

## DAIRY WASTE MANAGEMENT REGULATORY POLICY

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Regulation of dairy waste is likely to be one of the most controversial issues affecting dairy farming in the 1990s. In the late 1980s, state regulatory agencies took action in Florida, and subsequently in Texas, to regulate dairy farms as a source of pollution of streams, lakes, and reservoirs. Primary concerns were with control of runoff from dairy farms leading to increased concentrations of nitrates, phosphorus, and other pollutants into surface and ground water. This marked the beginning of the transformation of the livestock and poultry industry to being regulated as a point source of pollution, as specified in the Federal Clean Water Act of 1972. Reauthorization of the Clean Water Act is on the Congressional agenda for the current session.

Initially, it was perceived that regulation of dairy waste would apply only to large dairies involving over 700 cows and/or to new dairies, or to those that were substantially expanding their operations. Subsequently, it became clear that any dairy against whom a complaint is registered could be required to modify their operations and farming practices to control dairy wastes. Even without a complaint, in Minnesota, any dairy farm milking over seven cows that is anticipating expansion must submit a waste management plan.

States are at substantially different stages of development in the regulation of dairy waste. Where regulation has been pursued aggressively, considerable controversy has developed. Experience has been an important teacher in each of these situations. Hopefully, the lessons learned can help smooth the transition to more economically effective applications of waste management principles and practices established in the policy arena. This paper reviews the status of current

regulation of dairy waste, including policies regarding enforcement in the major milk-producing states and identifies alternative actions which might be taken to facilitate the transition in the evolving regulatory environment.

A telephone survey of regulatory and Soil Conservation Service officials in each of the 21 major dairy states, complemented by four additional states where milk production is a major agricultural activity was conducted to determine the status of dairy waste regulation and enforcement in each of the states surveyed. Actual and estimated compliance costs are briefly discussed.

### **Regulatory Background**

The Environmental Protection Agency (EPA) is the Federal agency responsible for developing, interpreting, and enforcing the Clean Water Act, as amended by the Water Quality Act of 1987. All state legislatures in the United States have adopted similar legislation, and have authorized a state agency to carry out the objectives of the law. Some states have entered into agreements with the EPA to assume regulatory responsibilities—delegated authority in their respective states.

In 1972 the U.S. Congress enacted the Clean Water Act (CWA) aimed at preventing the discharge of polluted water into the streams, rivers, and lakes of the United States. The initial priority of this legislation was to curtail the discharge from industrial plants and municipal waste plants. Such forms of pollution were designated as point sources because the discharge source could be directly identified.

In 1987 the CWA was amended declaring "It is the national policy that programs for control of nonpoint

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pollution be so developed and implemented in an expeditious manner so as to enable the goals of this Act to be met through control of both point and nonpoint sources of pollution.” Agricultural activities were generally treated as nonpoint source dischargers. The conservation provisions of the 1985 Food Security Act<sup>1</sup> were augmented in the 1990 Food, Agriculture, Conservation and Trade Act.<sup>2</sup> Despite these changes in farm policy, in a 1992 report the EPA Office of Water concluded that agriculture continues to be the single largest contributor to nonpoint source problems in the nation.

Under the Clean Water Act, confined animal feeding operations (CAFOs) were designated to be point sources of pollution. The major factor distinguishing CAFOs as point source pollution is that: (1) the surface of the livestock confinement area cannot sustain vegetation and (2) the sheer volume of solid and liquid waste generated by the CAFO. In 1987, new regulations pertaining to all point-source polluters were approved that detailed what types and sizes of CAFOs were required to obtain a National Pollution Discharge Elimination System (NPDES) permit.

An NPDES permit is required by any CAFO with more than 1,000 animal units (a feeder steer), and by CAFOs with fewer animal units if there is a non-zero probability that they will discharge into the waters of the United States. The NPDES general permit is a blanket permit which specifies structural guidelines for a CAFO waste management system. The basic requirement is sufficient water storage capacity to accommodate all runoff from the CAFO, except in the event of a 24-hour, 25-year flood event.

There is no requirement for all CAFOs to have a general permit. If the CAFO is under 1,000 animal units (equivalent to 700 dairy cows) and management feels the operation will never discharge except in the event of a 24-hour, 25-year storm event it is not obligated to get a permit. If a dairy farm applies for a permit, the owner agrees to comply with the facility and managerial requirements of the permit. The advantage of the protection under the general permit is that a compliant firm is not subject to legal or civil action even in the case of a reported discharge. Farmers who do not obtain a permit are out of compliance and are subject to penalties of \$10,000 per day if a discharge occurs.

