

1994

Marketable Pollution Allowances (Great Lakes Symposium)

James E. Krier

University of Michigan Law School, jkrier@umich.edu

Follow this and additional works at: <http://repository.law.umich.edu/articles>

 Part of the [Environmental Law Commons](#), [Legislation Commons](#), and the [Property Law and Real Estate Commons](#)

Recommended Citation

Krier, James E. "Marketable Pollution Allowances (Great Lakes Symposium)." U. Tol. L. Rev. 25, no. 2 (1994): 449-55.

This Article is brought to you for free and open access by the Faculty Scholarship at University of Michigan Law School Scholarship Repository. It has been accepted for inclusion in Articles by an authorized administrator of University of Michigan Law School Scholarship Repository. For more information, please contact mlaw.repository@umich.edu.

MARKETABLE POLLUTION ALLOWANCES

*James E. Krier**

I. INTRODUCTION

IN March 1993, the EPA auctioned off 150,010 sulfur dioxide emissions permits at the Chicago Board of Trade.¹ The auction brought in \$21.4 million and ushered in the Clean Air Act's market-based approach to sulfur dioxide control.² Congress created these marketable pollution allowances (MPAs) under Title IV of the Clean Air Act Amendments of 1990³ to regulate acid rain pollution.

While most MPAs were bought by utilities, to be exchanged as a commodity according to need, some MPAs were removed from the market solely to prevent their use by polluters. The Cleveland-based National Healthy Air License Exchange bought one allowance and hopes to move ten percent of the available permits to nonprofit nonusers.⁴ The role of these nonusers is one of many elements of uncertainty affecting the viability of this control scheme.

This essay addresses the property rights which permit market principles to make an MPA control method effective. It then evaluates the MPA program by comparing it to another alternative form of pollution regulation—emission fees—and concludes by urging caution with regard to both the program's implementation and expectations.

II. THE EMERGENCE OF PROPERTY RIGHTS

The MPAs created by the 1990 legislation are hybrid property rights. We know they are not full-fledged property rights because, among other reasons, the law tells us so.⁵ But MPAs have some essential property-rights characteristics.

* Earl Warren DeLano Professor of Law, University of Michigan Law School. This article is based on remarks the author presented at The University of Toledo College of Law's Eighth Annual Colloquium on Corporate Law and Social Policy, March 11, 1993.

1. M.R. Kropko, *Environmentalists Chalk Up Pollution for Clean Air Ecology: National Healthy Air License Exchange Buys Sulfur Dioxide Emission License So That No One Can Use It*, L.A. TIMES, Oct. 10, 1993, at A35.

2. *Id.*

3. Clean Air Act Amendments of 1990, Pub. L. No. 101-549, 104 Stat. 2399 (codified as amended at 42 U.S.C. §§ 7651-7671q. (Supp. III 1991)).

4. Kropko, *supra* note 1, at A35.

5. See 42 U.S.C. § 7651b(f) (Supp. III 1991) ("An allowance allocated under this subchapter is a limited authorization to emit sulfur dioxide in accordance with the provisions of this subchapter. Such allowance does not constitute a property right."). I presume that one reason Congress inserted

Chiefly, they confer entitlements to pollute, and these entitlements are transferable—they may be bought and sold on the market.

Although theorists have at best a weak understanding of the *mechanisms* by which property rights developed historically—from a state of nature—they have for centuries known and agreed that scarcity is a prime *condition* for the emergence of property regimes. The move from common ownership or nonownership of resources to property rights in those same resources seems almost always to have been, and still to be, stimulated by the very waste to which common ownership regularly gives rise. Because property rights economize on resources, they are an attractive response to the problem.

Suppose a group of people owns a resource in common, meaning that each member of the group has a right of use, subject only to similar rights of use in the other members. In other words, all in the group are free to exploit the common resource pool. Under such circumstances, troublesome incentives result. As any member consumes the common resource, he or she gains all of what is taken but loses considerably less. For example, let a member *X* take a head of cattle from a herd owned in common by the group. The gain to *X* is one head, whereas the loss is only $1/n$ of that, with n being the number of members in the group. Under such conditions, each member will be inclined to consume marginal units, because the benefits of consumption are concentrated on the individual while the costs of depletion are spread among the group as a whole.

The situation just described is unproblematic so long as there is an abundant herd—its size exceeds the demand. But demand is likely to increase over time, because of population growth, with resulting scarcity. Not only does each member have an incentive to continue consuming cattle, but no member has an incentive to enhance the size of the herd; the new head, after all, would belong to all in common.

