and potentially limiting factors (phosphorus, nitrogen, carbon, sunlight, water temperature, flow rate, benthic structure, sediments, etc.)? (2) variety of possible sources of phosphorus, some of which are regulated and some are not -- point and nonpoint sources (e.g., agriculture, municipal runoff, air deposition). How can we measure the environmental impacts of phosphorus discharges from nonpoint sources? (3) complexity of specific hydrological systems (e.g., Passaic River system); and (4) impacts of growth-related changes in the watershed.

Advocates of effluent trading systems recommend that such scientific uncertainties be counteracted by trading ratios reflecting margins of safety along with adaptive management mechanisms that allow for modification of the trading system when relevant scientific information becomes available. But are these devices compatible with a water pollution control system based on firm legal rights and fixed targets?

2. Is effluent trading "legal"?

Unlike the Clean Air Act, the Clean Water Act ("CWA") does not specifically mention pollutant trading. Some commentators have suggested that effluent trading would violate the effluent limitation, anti-backsliding, and anti-degradation provisions of the Clean Water Act, as well as its "zero-discharge" goal. EPA has reduced the legal ambiguity of effluent trading by declaring that trading cannot be utilized to modify technology-based effluent limitations; in other words, trading can only be instituted as part of the process of developing and implementing TMDLs. But litigation is currently pending with regard to the legality of trading water quality-based effluent limitations. Must the Clean Water Act be amended in order to definitively authorize effluent trading? If not, what legal restrictions must be included in specific trading proposals? For example, may effluent limitations included in discharge permits be variable, instead of fixed, and still comply with the CWA?

3. Avoiding "Hot Spot" problems.

A fundamental aspect of any trading program is that pollutant reductions will not occur uniformly across all sources. This aspect of trading often raises a concern about pollutant concentrations becoming unacceptably high in one or more locations, forming "hot spots." How should a trading program be designed and implemented in order to ensure that locally high pollutant concentrations are not created? And how can the program be modified if an unexpected hot spot does appear?

4. Reducing and allocating transaction costs.

Three varieties of transaction costs might be considerably higher for an effluent trading system than for the ordinary system of discharge permitting: (1) search and information costs – E.G., identifying the potential traders, analyzing scientific uncertainties and setting trading ratios, designing a trading system in order to maximize environmental benefits and avoid hot spots; (2) bargaining and decision costs – E.G., publicizing the system, setting the bargaining context, facilitating trades, mediating among possible trading partners, arranging for public participation, and conducting the more complex permitting and contract negotiation proceedings; and (3) monitoring, surveillance, and enforcement costs – E.G., performing the enhanced compliance and ambient monitoring that a more complex system requires, plus enforcing against sham traders that violate their permits or contracts, some of which traders (e.g., nonpoint sources) are not subject to discharge permits. Assuming that transaction costs do not outweigh economic savings created by a trading system, who should pay these costs? Government? Sellers? Purchasers? Some combination of these? The answer to this question may depend on the extent of governmental participation in the trading system. For example, should trading be bilateral (between willing buyers and sellers) or indirect through a governmental clearinghouse? Should a governmental agency administer an effluent credit "bank"?

5. <u>Allocating responsibility and liability.</u>

If a trader fails to perform its obligations, or a trade does not achieve water quality goals, who bears legal responsibility for correcting the situation? And who can enforce against whom if the situation remains uncorrected? Where only point sources are concerned, these questions would presumably be answered within the boundaries of the NPDES permit system. But point/nonpoint trades raise potentially difficult enforceability problems. For example, who can enforce against a farmer that is violating its trading contract with a POTW? The contracting POTW certainly can do so, but can the responsible state agency enforce directly against the farmer, or only against the POTW? Are citizens with an interest in preserving water quality third-party beneficiaries who can sue for breach of contract independent of the citizen suit provisions of the CWA? What are the public participation requirements in point/nonpoint source trades?

<u>6. What is the objective of effluent trading?</u>

In its Water Quality Trading Policy (2003), EPA supports environmental restoration (for example, "the creation and restoration of wetlands, floodplains, and wildlife and/or waterfowl habitat") as one of the objectives of water quality trading. Adding environmental restoration to environmental quality maintenance as a factor in the design of trading programs adds another layer of uncertainty and additional transaction costs to an already complex administrative system.

<u>7. Special problems regading POTWs engaged in point/point or point/nonpoint effluent trades.</u>

A POTW involved in a phosphorous effluent trade should consider whether internal system trades (e.g., pretreatment trades) are desirable and feasible. Another question is whether combined or sanitary sewer overflows should be included in the trading program, and if so how overflows should affect water quality goals, trading area boundaries, trading ratios, etc. Infiltration/inflow sources of phosphorous might also complicate the design of a trading system involving a POTW. Third, how should federal or state subsides for construction or operation and maintenance (e.g., State Revolving Loan funds) be factored into a trading program? Fourth, what are the environmental justice implications of relatively affluent upstream suburban communities purchasing discharge credits from comparatively disadvantaged downstream urban areas? Or vice versa? Fifth, who should receive the economic benefits of cost savings created by effluent trading? Sewerage authorities for capital improvements? Ratepayers by way of decreased sewage disposal charges? Governmental oversight agencies through intergovernmental fund transfers? Finally, do POTWs possess the legal authority to engage in effluent trades?