Under certain circumstances, the EPA can require firm specific individual permits. The firm cannot operate or discharge unless it complies with site specific best management practices and facility requirements unique to its physical environment and operating style. Many state agency discharge permits are individual permits.

After the CWA was enacted in 1972, most state legislatures enacted pollutant discharge legislation. The language of these state laws was similar, and in some cases, identical to federal legislation, and like the U.S. Congress, state legislators authorized state environmental agencies to carry out the objectives of the legislation. Some state agencies developed regulations similar to federal EPA regulations, and others developed regulations that differ considerably from federal regulations with respect to permitting and policing discharge of pollutants into state waters.

The genesis of much of this state legislation resulted from the desire of states to be delegated regulatory authority from EPA. States were also confronted with alleged complaints concerning injuries caused by discharges. By early 1993, EPA delegated this authority to the state level environmental agency in 38 states and one territory to issue compliance permits to potential dairy waste dischargers. Despite the fact that the federal and state regulations had the same goal, and were couched in similar language, regulatory philosophy and enforcement processes have evolved differently across states.

### ***Environmental Protection Agency***

The EPA is organized into ten regional offices to write and enforce regulations appropriate to conditions within these regions. To conserve funding and manpower requirements, the EPA is authorized to delegate enforcement responsibilities to a responsible state agency (Table 1). The EPA approved NPDES permit programs for most of the delegated states during the 1970s and mid-1980s.

During this period CAFOs in many states, both delegated and nondelegated, were not large enough to meet minimum NPDES general permit size guidelines and were of little noticeable concern. Because CAFOs were generally too small to be required to hold permits and due to the perception of agriculture as a nonpoint discharge source, agriculture took low priority for EPA enforcement action, despite the CAFO regulations. For

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<sup>1</sup> Conservation compliance, sodbuster, swampbuster, and conservation reserve.

<sup>2</sup> Water quality incentive program, wetland reserves, and environmental easements.

Table 1. Delegated and Nondelegated States, by Region

Region	Delegated	Nondelegated
I	CT, RI, VT	MA, ME, NH
II	NJ, NY	
III	DE, MD, PA, VA, WV	DC
IV	AL, GA, KY, MS, NC, SC, TN	FL
V	IL, IN, MI, MN, OH, WI	
VI	AR	LA, NM, OK, TX
VII	IA, KS, MO, NE	
VIII	CO, MT, ND, UT, WY	SD
IX	CA, HI, NV	AZ
X	OR, WA	AK, ID

example in Texas, EPA had not been involved with dairy waste enforcement until 1992, when several dairy operations were threatened with a law suit because they did not have a NPDES general discharge permit.

### ***State Regulation of Dairy Waste***

In order to delegate regulatory authority to a state, the EPA must interpret the state regulations as being in compliance with or exceeding EPA/NPDES general permit requirements. In some nondelegated states, as a matter of policy, the state legislatures have not given state environmental agencies the scope of authority that Congress has given EPA. Other nondelegated states may be in the process of obtaining delegated status with state regulatory requirements being even more strict than the EPA requirements.

To gain insight into the application of environmental regulations pertaining to dairy operations across the United States, two telephone surveys of state regulatory requirements were conducted in April and May 1993. Each state soil conservation service office (SCS) was contacted and asked questions relating to the costs of developing and maintaining a dairy waste management system that conforms with contemporary state requirements. SCS was contacted initially because recent experience in Texas indicated that SCS plays a major role in the design of waste management systems.

It became evident that the involvement of SCS in dairy waste management was highly variable across states. This finding prompted a second survey of state environmental agencies. The agency contacted was acknowledged as being the lead agency in each state on

dairy waste/environmental issues. In addition to the two surveys, each of the ten regional EPA administrators were contacted to discuss their views of dairy waste problems and were asked to provide information that the state regulatory personnel were unable to provide. The states in Table 2 represent the 21 major milk producing states and four additional states where milk production is a major agricultural activity.