Now observe what a transition to private property rights would accomplish. Each member would be allotted a certain number of cattle as his or hers. If *X* were then to consume a head, the gains *and the losses* would be *X*'s and *X*'s alone. The ability to consume at the cost of others, and thus the incentive to exploit, largely vanishes. At the same time, an incentive to breed a larger herd for oneself comes into the picture. And if *Y* were to value a head of cattle more than *X*, a transfer by sale could easily be arranged. As can be seen, then, property rights generally moderate demand, enhance supply, and facilitate the movement of resources to their highest valued uses. These are important reasons *why* property rights emerge as resources become scarce, regardless of whether we understand *how* the process worked in the first instance.

The story with pollution is similar to the foregoing, but only in some respects. Pollution, too, involves consumption—of environmental resources. Suppose the air resource is owned in common (as defined above) and assume that pollution

this provision was to free the government of any constitutional obligation to pay compensation should it later decide to further limit or altogether abrogate the allowances. Indeed, the cited section goes on to say: "Nothing in this subchapter or in any other provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization." *Id.*

control is costly (if it were not, there would be no pollution problem). Given these circumstances, X , a manufacturer, must decide whether to control air pollution resulting from its operations. If X controls, there is a cost to it but a gain—cleaner air—to society at large. If X does not control, the gain in control costs avoided is realized entirely by X , whereas the costs of pollution are shared by all who live in the problem shed. Of course, X is included but only as $1/n$. History proves what calculation predicts: X does not control.

Enter private property rights? Not exactly, and this is where the pollution story departs from the cattle story. The initial social response to pollution (once clean air became scarce enough to indicate a problem) was through the common law, for by now organized civilizations had developed, with governments and laws. The relevant common law was that of nuisance, according to which judges and juries decided, in essence, whether polluters like X had acted reasonably under the circumstances. If they had, they could continue; otherwise, they could not. Arguably, the nuisance regime as thus administered mimicked a property rights regime, but only imperfectly. In any event, as population and technology flourished and dispersed, pollution spread beyond the common law's grasp, and, at about the turn of the century, there began an ongoing program of legislative intervention.

The chief method of legislative intervention, from then until now, has been command and control regulation. Under this approach, sources are told how much they must control or what devices they must install. Typically, and as a rough approximation, the regulatory requirements are uniform across all sources of a given pollutant—"Everybody cut back by P percent," or "Everybody put one of these things on your smokestacks." Uniform treatment has two advantages. First, it looks to be fair. Second, it is easy to formulate and apply, at least as compared to a regulatory program that would require different sources to control to different degrees.

Nevertheless, regulators might want some sources to control more than other sources. Such differential abatement requirements can minimize control costs, which, in turn, makes it feasible to control more, or to save money and make it available for other desirable ends, or both. Suppose there are two pollution sources, S_1 and S_2 , and suppose further that, as is commonly the case, one of these, say S_1 , can reduce its pollution output over some range at less cost than can the other source, S_2 . Within the range, equal abatement requirements are wasteful; it would be cheaper to have S_1 make all reductions that it can manage at lower cost than S_2 , and to require abatement by S_2 starting only at the point where its costs per unit controlled are the same as S_1 's. When each source is spending equally on the last unit of pollution it controls, total reduction costs are minimized for any given level of abatement. (Skeptics are encouraged to work out the simple math.)

If there were nothing more to the matter than this, then policy-makers simply could enact command and control regulations that require sources to control more the lower their abatement costs. But concerns about ease of administration get in the way. In order to set abatement requirements according to a pattern that equalizes the marginal costs of control for any given pollutant across all that pollutant's sources, government regulators obviously need to know what all of

those marginal costs of control *are*, and that information is very hard to obtain. The information also has a short shelf life. As new sources move into a region, every source has to be adjusted downward if air quality is to be held constant. To keep marginal control costs equal, then, one needs fresh information about each source's abilities, given new abatement requirements. In short, because information is costly, it would be—and is—very expensive to set differential regulatory standards. Moreover, notice that differential regulatory standards have perverse effects. They saddle the “best” sources, the ones that can most effectively control their pollution, with the biggest control burdens, asking less of the clunkers. And while differential standards give all sources incentives to find cheaper ways to control to the *required* extent, they create no incentives for any source to control *more* than the required extent. Technology might advance, but air quality will not, unless regulators seize upon the opportunities offered by technological advance and tighten the regulatory standards. But if sources anticipate that regulators will likely act in this fashion, they lose interest in advancing technology. The result is stagnation.

