

INNOVATIVE POLICIES FOR ADDRESSING LIVESTOCK WASTE PROBLEMS

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Animal waste is one of the most persistent environmental problems affecting the nation. Waste products that originate in dairies, poultry and swine facilities, and pasture land are contaminating the nation's rivers and lakes and reducing the quality of groundwater aquifers. A significant body of legislation, specifically designed to curb this problem, has not been effective. We believe that there are three reasons explaining the inability of these current policies to deal adequately with waste management problems. They are:

1. The multimedia nature of animal waste problems;
2. Concern for the financial situation of small producers; and
3. Inadequate means of monitoring and enforcement.

In what follows, we discuss the implications of these three factors on future policy design.

Animal waste creates problems in multiple dimensions and media, a feature that existing regulation largely fails to address. For example, until recently, most policies developed to regulate land application of nutrients have focused on nitrogen applications, and little emphasis has been placed on controlling other contaminants such as phosphorus, odor, dust and pathogens. Combined with little regulatory monitoring, this situation has resulted in a buildup of pollutants on cropland, especially on the land in proximity to livestock operations.

There needs to be a directed effort to create a holistic approach to the problem through regulation of all significant types of pollutants. Regulatory standards, waste management technology performance criteria and other policy targets should be set within a framework that simultaneously addresses as many facets of the animal

waste problem as possible. In addition, it is inefficient to restrict animal waste regulation to livestock production operations alone. Instead, it is essential for regulation to encompass waste transport and disposal in addition to waste generation. Successful implementation of this holistic approach to regulation calls for continuous emphasis on research that identifies the linkages for different manifestations of animal waste problems and their relationship to production practices. That is, policy makers are going to require a better understanding of the relationship between observable production activities (number of animals on a farm, disposal acreage and location) and the resulting waste products that may not be observable for individual farms. For new proposed guidelines to succeed, it will be important to be able to associate all pollution channels and parties to their corresponding routes and actions that lead to different environmental consequences.

Incorporating waste generation, transport and disposal into one holistic regulatory unit suggests that policies will likely need to be designed in order to impose regulation over geographical regions. These regional waste management control activities may lead to the establishment of regional waste management accounting systems. This means that regional water quality agencies or other regional waste control agencies should have information about the production and waste disposal activities of different facilities and be able to obtain aggregate perspectives in order to design and assess specific policy actions. One of the most important challenges of policy reform is the establishment of independent systems of monitoring that will follow waste management activities comprehensively.

The capacity of current policies to modify behavior is restricted by the requirement to consider the financial situation of producers when enforcing

regulations and also by the exemption of integrators from liability for environmental damages caused by waste generation. The desire to maintain and preserve some of the small farming units that are engaged in animal production has resulted in the establishment of “economic achievability” constraints that prevent the use of both penalties and regulations that would threaten the economic viability of small operations. In addition, animal agriculture in the United States, and in particular the swine and poultry sectors, has undergone a process of transition. Most production of poultry and swine is done through contractual arrangements where the facility operators who raise the animals receive genetic materials and dietary requirements (feed) from integrators, who ultimately process and sell the final product. For the most part, these integrators are not held liable for animal waste problems.

There are two main reforms that can address these financial and ability to pay constraints currently placed on waste management regulation. First, the liability for animal waste management should be shared by both integrators and operators. The exact level of sharing should be subject to further research. In some situations, it may be desirable to assign full liability to integrators while establishing a regulation that enables integrators to protect themselves against mismanagement by contractors. In particular, when integrators are responsible for the establishment of new animal livestock facilities and dictate the specifications of production facilities, they should also be responsible and liable for the waste management implications of their activities. Second, the desire to sustain small animal producers should be expressed explicitly in policy by introducing a system of green payments and other incentives for environmental services provided by farmers in animal waste control. In other words, it is better to provide explicit subsidies to allow financially constrained farmers to comply with strict regulatory standards rather than to weaken regulatory standards through implicit economic achievability subsidies, as is done at present.

The emphasis on holistic solutions that also incorporate the responsibility of the integrator and view waste management problems within a

regional context may lead to the development and adoption of new technologies. In the past, the most effective method for waste management was recycling waste and using it as a crop fertilizer. It may be that with today’s technologies, other types of recycling activities are now feasible. It may be possible to use waste products to fertilize exotic species (e.g. algae and duckweed) or use them as new sources of energy. In any case, government efforts should support basic research to find alternative mechanisms to dispose of waste products and to improve technologies for monitoring waste flows, thus enabling the transfer of waste regulation from a nonpoint to a point source pollution problem.

Animal waste regulation is also constrained by the problems of monitoring and enforcement. Frequently, water contamination is a non-point pollution problem (i.e., it is difficult to identify the exact source of a particular pollution) and, therefore, it is costly to monitor the economic activities that lead to the generation of waste and the ultimate contamination of water and other media. In the situations where regulation has tried to control waste disposal by restricting field applications below agronomic rates, excessive waste has been exported to off-farm fields, but its ultimate disposal was not adequately monitored.

One way of addressing the problems of monitoring and enforcement is to fund public sector research to develop technologies that will provide indicators on the origin of waste products. Research of this kind should be a major priority. Such technology will transform animal waste non-point source problems into point source problems, thereby simplifying monitoring and enforcement. Another direction for research, as mentioned above, should be to obtain a better understanding between observable activities (number of animals on a farm, the farm’s disposal acreage and location) and the resulting waste products that may not be observable for each individual farm.

Improved information on pollutant emissions, as described above, can make it possible to increase the economic efficiency of regulation through the use of incentive systems such as the introduction of animal production or manure disposal trading

rights. This type of system could be implemented in several ways. One alternative is the development of waste disposal rights that could be issued and traded in a market. Animal waste operators who own disposal lands could be allowed to dispose of a certain amount of waste products on a per unit base, and these rights would be tradable. Furthermore, landowners who do not own animals may also be given rights to use their lands to

dispose of animal waste. This system could lead to the establishment of economic markets for animal waste disposal. Of course, regional authority will have to monitor overall groundwater quality and other environmental conditions in order to establish parameters for these markets. Environmental authorities also have to develop a monitoring system of growers' and farmers' activities and establish penalties when disposal levels exceed acceptable limits.

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