The results of this survey, while partially subjective, clearly indicate substantial variation in dairy waste regulatory requirements from state to state. While some states have a strict no-discharge policy and require a permit to apply dairy waste to cropland, others appear to offer CAFOs more leeway in designing and operating their waste management systems. These differences in policy appear to be attributable to the following primary factors:

- There is wide variation in the size of dairies across the United States. Some states apparently do not have dairies that meet the 700 cow threshold size where an NPDES permit is required. In some of these cases, the state regulatory officials have not chosen to explicitly enforce dairy waste management regulations relating to CAFOs.
- Some states (both delegated and nondelegated) have gone considerably beyond EPA requirements and are requiring permits of virtually any dairy farm. For example, Minnesota requires a waste management plan and certificate of compliance for dairy farms having as few as seven cows. Such differences in policy appear to result from an interpretation that approaches a perception of the spirit of the Clean Water Act as opposed to the literal definition of a CAFO under the NPDES permit. That literal definition involves 700 dairy cows confined more than 45 days to an area that does not sustain vegetation. The conventional wisdom as to the spirit of the Clean Water Act implies zero discharge.
- Some states interpret their circumstances threatening the environment as being more precarious than others. In part this is a function of the judgment of policymakers regarding the relative importance of the economic activity from the dairy industry compared with the perceived value of clean streams, lakes, bays, and groundwater supplies.

Table 2. State Summary of EPA-SCS Questionnaire Regarding Dairy Farm Waste Management, May 1993.

State	Delegated	Threshold (head)	Permits <sup>a</sup>	State Cost Share (other than ACP-LTA)
CA	Y	700	Notice of Intent <sup>e</sup>	None
FL	N <sup>b</sup>	1	Individual permit <sup>c</sup> have permit Construction permit	Pending <sup>d</sup>
ID	N	300	Notice of Intent	Watershed and 319 funds
IL	Y	700 300	NPDES: discharging near U.S. water NPDES: discharging to man-made drainage	Watershed and 319 funds
IN	Y	300	Letter of Approval	None
KS	Y	300	Individual permit	Watershed
KY	Y	150 1	No-discharge permit: when discharging only Construction permit	None
MD	Y	100	NPDES: Mandatory (Coastal Zone Management)	State funds
MI	N	700 1	NPDES: no dairies of this size in state Groundwater permit: if not following BMP's	None
MN	Y	7	Waste management plan Certificate of compliance	None
MO	Y	150	Letter of Approval	None
NC	Y	75	Non-discharge permit	State BMP funds
ND	Y	200	Waste Management Plan	None
NM	N	700	NPDES: General	None
NY	Y	700	NPDES: Individual	None
OH	Y	700	NPDES: General	None
PA	Y	1	Permit to construct	Chesapeake Bay program
SD	N	700	NPDES: General	None
TN	Y	700	NPDES: Voluntary	None
TX	N	700 250	NPDES: General TX Water Commission Individual	None
VA	Y	500 300	Pollution abatement: Renewal every 3 years Pollution abatement: Renewal every 5 years	Chesapeake Bay program
VT	Y	None	None	None
WA	Y	1	NPDES: General	None
WI	Y	700	NPDES: General	None

<sup>a</sup>In general, after a complaint, a farm will be required to obtain an individual permit.  
<sup>b</sup>Nondelegated, but EPA defers to the state agency.  
<sup>c</sup>Varies by region.  
<sup>d</sup>State financed cost sharing is being considered.  
<sup>e</sup>A notice of intent is equivalent to an NPDES permit.

### ***Economic Impacts of Regulations***

Because Texas and Florida were among the first states experiencing strict enforcement of EPA regulations for dairy CAFOs, data was collected on the costs of compliance. We found a range of compliance investment costs for dairies that had not previously invested in animal waste containment facilities from \$7,000 for a 200 cow Texas dairy to \$600,000 for a 1500 cow Florida dairy. In addition, annual maintenance costs of \$5,000 to \$25,000 were required for the Texas and Florida dairies. Estimated costs for dairies in other regions ranged from a few thousand dollars to several hundred thousand dollars depending on the cattle concentration, average rainfall, evaporation rates, and the extent of existing waste management facilities typical of dairies in the region.

Such investment costs are probably large enough to cause dairy owners to consider whether their operation is sufficiently profitable or of sufficient longevity to remain in dairying. Many Texas and Florida dairy-men who decided to remain in dairying, enlarged and modernized their dairy operations at the time they brought their operations into dairy waste regulatory compliance. Accordingly, dairy waste regulations may result in fewer but larger dairies. In the process it may result in shifts in milk production to regions where costs of managing dairy waste per hundredweight of milk are lower.