The short of all this is that regulation falters as environmental conditions become worse with growth and more and more control per source is necessary. For crude uniform regulation we pay the steep price of waste; for fine-tuned regulation we pay the steep price of information. And for any kind of regulation we may pay the price of stasis.

III. THE VIRTUES AND VICES OF MPAS

Consider two alternatives to command and control regulation. Both alternatives rely on incentives rather than commands; that is, both put a price on pollution and then leave decisions about control up to sources, which may pollute if they wish, provided only that they pay. But the two approaches arrive at the relevant price in different ways, and the difference is very important.

The first alternative we shall consider, emission fees, never went very far in practice (at least as to air and water pollution, and at least in this country). The idea is for the government to figure out how much abatement is necessary, and then to charge a price that will yield that amount. The price is figured in terms of a uniform charge assessed for every unit of pollution output. Hence, each pollution source must decide whether to control pollution and pay for the controls, or not control pollution and pay the fees assessed for not controlling. A moment's reflection will show that each polluter will control up to the point where controlling one more unit costs more than the fee charged for not controlling. A moment's more reflection will show that sources with relatively low pollution control costs will control quite a bit and pay few fees, whereas sources with higher control costs will control less and pay more fees.

Notice that the overall pattern of control will be different among sources as a function of the differential control costs. Notice also that every source will control exactly to the point where its marginal costs of control equal the fee. Since the fee per unit of pollution is the same for all sources of a given pollutant, it follows that every source will control to the point where its *marginal* costs of

control—the costs of controlling the last unit—are the same as those of every other source. Once again, this minimizes control costs for any given level of abatement. Finally, with emission fees, as compared to command and control regulations, all sources have ongoing incentives to find technological advances that will make control cheaper, *and* to use the new technologies to reduce their pollution output and thus their emission fees. Moreover, the best sources, as defined above, pay the least; the clunkers pay the most.

In sum, we end up with the abatement patterns of an idealized program of differential regulations and, at the same time, avoid regulatory disadvantages. We need only to find and set the right fee.

Therein lies a problem. Usually, we don't know what the right fee is. It happens to be a derivative of the same marginal cost information discussed above in connection with differential regulation. That information, as stated earlier, is hard to obtain. If we could get it, fees would be superior to differential regulation (because of their other dynamic advantages), but often the information simply isn't available.

Enter MPAs, which are best understood in the following way. Pollution abatement is a function of supply and demand, of quantity and price. If we increase the price of polluting, sources, in turn, will decrease the quantity of pollution produced. This is the motivating idea behind emission fees, which manipulate price. But if, instead of increasing the *price* of polluting, we decrease the allowable *quantity* and then put that quantity up for sale, its price will be determined by the market as sources bid for the limited pollution allowances available. This is the motivating idea behind MPAs, which manipulate quantity. With emission fees, the government sets the price, and the market sets the quantity. With MPAs, the government sets the quantity, and the market sets the price. And the fact is that it is much easier to set the desired quantity—"We want no more than so many units of pollution per unit of time"—than it is to determine the right price.

This illustrates the chief advantage of MPAs as compared to emission fees, but there are others as well. Among them, one merits special mention. Notice that emission fees, which in principle would minimize the sum of polluters' abatement costs, would in reality tend to maximize the sum of all their costs—abatement costs plus fees paid for pollution not abated. The fees are not a cost to society; they are merely a transfer payment from polluters to the treasury. But obviously they are a cost to polluters, like a tax that transfers money from a taxpayer to the government. Because fees are expensive to sources, sources do not want them. And because sources have political power, they can be expected to oppose fees tooth and nail, which perhaps explains fees' absence on the scene. They prefer regulation that allows pollution for free so long as it is within the regulatory limits.

MPAs are different. MPAs are much like property rights, which can be allotted as society thinks best. Hence, they can be—and, under the Clean Air Act, to a substantial extent they are—*given* to sources. If nothing else, this buys off

opposition, which is no doubt one reason the Clean Air Act works as it does.⁶ Nevertheless, constructive incentives remain intact, because, as with the head of cattle we talked about at the outset, MPAs are transferable. Sources holding them must consider that, if they can find a good way to control, then they can sell some of their holdings at a profit. Thus, the best controllers will abate and sell allowances. The clunkers will pollute, buy allowances, and bear the largest financial burdens. Total control costs will be minimized, and all sources will have ongoing incentives to find better technology. MPAs realize all the advantages of emission fees while escaping their central problems.

So much for the virtues of MPAs. What about vices? I shall mention several. MPAs can give rise to so-called hot spots, which occur when many polluting sources decide to pollute in the same place. The problem is minimized to the degree that the pollutant in question has no local effects but is of importance only as it mixes in a larger atmospheric space. To some degree, this is true of the sulfur dioxide controlled by the Clean Air Act's MPA program. But it is not entirely true, and a few potential hot-spot problems already have been reported in the press.⁷ If the accounts prove to be well-founded, controls on source location will become necessary, and this is an unfortunate complication, though one shared by regulation and emission fees.

A second problem is that while MPAs make the quantity of pollution certain, they leave its price uncertain—up to the market. Emission fees have exactly opposite characteristics: price is certain, quantity is not. Given this, risk-averse sources might feel most comfortable putting their money into abatement rather than worrying about possibly high MPA prices in the future. They might abate when, in fact, it would prove cheaper for them not to do so, with the consequence that cost minimization would not be realized. Again, there is some evidence of this already.⁸

Finally, there is a concern that MPAs trivialize the pollution problem. To endorse the idea that there is a right or a license to pollute so long as one pays, the argument runs, is to endorse the idea that the environment is a mere commodity. There is the fear that such "commodification" might proceed apace, dull our sentiments, harden us, and take us to the point where much that is now held sacred will come to be regarded as nothing but an asset—our environment, our children (markets for babies), our selves (markets for body parts).

6. It would be a mistake to assume that the practice of allotting MPAs to sources for free works some sort of distributive injustice. By reducing the costs to firms, we reduce as well the costs of products passed on to consumers. Pollution figures heavily in the production of basic consumption goods, on which low-income people spend the largest proportion of their incomes. Hence, giving MPAs to firms might well have desirable progressive effects in many instances.

7. See, e.g., Matthew L. Wald, *Lilco's Emissions Sale Spurs Acid Rain Concern*, N.Y. TIMES, Mar. 18, 1993, at B1.

8. See, e.g., Matthew L. Wald, *Risk-Shy Utilities Avoid Trading Emission Credits*, N.Y. TIMES, Jan. 25, 1993, at D2.

IV LEARNING BY DOING

A late colleague used to argue that my law school should experiment with grade reform once experience with various such reforms suggested the best way to go. Congress, with no sense of irony, often has reasoned about pollution control reform in the same way. It has long been willing to try untried alternatives, but only after the alternatives have proven themselves effective in the real world. Now, with MPAs, we have realized some sort of miracle. We find ourselves with an unusual opportunity to test in practice what looks to be a very good idea in theory, to work out (if we can) wrinkles like hot spots, to educate unduly conservative sources, and to learn by doing. One real danger as we embark on the new experiment is that our hopes may be too high. It is possible that advocates of MPAs have oversold the idea, such that shortcomings appear (some already have, and more most certainly will), backlash will develop, and a promising approach to environmental problems will be abandoned rather than improved.

A sense of modesty, on the part of everyone, is probably the best way to deal with this concern. We should experiment with open minds and realistic expectations, all the while remembering that no policy alternative is perfect, including command and control regulation most of all. Our understanding of all the alternatives should improve as we learn by doing.

But what about the problem of commodification, the worry that to permit buying and selling debases the environment (and other precious things) and corrupts our sensibilities about appropriate categories of value? Here, trial and error, the process of learning from *future* experience, cannot so comfortably be relied upon. The way the argument runs, there is a danger that by the time we have committed the error of commodification it will be too late to turn back. We already will have become desensitized or re-socialized and will have tripped into a new and meaner set of attitudes.

The problem, though perhaps distant, is nevertheless deep. Once again, a possible response is to proceed with modesty and caution, to limit our experiments, and to watch carefully for any "unintended cultural consequences" that might threaten to develop.⁹ Another is to look to the *past* as an ongoing experiment. Doing so, we can see that we have not let ourselves slip so easily into markets where markets don't belong. If anything, the opposite has been the case. We have moved away from inappropriate commodification, as with slavery and child labor. And, as with MPAs, we have at times been remarkably obdurate about expanding the list of things to be bought and sold.

9. On this topic, the unwanted impacts of public policy on social norms and understandings, see Richard Pildes, *The Unintended Cultural Consequences of Public Policy: A Comment on the Symposium*, 89 MICH. L. REV. 936 (1991).