### ***Policy Options and Consequences***

Wide state-to-state variation exists in the procedures and standards for regulation and enforcement related to dairy waste. A major cause of this variability is differences in interpretation of the laws which result, in part, from diversity in the physical and political environment for regulation. This creates an unlevel playing field (cost structure) which carries the potential consequence of geographically distorted investments in dairying. The consequence of such distortions could be longer-term economic and political stress in the industry. States trying to prevent dairy industry decline or those encouraging the industry to locate and expand, based in part on the relative absence of environmental regulation, could find that such actions are counterproductive in the long run.

### ***Regulatory Approach***

The two basic alternative regulatory approaches to dairy waste management involve either the specifica-

tion of specific best management practices that must be utilized or the specification of performance standards that must be met.

**Best Management Practices.** This regulatory approach involves the specification of a set of best available technologies, facilities, and equipment accompanied by standards for best management practices that must be used by dairies. These technology-based policies that emphasize the design of the systems required to control waste could be utilized as the primary regulatory approach. Examples include the design of lagoons, thickness of liners, type and use of solid separator devices, freestall housing, standards for calculation of runoff per acre, size requirements (animal units), and standards for acres per animal for land application of manure.

Under current federal permit standards, for example, the criterion for compliance has become whether a dairy's lagoon is large enough to accommodate all runoff and waste water, whether the lagoon liner meets requirements for thickness and impermeability, and whether the dairy's paperwork is in order. If a dairy's waste management system meets technical specifications, then the dairy is in compliance.

In other words, a dairy is in compliance if it is employing the accepted technologies and best management practices. This technology-based approach tends to assume that certain technologies are to be utilized in the development of waste management plans. Standard requirements may become a barrier to the development of new approaches and technologies for dealing with dairy waste. In addition, there is no guarantee that this approach will actually meet water quality standards on each farm.

**Performance Standards.** This regulatory approach involves the adoption of standards for water quality (runoff) discharged from dairy farms that must be met, leaving it up to the farmer and related waste management experts to develop the system that will best meet the performance standards. Under this standards-based approach, emphasis is placed on the desired end result in terms of water quality rather than on the technologies and practices utilized to achieve the end result. That is, less emphasis is placed on the specifics of design and more emphasis on measuring reduced pollution. An integral part of this design would be the development of a soil nutrient management plan for distributing waste that would meet the performance standard.

This alternative requires more monitoring, data, and testing, but provides farmers with greater flexibility in system design. Implementation requirements may be more demanding because of the need for evaluation of water quality rather than simply utilizing a checklist of physical characteristics.

The positive consequence of this standards-based approach is the potential for greater innovation and consideration of the unique conditions affecting the farm and the design of its waste management system. Investment tends to be geared to the requirements for remedying water quality problems. A standards-based approach allows for differences in appropriate technologies across regions and for different sized dairies.

### ***Easing the Pain of Adjustment***

Regardless of the regulatory and policy approach taken for managing dairy wastes, controversy has developed and will continue to be fostered among dairy farmers, their neighbors, regulators, and policymakers. Several options are available to the government for reducing the tension and pain of adjustment:

- **Increased SCS Role:** Enhance communication and cooperation between the regulator (EPA or its delegated agency) and those providing technical assistance (SCS and consultants) or technical assistance could be provided. It is critically important that each is operating with the same goals, requirements, and standards to minimize investments, mistakes, and controversy. Some proposals would give USDA lead agency responsibility in dealing with agricultural pollution issues. Others would mandate a substantially increased role and resources available to SCS for providing farmer assistance in designing

animal waste management systems and nutrient waste management

- **Green Payments.** To help defray a portion of the cost of compliance with new environmental standards it has been suggested that the federal and/or state government establish a cost sharing program frequently referred to as green payments. Such a green payment system would be designed to assist farmers financially to develop and implement a waste management plan during a specified transition period. Financial assistance incentives would reduce the burden of adjusting particularly in offsetting costs of fixed investments. With such payments not only would fewer farms go out of business, but the transition to a more efficient and environmentally sensitive industry could be facilitated.

### ***Need for Regulatory Stability***

For dairy farmers who have large fixed investments in their operations, one of the greatest dangers in the regulatory arena is the risk of change — the chance that a waste management design that is acceptable today will not be acceptable tomorrow. For example, while surface water runoff appears to be the primary concern today and systems are being designed to deal primarily with surface water pollution, tomorrow ground water could become a primary concern. In order to avoid placing an insurmountable burden on the dairy industry, it is important that regulatory approaches be designed that minimize the risk of changes in regulation. Without such assurance, the turmoil which has characterized the dairy industry will be further heightened and prolonged.